



**NOTICE OF
CITY COUNCIL REGULAR MEETING
CELINA ISD ADMIN BLDG., BOARD ROOM 205 S. COLORADO STREET, CELINA, TX
75009
Tuesday, February 12, 2019 AT 5:00 PM**

AGENDA

I. CALL TO ORDER AND ANNOUNCE A QUORUM PRESENT:

II. PLEDGE OF ALLEGIANCE/INVOCATION:

III. PROCLAMATIONS/PRESENTATIONS/OATHS OF OFFICE:

IV. OPEN FORUM:

Open Forum is for information only. If you wish to speak, please sign the "Speaker List" with the City Secretary. Speakers are limited to three (3) minutes. The Council can take no action. No charges and/or complaints will be heard against any elected official or employee of the city.

Please note Anyone wishing to furnish the City Council with copies/handouts regarding their item of interest must provide 9 copies and present them to the City Secretary for distribution to the City Council.

V. WORKSESSION/COMMITTEE REPORTS/STAFF REPORTS:

- A. New employee introductions. (McAfee) (Shaw)
- B. Master Trails Plan Presentation. (Norris Design)
- C. Discussion regarding 2015 Model Code. (McAfee)
- D. Comprehensive Plan update. (McAfee)
- E. General locations for future fire and police stations. (Metdker, Griggs, DeBuff)
- F. Discussion regarding any and/or all agenda items.
- G. Staff Reports attached

VI. EXECUTIVE SESSION:

The Celina City Council will convene into Executive Session pursuant to Texas Government Code 551.071, Consultation with Attorney, on a matter in which the duty of the attorney to the governmental body under the Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with this Chapter.

- A. Discussion regarding a resolution supporting proposed legislation related to the creation of the North Celina Municipal Management District #3 (Dynavest).

Reconvene Into Open Session

- B. Consider and act upon any items discussed in executive session.

VII. CONSENT AGENDA: Items are considered self-explanatory and will be enacted with one motion. No separate discussion of these items will occur unless so requested by at least one member of the City Council.

A. Minutes Approval:

- 1. City Council - Regular Meeting - Jan 8, 2019 5:00 PM
- 2. City Council - Special Meeting - Jan 22, 2019 5:00 PM

- B. Consider and act upon approval of a Joint General Election Contract for election services by and among the City of Celina, Celina Independent School District and Collin County, and a Joint General Election Agreement by and among the City of Celina, Denton County Elections Administrator and political subdivisions of Denton County. (Faulkner)
- C. Consider and act upon a Professional Service Agreement with Ideation Planning, LLC for a Comprehensive Plan and authorize and empower the City Manager to execute the same. (Comprehensive Plan) (McAfee)
- D. Consider and act to appoint Corbett Howard as the City-appointed director for Celina Municipal Management District No. 2 Board of Directors for a term ending May 1, 2022. (Laumer)
- E. Consider and act to authorize the City Manager to execute a contract by and between the City of Celina and Archer Western Construction LLC in the amount of \$3,656,576.99 for the construction of improvements to the Celina Road and Downtown Pump Stations. (Brawner)
- F. Consider and act to authorize the Mayor to execute a contract by and between the City of Celina and Marilee Special Utility District for the fifth addendum to the Full and Final Settlement Agreement and Release executed on April 24, 2001. (Laumer)
- G. Consider and act to authorize the City Manager to execute a contract between the City of Celina and McKee Utility Contractors in the amount of \$3,525,254.00 for the construction of 36-inch and 30-inch water line and appurtenances (Brawner)
- H. Consider and act to authorize the City Manager to execute a contract between the City of Celina and Viking Industrial Painting in the amount of \$459,800.00 (includes 10% contingency) for the Downtown elevated storage tank repair and rehab project. (Brawner)

VIII. PUBLIC HEARING/ACTION:

- A. The City Council will conduct the second of two public hearings, and act upon an ordinance of the City of Celina, Texas, adopting the annexation of certain territory contiguous to and adjoining the City of Celina, Texas, to wit: being an approximately 7.426 acre tract of land generally located on the north side of Frontier Parkway and approximately 900 feet east of Prairie Crossing. (All Storage Annexation) (McAfee)

- B. The Celina City Council will conduct a public hearing to consider testimony and act upon an ordinance amending Ordinance No. 2006-57, as heretofore amended, the same being the Comprehensive Zoning Ordinance, and amending the official zoning map of the City by designating the zoning of an approximately 7.4 acre tract of land from AG, Agricultural zoning district to PD, Planned Development District No. 95 (PD-95) with a base zoning designation of RO, Retail Office zoning, generally located on the north side of Frontier Parkway approximately 900 feet east of Prairie Crossing. (All Storage Celina Zoning Request) (McAfee)
- C. The City Council will conduct the first of two public hearings on the City-Initiated annexation of an approximately 4.0 acre tract of land owned by the City of Celina, and generally located on the north side of Light Farms Way and approximately 350 feet east of the Dallas North Tollway. (Fire Station No. 2 Annexation) (McAfee)

IX. ACTION ITEM:

- A. Consider and act upon a resolution declaring an expectation to reimburse expenditures with proceeds of future debt, and all matters incident and related thereto. (Toutounchian)
- B. Consider and act to authorize the City Manager to execute a contract between the City of Celina and Lee Engineering in the amount of \$88,091.00 for the design of Preston Road lights from Frontier Pkwy to CR 94. (Brawner)
- C. Consider and act to authorize the City Manager to execute an amendment to the Construction Manager at Risk Agreement to Establish the Guaranteed Maximum Price for by and between the City of Celina and Hill & Wilkinson in the amount of \$6,669,613.00 (Brawner)
- D. Consider and act upon an Office of the Governor Criminal Justice Program (JAG) grant resolution of support. (Griggs)
- E. Consider and act upon a resolution of the City of Celina Texas supporting the creation of the Celina Municipal Management District Number 3. (Sorrells MMD) (Laumer)

X. ADJOURNMENT:

City Council Chambers is wheelchair accessible. Persons with disabilities who plan to attend this meeting and who may need auxiliary aids or services such as interpreters for persons who are deaf, or hearing impaired, or readers of large print, are requested to contact the City Secretary's Office at 972-382-2682, or fax 972-382-3736 at least two (2) working days prior to the meeting so that appropriate arrangements can be made.

The City Council reserves the right to adjourn into executive session at any time during the course of this meeting to discuss any of the matters listed above, as authorized by the Texas Government Code, Chapter 551. "I, the undersigned authority do hereby certify that the Notice of Meeting was posted on the bulletin board at City Hall of the City of Celina, Texas, a place convenient and readily accessible to the general public at all times and said Notice was posted on the following date and time: _____ at ____ p.m. and remained so posted continuously for at least 72 hours prior to the scheduled time of said meeting."



Vicki Faulkner, TRMC
City Secretary, City of Celina, TX

Date Notice Removed



Development Services
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Dusty McAfee AICP, Director of Development Services
CC: Jason Laumer, City Manager
Date: February 12, 2019
Re: 2015 Model Codes Presentation. (McAfee)

Action Requested:

Discussion regarding 2015 Model Code. (McAfee)

Staff Recommendation:

N/A

2015 Model Codes

City Council

February 12, 2019



Background

- Celina adopted the 2012 model codes in 2013 and has been operating under them since that time
- The 2015 model codes have been reviewed and are ready to be adopted
- If adopted, the 2015 codes would go into effect on April 1st, 2019
- Best practice suggests to adopt new codes on a 3 year cycle



Adoption Process

- The ICC updates and publishes the international model codes every 3 years
- The State and NCTCOG reviews them and issues recommended state and regional amendments
- Local cities then review them and issue their own recommended local amendments
- Codes are usually adopted a year or two after they are published by the ICC



Why Adopt New Codes?

- Texas requires cities to adopt several of the ICC model codes
- Consistency (most regional cities remain up-to-date on code adoptions)
- Public Safety (codes born out of tragedy)
- ISO Rating
- Innovation (technology & materials constantly improving)
- Modern building codes protect property, first responders, and the tax base



Historic Milestones

- Building codes date back to Biblical times where civil law held builders responsible for dangerous structures
- Roman Empire promulgated building standards after collapse of Coliseum that killed/injured over 50,000 in 70 A.D.
- London Building Act was the result of the destruction of over 15,000 buildings in the great fire of 1666
- The Chicago fire of 1871 (burned for 2 days, 250 dead, 17,000 destroyed buildings) prompted both a building code and fire prevention standards in 1875
- First U.S. building code in 1905

Listing of International Model Codes

2015 Building Code	2015 Fire Code
2015 Residential Code	2015 Fuel Gas Code
2015 Energy Code	2017 Electrical Code
2015 Plumbing Code	2015 Mechanical Code

2015 Existing Building Code
2015 Swimming Pool & Spa Code
2015 Property Maintenance Code

Plus Local & Regional Amendments



Next Steps

- City Council Work Session (2-12-19)
- City Council Adoption (3-19-19)
- Effective Date (4-01-19)
- 2018 Codes (2020/2021)
- Feedback / Questions?



CITY OF CELINA, TEXAS ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF CELINA, TEXAS AMENDING THE CITY'S CODE OF ORDINANCES; CHAPTER 3: BUILDING REGULATIONS; DIVISION 1 GENERALLY SECTION 3.02.001 ENFORCEMENT; ADD SECTION 3.02.003 ADOPTION BY REFERENCE; DIVISION 2 BUILDING CODE; SECTION 3.02.051 INTERNATIONAL BUILDING CODE WITH AMENDMENTS; DIVISION 3 FIRE CODE; SECTION 3.02.101 INTERNATIONAL FIRE CODE WITH AMENDMENTS; DIVISION 4 RESIDENTIAL CODE; SECTION 3.02.151 INTERNATIONAL RESIDENTIAL CODE WITH AMENDMENTS; DIVISION 5 MECHANICAL CODE; SECTION 3.02.201 INTERNATIONAL MECHANICAL CODE WITH AMENDMENTS; DIVISION 6 FUEL GAS CODE; SECTION 3.02.251 INTERNATIONAL FUEL GAS CODE WITH AMENDMENTS; DIVISION 7 PLUMBING CODE; SECTION 3.02.301 INTERNATIONAL PLUMBING CODE WITH AMENDMENTS; DIVISION 8 NATIONAL ELECTRICAL CODE; SECTION 3.02.351 NATIONAL ELECTRIC CODE WITH AMENDMENTS; DIVISION 9 ENERGY CONSERVATION CODE; SECTION 3.02.401 INTERNATIONAL ENERGY CONSERVATION CODE WITH AMENDMENTS; DIVISION 10 PROPERTY MAINTENANCE CODE; SECTION 3.02.451 INTERNATIONAL PROPERTY MAINTENANCE CODE WITH AMENDMENTS; DIVISION 11 SWIMMING POOL AND SPA CODE; SECTION 3.02.501 INTERNATIONAL SWIMMING POOL SPA CODE WITH AMENDMENTS; DIVISION 12 EXISTING BUILDING CODE; SECTION 3.02.551 INTERNATIONAL EXISTING BUILDING CODE WITH AMENDMENTS; DIVISION 13 STORM SHELTER CODE; SECTION 3.02.601 INTERNATIONAL CODE COUNCIL – NATIONAL STORM SHELTER ASSOCIATION 500 CODE WITH AMENDMENTS; PROVIDING A CUMULATIVE REPEALER CLAUSE; PROVIDING SEVERABILITY; PROVIDING FOR SAVINGS; PROVIDING FOR A PENALTY NOT TO EXCEED \$2,000.00 AND A SEPARATE OFFENSE SHALL BE DEEMED COMMITTED EACH DAY DURING OR ON WHICH A VIOLATION OCCURS OR CONTINUES AND INCLUDING PROVISIONS FOR THE AUTHORIZATION TO SEEK INJUNCTIVE RELIEF TO ENJOIN VIOLATIONS WHICH CONSTITUTE AN IMMINENT HAZARD OR DANGER TO THE PUBLIC HEALTH AND SAFETY; PROVIDING A PUBLICATION CLAUSE; PROVIDING FOR ENGROSSMENT AND ENROLLMENT; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City of Celina, Texas, is a Home Rule Municipality located in Collin County and Denton County, Texas, created in accordance with provisions of the Texas Local Government Code the Texas Constitution and operating pursuant to the enabling legislation of the State of Texas; and

WHEREAS, the City of Celina, Texas is a home rule municipality empowered under the Texas Local Government Code, Section 51.001, to adopt an ordinance or rule that is for the good government of the City; and

WHEREAS, the Texas Local Government Code, Chapter 214, was amended by Senate Bill No. 365, an act of the 77th Texas Legislature, by adding Subchapter G, which provides for the adoption of the International Residential Code as a municipal residential building code in the State of Texas; and

WHEREAS, the City Council does hereby find and determine that the adoption of this Ordinance is in the best interest of the public health, safety, morals and general welfare of the City to adopt the construction and related codes as set forth herein;

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CELINA, COLLIN COUNTY, TEXAS:

SECTION 1
INCORPORATION OF PREMISES

That the above and foregoing premises are true and correct and are incorporated herein and made a part hereof for all purposes.

SECTION 2
FINDINGS

After due deliberations the City Council has concluded that the adoption of this Ordinance is in the best interest of the City of Celina, Texas, and of the public health, safety and welfare.

SECTION 3
AMENDMENT

That Chapter 3: Building Regulations; Article 3.02: Technical and Construction Codes and Standards; Section 3.02.001 Enforcement, Add Section 3.02.003 Adoption by Reference is hereby amended to read as follows:

DIVISION 1. GENERALLY

Section 3.02.001 – Enforcement

The City Building Official shall have the authority and power to enforce all provisions of the International Building Code, 2015 Edition and appendices, as amended; the International Fire Code, 2015 Edition and appendices, as amended; the International Residential Code, 2015 Edition and appendices, as amended; the International Mechanical Code, 2015 Edition and appendices, as amended; the International Fuel Gas Code, 2015 Edition and appendices, as amended; The International Plumbing Code, 2015 Edition and appendices as amended; the National Electrical Code, 2017 Edition and appendices, as amended; the International Energy Conservation Code, 2015 Edition and appendices as amended; the International Property Maintenance Code, 2015 Edition and appendices as amended; the International Swimming Pool Spa Code and appendices as amended; the Existing Building Code, 2015 Edition and appendices as amended

Section 3.02.003 - Adoption by Reference.

1. There is hereby adopted by the City of Celina for establishing rules and regulations for the construction, alteration, removal, demolition, equipment, use and occupancy, location and maintenance of buildings and structures, including permits and penalties, the following codes:
 - a. The International Building Code, being in particular the 2015 edition and appendices, as amended, except as it may be in conflict with the provisions of any ordinance of the city.
 - b. The International Fire Code, being in particular the 2015 edition and appendices, as amended, except as it may be in conflict with the provisions of any ordinance of the city.
 - c. The International Residential Code, being in particular the 2015 edition and appendices, as amended, except as it may be in conflict with the provisions of any ordinance of the city.
 - d. The International Mechanical Code, being in particular the 2015 edition and appendices, as amended, except as it may be in conflict with the provisions of any ordinance of the city.
 - e. The International Fuel Gas Code, being in particular the 2015 edition and appendices, as amended, except as it may be in conflict with the provisions of any ordinance of the city.
 - f. The International Plumbing Code, being in particular the 2015 edition and appendices, as amended, except as it may be in conflict with the provisions of any ordinance of the city.
 - g. The National Electrical Code, being in particular the 2017 edition and appendices, as amended, as published by the National Fire Protection Association, except as it may be in conflict with the provisions of any ordinance of the city.
 - h. The International Energy Conservation Code, being in particular the 2015 edition and appendices, as amended, except as it may be in conflict with the provisions of any ordinance of the city.
 - i. The International Property Maintenance Code, being in particular the 2015 edition and appendices, as amended, except as it may be in conflict with the provisions of any ordinance of the city.
 - j. The International Swimming Pool and Spa Code, being in particular the 2015 edition and appendices, as amended, except as it may be in conflict with the provisions of any ordinance of the city.
 - k. The International Existing Building Code, being in particular the 2015 edition and appendices, as amended, except as it may be in conflict with the provisions of any ordinance of the City.
 - L. The International Code Council – National Storm Shelter Association 500, being in particular the ICC 500-2014 edition and appendices, as amended, except as it may be in conflict with provisions of any ordinance of the City.
2. The building codes adopted by reference in subsection (1) of this section are hereby amended in the following particulars:
 - a. The following words, terms and phrases, when used in this section, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning.

Permanent toilet facilities means a room in an existing building (including a construction trailer) or in the building being constructed with a water closet installed in such room, which conforms to the plumbing code, and is continuously available to all workers involved in a construction project.

Temporary toilet facilities means a portable, fully enclosed, chemically sanitized toilet which is serviced and cleaned at least once each week.

- b. Every construction project requiring a permit within the city shall have adequate toilet facilities for workers associated with the project. The following shall be considered adequate facilities:

Commercial and Residential construction projects: At least one permanent toilet facility for every ten (10) workers shall be maintained in each subdivision for the employees or subcontractors of each builder holding a permit for a building in that subdivision. Each builder must provide a toilet facility as long as the builder holds an active permit in the subdivision.

3. Authority to establish policy standards, the Building and Fire Official shall have authority to establish certain policy guidelines or standards regulating various provisions of the residential, building, fire, plumbing, fuel gas, mechanical, electrical, property maintenance, swimming pool, spa, existing buildings, abatement of dangerous buildings and health codes adopted in this chapter that are subject to the standardization of construction or health methods and/or local interpretation. The Building Official shall have the authority to outline conditions and provide for code consistency to rules, regulations, or laws with county, state or federal agencies.
4. Unless deleted, amended, expanded or otherwise changed herein, all provisions of such Code shall be fully applicable and binding. Any reference to the NFPA Codes other than the National Electric Code shall mean the most current edition available.
5. Amendments. The following noted portions of the above noted codes are hereby amended to read as follows:

DIVISION 2. BUILDING CODE

Section 3.02.051 - International Building Code amendments:

The following noted portions of the International Building Code are hereby amended to read as follows:

Section 101.4; change to read as follows:

101.4 Referenced codes. The other codes listed in Sections 101.4.1 through 101.4.8 and referenced elsewhere in this code, when specifically adopted, shall be considered part of the requirements of this code to the prescribed extent of each such reference. Whenever amendments have been adopted to the referenced codes and standards, each reference to said code and standard shall be considered to reference the amendments as well. Any reference to NFPA 70 or the Electrical Code shall mean the Electrical Code as adopted.

Section 101.4.7; add the following:

101.4.8 Electrical. The provisions of the Electrical Code shall apply to the installation of electrical systems, including alterations, repairs, replacement, equipment, appliances, fixtures, fittings and appurtenances thereto.

Section 105.2; under sub-title entitled "Building" delete items 1, 2, 10 and 11 and re-number as follows:

Building:

- ~~1. One story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 120 square feet (11 m2).~~
- ~~2. Fences not over 7 feet (1829 mm) high.~~
- ~~3. 1. (Unchanged)~~
- ~~4. 2. (Unchanged)~~
- ~~5. 3. (Unchanged)~~
- ~~6. 4. (Unchanged)~~

- 7. 5. (Unchanged)
- 8. 6. (Unchanged)
- 9. 7. (Unchanged)
- 10. ~~Shade cloth structures constructed for nursery or agricultural purposes, not including service systems.~~
- 11. ~~Swings and other playground equipment accessory to detached one and two family dwellings~~
- 12. 8. (Unchanged)
- 13. 9. (Unchanged)

Section 109; add Section 109.7 to read as follows:

1.7 Re-inspection Fee. A fee as established by city council resolution may be charged when:

- 1. The inspection called for is not ready when the inspector arrives;
 “Not ready” is defined as being obviously incomplete.
 (Example: required element is missing, such as no water on DWV water test,
 No brick ties on framing brick tie inspection, Work by trade is still being performed)
- 2. No building address is clearly posted;
 Address must be posted according to the following minimums:
 T-Pole / Plumbing Rough-in: on T-pole brace,
 Framing / MEP: clearly posted on structure, trash container or sign
 Meter release or other inspection after “dry-in”: permanent address displayed on structure
- 3. City approved plans are not on the job site available to the inspector;
- 4. The building is locked or work otherwise not available for inspection when called;
- 5. The job site is red-tagged twice for the same item;
- 6. Failure to maintain erosion control, trash control or tree protection.

Any re-inspection fees assessed shall be paid before any more inspections are made on that job site.

Section 109; add Section 109.8, 109.8.1, 109.8.2 and 109.9 to read as follows:

109.8 Work without a permit.

109.8.1 Investigation. Whenever work for which a permit is required by this code has been commenced without first obtaining a permit, a special investigation shall be made before a permit may be issued for such work.

109.8.2 Fee. An investigation fee, in addition to the permit fee, shall be collected whether or not a permit is subsequently issued. The investigation fee shall be equal to the amount of the permit fee required by this code or the city fee schedule as applicable. The payment of such investigation fee shall not exempt the applicant from compliance with all other provisions of either this code or the technical codes nor from penalty prescribed by law.

109.9 Unauthorized cover up fee. Any work concealed without first obtaining the required inspection in violation of Section 110 shall be assessed a fee as established by the city fee schedule.

Section 202; amend definition of Ambulatory Care Facility as follows:

AMBULATORY CARE FACILITY. Buildings or portions thereof used to provide medical, surgical, psychiatric, nursing or similar care on a less than 24-hour basis to individuals who are rendered incapable of self-preservation by the services provided. This group may include but not be limited to the following:

- Dialysis centers
- Sedation dentistry
- Surgery centers
- Colonic centers
- Psychiatric centers

Section 202; add definition of Assisting Living Facilities to read as follows.

ASSISTED LIVING FACILITIES. A building or part thereof housing persons, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment which provides personal care services. The occupants are capable of responding to an emergency situation without physical assistance from staff.
Section 202; change definition of “Atrium” as follows:

ATRIUM. An opening connecting three or more stories... {Balance remains unchanged}

Section 202; amend definition to read as follows:

HIGH-RISE BUILDING. A building with an occupied floor located more than ~~75 55 feet (22 860 mm)~~ (16 764 mm) above the lowest level of fire department vehicle access

Section 202; add definition of “Repair Garage” as follows:

REPAIR GARAGE. A building, structure or portion thereof used for servicing or repairing motor vehicles. This occupancy shall also include garages involved in minor repair, modification and servicing of motor vehicles for items such as lube changes, inspections, windshield repair or replacement, shocks, minor part replacement and other such minor repairs.

Section 202; amend definition of “Special Inspector” to read as follows:

SPECIAL INSPECTOR. A qualified person employed or retained by an approved agency who shall prove to the satisfaction of the registered design professional in responsible charge and approved by the Building Official as having the competence necessary to inspect a particular type of construction requiring special inspection.

Section 303.1.3; add a sentence to read as follows:

303.1.3 Associated with Group E occupancies. A room or space used for assembly purposes that is associated with a Group E occupancy is not considered a separate occupancy. Except when applying the assembly requirements of Chapter 10 and 11.

Section 304.1; add the following to the list of occupancies:

- Fire stations
- Police stations with detention facilities for 5 or less

Section 307.1.1; add the following sentence to Exception 4:

4. Cleaning establishments... {Text unchanged} ...with Section 707 or 1-hour horizontal assemblies constructed in accordance with Section 711 or both. See also IFC Chapter 21, Dry Cleaning Plant provisions.

Section 403.1, Exception 3; change to read as follows:

3. Open air portions of buildings ~~Buildings~~ with a Group A-5 occupancy in accordance with Section 303.6.

Section 403.3, Exception; delete item 2

Section 403.3.2; Change to read as follows:

403.3.2 Water supply to required fire pumps. In buildings that are more than ~~420~~ 120 feet (36.5 m) in building height, required fire pumps shall be supplied by connections to no fewer than two water mains located in different streets. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate.

Exception: {No change to exception.}

Section 404.5; delete Exception

Section 406.3.5.1; Carport separation; amend to read as follows:

A fire separation is not required between a Group R-2 and U carport provided that the carport is entirely open on all sides and that the distance between the two is at least 10 feet (3048 mm).

Section 406.8; add a second paragraph to read as follows:

This occupancy shall also include garages involved in minor repair, modification and servicing of motor vehicles for items such as lube changes, inspections, windshield repair or replacement, shocks, minor part replacement and other such minor repairs

Section 423 Storm Shelters; amend to read as follows

423.1 General. This section applies to the construction of storm shelters constructed as separate detached buildings or constructed as rooms or spaces within buildings for the purpose of providing protection from storms that produce high winds, such as tornadoes and hurricanes during the storm. Such structures shall be designated to be hurricane shelters, tornado shelters, or combined hurricane and tornado shelters. Design of facilities for use as emergency shelters after the storm are outside the scope of ICC 500 and shall comply with Table 1604.5 as a Risk Category IV Structure.

423.2 Construction. In addition to other applicable requirements in this code, storm shelters shall be constructed in accordance with ICC 500. Buildings or structures that are also designated as emergency shelters shall also comply with Table 1604.5 as Risk Category IV structures.

423.3 Critical emergency operations. In areas where the shelter design wind speed for tornados in accordance with Figure 304.2(1) of ICC 500 is 250 mph, new buildings for 911 call stations, emergency operation centers and fire, rescue, ambulance and police stations shall comply with Table 1604.5 as a Risk Category IV structure and shall be provided with a storm shelter constructed in accordance with ICC 500.

423.4 Group E occupancies. In areas where the shelter design wind speed for tornados is 250 mph in accordance with Figure 304.2(1) of ICC 500, all new buildings for Group E occupancies with an occupant load of 50 or more shall have a storm shelter constructed in accordance with ICC 500.

Exceptions:

1. Group E day care facilities
2. Group E occupancies accessory to places of religious worship
3. Buildings meeting the requirements for shelter design in ICC 500

423.4.1 Required occupant capacity. The required occupant capacity of the storm shelter shall include all of the buildings on the site and shall be the total occupant load of the classrooms, vocational rooms and offices in the Group E occupancy.

Exceptions:

1. Where a new building is being added on an existing Group E site, and where the new building is not of sufficient size to accommodate the required occupant capacity of the storm shelter for all of the buildings on the site, the storm shelter shall at a minimum accommodate the required occupant capacity for the new building.
2. Where approved by the code official, the required occupant capacity of the shelter shall be permitted to be reduced by the occupant capacity of any existing storm shelters on the site.
3. For public schools, the required occupant capacity of the storm shelter shall be calculated by multiplying 1.05 by the Texas Education Agency maximum student capacity for the classroom and laboratory spaces according to Title 19, Part 2, Chapter 61, Subchapter CC, Section 61.1036 of the Texas Administrative Code. The Design Professional in Responsible Charge shall provide an analysis showing the calculation of the maximum student capacity on the construction documents.

423.4.2 Location Storm shelters shall be located within the buildings they serve or shall be located where the maximum distance of travel from not fewer than one exterior door of each building to a door of the shelter serving that building does not exceed 1,000 feet (305 m).

Section 506.3.1 Minimum percentage of perimeter; add sentence to read as follows:

{text unchanged}... Such open space shall be either on the same lot or dedicated for public use and shall be accessed from a street or approved fire lane. In order to be considered as accessible, if not in direct contact with a street or fire lane, a minimum 10-foot wide pathway meeting fire department access from the street or approved fire lane shall be provided

Table 601 Fire resistance rating for building elements (hours) Foot note B; amend to read as follows

b. Except in Group F-1, H, M and S-1 occupancies, fire protection of structural members in roof construction shall not be required, including protection of primary structural frame members, roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.

Section 712.1.9 Two Story Openings; change item 4 to read as follows:

1. is not open to a corridor in Group I and ~~R~~ H occupancies

Section 901.6.1; add Section 901.6.1.1 to read as follows:

901.6.1.1 Standpipe Testing. Building owners/managers must maintain and test standpipe systems as per NFPA 25 requirements. The following additional requirements shall be applied to the testing that is required every 5 years:

1. The piping between the Fire Department Connection (FDC) and the standpipe shall be back flushed when foreign material is present, and also hydrostatically tested for all FDC's on any type of standpipe system. Hydrostatic testing shall also be conducted in accordance with NFPA 25 requirements for the different types of standpipe systems.
2. For any manual (dry or wet) standpipe system not having an automatic water supply capable of flowing water through the standpipe, the tester shall connect hose from a fire hydrant or portable pumping system (as approved by the fire code official) to each FDC, and flow water through the standpipe system to the roof outlet to verify that each inlet connection functions properly. Confirm that there are no open hose valves prior to introducing water into a dry standpipe. There is no required pressure criteria at the outlet. Verify that check valves function properly and that there are no closed control valves on the system.

3. Any pressure relief, reducing, or control valves shall be tested in accordance with the requirements of NFPA 25. All hose valves shall be exercised.
4. If the FDC is not already provided with approved caps, the contractor shall install such caps for all FDC's as required by the fire code official.
5. Upon successful completion of standpipe test, place a blue tag (as per Texas Administrative Code, Fire Sprinkler Rules for Inspection, Test and Maintenance Service (ITM) Tag) at the bottom of each standpipe riser in the building. The tag shall be check-marked as "Fifth Year" for Type of ITM, and the note on the back of the tag shall read "5 Year Standpipe Test" at a minimum.
6. The procedures required by Texas Administrative Code Fire Sprinkler Rules with regard to Yellow Tags and Red Tags or any deficiencies noted during the testing, including the required notification of the local Authority Having Jurisdiction (fire code official) shall be followed.
7. Additionally, records of the testing shall be maintained by the owner and contractor, if applicable, as required by the State Rules mentioned above and NFPA 25.
8. Standpipe system tests where water will be flowed external to the building shall not be conducted during freezing conditions or during the day prior to expected night time freezing conditions.
9. Contact the fire code official for requests to remove existing fire hose from Class II and III standpipe systems where employees are not trained in the utilization of this firefighting equipment. All standpipe hose valves must remain in place and be provided with an approved cap and chain when approval is given to remove hose by the fire code official.

Section 903.1.1; change to read as follows:

[F] 903.1.1 Alternative protection. Alternative automatic fire-extinguishing systems complying with Section 904 shall be permitted in addition to automatic sprinkler protection where recognized by the applicable standard, or as approved by the fire code official.

Section 903.2; add the following:

[F] 903.2 Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12. Automatic Sprinklers shall not be installed in elevator machine rooms, elevator machine spaces, and elevator hoistways, other than pits where such sprinklers would not necessitate shunt trip requirements under any circumstances. Storage shall not be allowed within the elevator machine room. Signage shall be provided at the entry doors to the elevator machine room indicating "ELEVATOR MACHINERY – NO STORAGE ALLOWED."

Section 903.2; delete the exception.

Section 903.2.9; add Section 903.2.9.3 to read as follows:

[F] 903.2.9.3 Self-service storage facility. An automatic sprinkler system shall be installed throughout all self-service storage facilities.

Exception: One-story self-service storage facilities that have no interior corridors, with a one-hour fire barrier separation wall installed between every storage compartment.

Section 903.2.11; change 903.2.11.3 and add 903.2.11.7, 903.2.11.8, and 903.2.11.9 as follows:

903.2.11.3 Buildings 35 feet or more in height. An automatic sprinkler system shall be installed throughout buildings with a floor level, other than penthouses in compliance with Section 1509 of the *International Building Code*, 35 feet (10 668mm) or more above the lowest level of fire department vehicle access.

Exception:

Open parking structures in compliance with Section 406.5 of the *International Building Code*.

903.2.11.7 High-Piled Combustible Storage. For any building with a clear height exceeding 12 feet (4572 mm), see Chapter 32 of the IFC to determine if those provisions apply.

903.2.11.8 Spray Booths and Rooms. New and existing spray booths and spraying rooms shall be protected by an approved automatic fire-extinguishing system.

903.2.11.9 Buildings over 6,000 sq. ft. An automatic sprinkler system shall be installed throughout all buildings with a building area over 6,000 sq. ft. For the purpose of this provision, firewalls shall not define separate buildings.

Exception: Open parking garages in compliance with Section 406.5 of the *International Building Code*.

Section 903.3.1.1.1; change to read as follows:

[F] 903.3.1.1.1 Exempt locations. When approved by the *fire code official*, automatic sprinklers shall not be required in the following rooms or areas where such. *{Text unchanged}*... because it is damp, of fire-resistance-rated construction or contains electrical equipment.

1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.
2. Any room or space where sprinklers are considered undesirable because of the nature of the contents, when approved by the code official.
3. Generator and transformer rooms, under the direct control of a public utility, separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours.
4. Elevator machine rooms, machinery spaces, and hoistways, other than pits where such sprinklers would not necessitate shunt trip requirements under any circumstances.

Section 903.3.1.2; add Section 903.3.1.2.3 to read as follows:

[F]Section 903.3.1.2.3 Attics and Attached Garages. Sprinkler protection is required in attic spaces of such buildings two or more stories in height, in accordance with NFPA 13 and/or NFPA 13R, and attached garages.

Section 903.3.1.3; change to read as follows:

[F] 903.3.1.3 NFPA 13D sprinkler systems. Automatic sprinkler systems *installed in one- and two-family dwellings, Group R-3 and R-4 condition 1 and townhouses shall be permitted to be installed throughout in accordance with NFPA 13D or in accordance with state law*

Section 903.3.1.4; add to read as follows:

[F] 903.3.1.4 Freeze protection. Freeze protection systems for automatic fire sprinkler systems shall be in accordance with the requirements of the applicable referenced NFPA standard and this section.

903.3.1.4.1 Attics. Only dry-pipe, preaction, or listed antifreeze automatic fire sprinkler systems shall be allowed to protect attic spaces.

Exception: Wet-pipe fire sprinkler systems shall be allowed to protect non-ventilated attic spaces where:

1. The attic sprinklers are supplied by a separate floor control valve assembly to allow ease of draining the attic system without impairing sprinklers throughout the rest of the building, and
2. Adequate heat shall be provided for freeze protection as per the applicable referenced NFPA standard, and

3. The attic space is a part of the building's thermal, or heat, envelope, such that insulation is provided at the roof deck, rather than at the ceiling level.

903.3.1.4.2 Heat trace/insulation. Heat trace/insulation shall only be allowed where approved by the fire code official for small sections of large diameter water-filled pipe.

Section 903.3.5 Water Supplies; add a second paragraph to read as follows:

[F] Water supply as required for such systems shall be provided in conformance with the supply requirements of the respective standards; however, every fire protection system shall be designed with a 10 psi safety factor. Reference Section IFC 507.4 for additional design requirements.

Section 903.4 Sprinkler system supervision and alarms; add a second paragraph after the exceptions to read as follows:

[F] Sprinkler and standpipe system water-flow detectors shall be provided for each floor tap to the sprinkler system and shall cause an alarm upon detection of water flow for more than 45 seconds. All control valves in the sprinkler and standpipe systems except for fire department hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering

Section 903.4.2 Alarms; add second paragraph to read as follows:

[F] The alarm device required on the exterior of the building shall be a weatherproof horn/strobe notification appliance with a minimum 75 candela strobe rating, installed as close as practicable to the fire department connection.

Section 905.2 Installation standard; change to read as follows:

[F] 905.2 Installation standard. Standpipe systems shall be installed in accordance with this section and NFPA 14. Manual dry standpipe systems shall be supervised with a minimum of 10 psig and a maximum of 40 psig air pressure with a high/low alarm.

Section 905.3; add Section 905.3.9 and exception to read as follows:

[F] 905.3.9 Buildings exceeding 10,000 sq. ft. In buildings exceeding 10,000 square feet in area per story and where any portion of the building's interior area is more than 200 feet (60960 mm) of travel, vertically and horizontally, from the nearest point of fire department vehicle access, Class I automatic wet or manual wet standpipes shall be provided.

Exceptions:

1. Automatic dry and semi-automatic dry standpipes are allowed as provided for in NFPA 14.
2. R-2 occupancies of four stories or less in height having no interior corridors.

Exception: Automatic dry and semi-automatic dry standpipes are allowed as provided for in NFPA 14.

Section 905.4; change item 1, 3, 5, and add item 7: to read as follows:

- [F]** 1. In every required ~~interior~~ exit stairway, a hose connection shall be provided for each story above and below grade plane. Hose connections shall be located at an intermediate landing between stories, unless otherwise approved by the fire code official.
2. {No change.}
3. In every exit passageway, at the entrance from the exit passageway to other areas of a building.
Exception: Where floor areas adjacent to an exit passageway are reachable from an ~~interior~~ exit stairway hose connection by a {No change to rest.}
4. {No change.}
5. Where the roof has a slope less than four units vertical in 12 units horizontal (33.3-percent slope), each standpipe shall be provided with a two-way a-hose connection shall be located to serve the roof or at the

highest landing of an ~~interior~~ exit stairway with stair access to the roof provided in accordance with Section 1011.12.

6. {No change.}

7. When required by this Chapter, standpipe connections shall be placed adjacent to all required exits to the structure and at two hundred feet (200') intervals along major corridors thereafter, or as otherwise approved by the fire code official.

Section 905.9 Valve supervision; add a second paragraph after the exceptions to read as follows:

[F] Sprinkler and standpipe system water-flow detectors shall be provided for each floor tap to the sprinkler system and shall cause an alarm upon detection of water flow for more than 45 seconds. All control valves in the sprinkler and standpipe systems except for fire department hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering

Section 907.1; add Section 907.1.4 to read as follows:

[F] 907.1.4 Design standards. Where a new fire alarm system is installed, the devices shall be addressable. Fire alarm systems utilizing more than 20 smoke detectors shall have analog initiating devices.

Section 907.2.1; change to read as follows:

[F] 907.2.1 Group A. A manual fire alarm system that activates the occupant notification system in accordance with new Section 907.5 shall be installed in Group "A" occupancies having an occupant load of 300 or more persons or more than 100 persons above or below the lowest level of exit discharge. Group "A" occupancies not separated from one another in accordance with Section 707.3.10 of the *International Building Code* shall be considered as a single occupancy for the purposes of applying this section. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy.

Exception: {unchanged.}

Activation of fire alarm notification appliances shall:

1. Cause illumination of the means of egress with light of not less than 1 foot-candle (11 lux) at the walking surface level, and
2. Stop any conflicting or confusing sounds and visual distractions.

Section 907.2.3; add exception 1.1 and change to read as follows:

[F] 907.2.3 Group E. A manual fire alarm system that initiates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6 shall be installed in Group E educational occupancies. When *automatic sprinkler systems* or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system. An approved smoke detection system shall be installed in Group E day care occupancies. Unless separated by a minimum of 100' open space, all buildings, whether portable buildings or the main building, will be considered one building for alarm occupant load consideration and interconnection of alarm systems.

[F] Exceptions:

1. A manual fire alarm system is not required in Group E educational and day care occupancies with an occupant load of 30 or less when provided with an approved automatic sprinkler system.
 - 1.1. Residential In-Home day care with not more than 12 children may use interconnected single station detectors in all habitable rooms. (For care of more than five children 2 1/2 or less years of age, see Section 907.2.6.)

Section 907.2.13, exception 3; change to read as follows:

[F] 3. Open air portions of buildings with an occupancy in Group A-5 in accordance with Section 303.1 of the International Building Code; however, this exception does not apply to accessory uses including but not limited to sky boxes, restaurants and similarly enclosed areas.

Section 907.4.2 Manual fire alarm boxes; add section 907.4.2.7 to read as follows:

[F] **907.4.2.7 Type.** Manual alarm initiating devices shall be an approved double action type.

Section 907.6.1; add Section 907.6.1.1 to read as follows:

[F] **907.6.1.1 Wiring Installation.** All fire alarm systems shall be installed in such a manner that a failure of any single initiating device or single open in an initiating circuit conductor will not interfere with the normal operation of other such devices. All signaling line circuits (SLC) shall be installed in such a way that a single open will not interfere with the operation of any addressable devices (Class A). Outgoing and return SLC conductors shall be installed in accordance with NFPA 72 requirements for Class A circuits and shall have a minimum of four feet separation horizontal and one foot vertical between supply and return circuit conductors. The initiating device circuit (IDC) from an addressable input (monitor) module may be wired Class B, provided the distance from the addressable module to the initiating device is ten feet or less.

Section 907.6.3 Initialing devise identification; delete all four exceptions:

Section 907.6.6; add sentence at end of paragraph to read as follows:

[F] See 907.6.3 for the required information transmitted to the supervising station.

Section 909 Smoke Control Systems; add section 909.22 to read as follows:

[F] **909.22 Stairway or ramp pressurization alternative.** Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and the stair pressurization alternative is chosen for compliance with Building Code requirements for a smokeproof enclosure, interior exit stairways or ramps shall be pressurized to a minimum of 0.10 inches of water (25 Pa) and a maximum of 0.35 inches of water (87 Pa) in the shaft relative to the building measured with all interior exit stairway and ramp doors closed under maximum anticipated conditions of stack effect and wind effect. Such systems shall comply with Section 909, including the installation of a separate fire-fighter's smoke control panel as per Section 909.16, and a Smoke Control Permit shall be required from the Fire Department as per Section 105.7.

[F] **909.22.1 Ventilating equipment.** The activation of ventilating equipment for the stair or ramp pressurization system shall be by smoke detectors installed at each floor level at an approved location at the entrance to the smokeproof enclosure. When the closing device for the stairway or ramp shaft and vestibule doors is activated by smoke detection or power failure, mechanical equipment shall activate and operate at the required performance levels. Smoke detectors shall be installed in accordance with Section 907.3.

[F] **909.22.1.1 Ventilation systems.** Smoke proof enclosure ventilation systems shall be independent of other building ventilation systems. The equipment, control wiring, power wiring and ductwork shall comply with one of the following:

1. Equipment, control wiring, power wiring and ductwork shall be located exterior to the building and directly connected to the smoke proof enclosure or connected to the smokeproof enclosure by ductwork enclosed by not less than 2-hour fire barriers constructed in accordance with Section 707 of the Building Code or horizontal assemblies constructed in accordance with Section 711 of the Building Code, or both.
2. Equipment, control wiring, power wiring and ductwork shall be located within the smokeproof enclosure with intake or exhaust directly from and to the outside or through ductwork enclosed by not less than 2-hour barriers constructed in accordance with Section 707 of the Building Code or horizontal assemblies constructed in accordance with Section 711 of the Building Code, or both.

3. Equipment, control wiring, power wiring and ductwork shall be located within the building if separated from the remainder of the building, including other mechanical equipment, by not less than 2-hour fire barriers constructed in accordance with Section 707 of the Building Code or horizontal assemblies constructed in accordance with Section 711 of the Building Code, or both.

Exceptions:

1. Control wiring and power wiring utilizing a 2-hour rated cable or cable system.
2. Where encased with not less than 2 inches (51 mm) of concrete.
3. Control wiring and power wiring protected by a listed electrical circuit protective systems with a fire-resistance rating of not less than 2 hours.

[F] 909.22.1.2 Standby power. Mechanical vestibule and stairway and ramp shaft ventilation systems and automatic fire detection systems shall be provided with standby power in accordance with Section 2702 of the Building Code.

[F] 909.22.1.3 Acceptance and testing. Before the mechanical equipment is approved, the system shall be tested in the presence of the fire code official to confirm that the system is operating in compliance with these requirements.

Section 910.2 Where required; change exception 2 and 3 to read as follows:

- [F] 2.** Only manual smoke and heat removal shall ~~not~~ be required in areas of buildings equipped with early suppression fast-response (ESFR) sprinklers. Automatic smoke and heat removal is prohibited.
- 3.** Only manual smoke and heat removal shall ~~not~~ be required in areas of buildings equipped with control mode special application sprinklers with a response time index of $50(m \cdot S)^{1/2}$ or less that are listed to control a fire in stored commodities with 12 or fewer sprinklers. Automatic smoke and heat removal is prohibited.

Section 910.2 Where required; add section 910.2.3 with exceptions to read as follows:

[F] 910.2.3 Group H. Buildings and portions thereof used as a Group H occupancy as follows:

1. In occupancies classified as Group H-2 or H-3, any of which are more than 15,000 square feet (1394 m²) in single floor area.

Exception: Buildings of noncombustible construction containing only noncombustible materials.

2. In areas of buildings in Group H used for storing Class 2, 3, and 4 liquid and solid oxidizers, Class 1 and unclassified detonable organic peroxides, Class 3 and 4 unstable (reactive) materials, or Class 2 or 3 water-reactive materials as required for a high-hazard commodity classification.

Exception: Buildings of noncombustible construction containing only noncombustible materials.

Section 910.3 Smoke and heat vents; Add Section 912.910.3.4 to read as follows:

[F] 910.3.4 Vent operation. Smoke and heat vents shall be capable of being operated by approved automatic and manual means. Automatic operation of smoke and heat vents shall conform to the provisions of Sections 910.3.2.1 through 910.3.2.3.

[F] 910.3.4.1 Sprinklered buildings. Where installed in buildings equipped with an approved automatic sprinkler system, smoke and heat vents shall be designed to operate automatically. The automatic operating mechanism of the smoke and heat vents shall operate at a temperature rating at least 100 degrees F (approximately 38 degrees Celsius) greater than the temperature rating of the sprinklers installed.

Exception: Manual only system per 910.2

[F] 910.3.4.2 Nonsprinklered buildings. Where installed in buildings not equipped with an approved automatic sprinkler system, smoke and heat vents shall operate automatically by actuation of a heat-responsive device rated at between 100°F (56°C) and 220°F (122°C) above ambient.

Exception: Listed gravity-operated drop out vents.

Section 910.4.3.1; change to read as follows:

[F] 910.4.3.1 Makeup air. Makeup air openings shall be provided within 6 feet (1829 mm) of the floor level. Operation of makeup air openings shall be ~~manual or~~ automatic. The minimum gross area of makeup air inlets shall be 8 square feet per 1,000 cubic feet per minute (0.74 m² per 0.4719 m³/s) of smoke exhaust.

Section 910.4.4; change to read as follows:

[F] 910.4.4 Activation. The mechanical smoke removal system shall be activated ~~by manual controls only automatically by the automatic sprinkler system or by an approved fire detection system.~~ Individual manual controls shall also be provided.

Exception: Manual only systems per Section 910.2.

Section 912.2 Location; add section 912.2.3 to read as follows:

[F] 912.2.3 Hydrant distance. An approved fire hydrant shall be located within 100 feet of the fire department connection as the fire hose lays along an unobstructed path.

Section 913.2.1 Protection of fire pump rooms; add second paragraph and exception to read as follows:

[F] When located on the ground level at an exterior wall, the fire pump room shall be provided with an exterior fire department access door that is not less than 3 ft. in width and 6 ft. – 8 in. in height, regardless of any interior doors that are provided. A key box shall be provided at this door, as required by IFC Section 506.1.

Exception: When it is necessary to locate the fire pump room on other levels or not at an exterior wall, the corridor leading to the fire pump room access from the exterior of the building shall be provided with equivalent fire resistance as that required for the pump room, or as approved by the *fire code official*. Access keys shall be provided in the key box as required by IFC Section 506.1.

Section 1006.2.2 Egress based on use; add new Section 1006.2.2.6 to read as follows:

1006.2.2.6 Electrical Rooms. For electrical rooms, special exiting requirements may apply. Reference the electrical code as adopted.

Section 1009.1 Accessible means of egress required; add exception 4 to read as follows:

Exceptions:

{Previous exceptions unchanged}

4. Buildings regulated under State Law and built in accordance with State registered plans, including any variances or waivers granted by the State, shall be deemed to be in compliance with the requirements of Section 1007.

Section 1010.1.4 Special doors; Add section 1010.1.5 to read as follows:

1010.1.4.5 Locking arrangements in educational occupancies.

In Group E and Group B educational occupancies, egress doors from classrooms, offices and other occupied rooms shall be permitted to be provided with locking arrangements designed to keep intruders from entering the room where all of the following conditions are met:

1. The door shall be capable of being unlocked from outside the room with a key or other *approved* means.
2. The door shall be openable from within the room in accordance with Section 1010.1.9.

3. Modifications shall not be made to listed *panic hardware*, fire door hardware or door closers.

Section 1010.1.9.4 Bolt locks; amend exceptions 3 and 4 to read as follows:

Exceptions:

3. Where a pair of doors serves an *occupant load* of less than 50 persons in a Group B, F, M or S occupancy. {*Remainder unchanged*}
4. Where a pair of doors serves a Group A, B, F, M or S occupancy {*Remainder unchanged*}

Section 1010.1.9.7 Delayed egress; amend to read as follows:

1010.1.9.7 Delayed egress.

Delayed egress locking systems shall be permitted to be installed on doors serving the following occupancies in buildings that are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or an *approved automatic smoke or heat detection system* installed in accordance with Section 907.

1. Group B, F, I, M, R, S and U occupancies.
2. Group E classrooms with an *occupant load* of less than 50.

Exception: Delayed egress locking systems shall be permitted to be installed on exit or *exit access* doors, other than the main exit or *exit access* door, serving a courtroom in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.

1010.1.9.7.1 Delayed egress locking system.

The delayed egress locking system shall be installed and operated in accordance with all of the following:

1. The delay electronics of the delayed egress locking system shall deactivate upon actuation of the *automatic sprinkler system* or *automatic fire detection system*, allowing immediate free egress.
2. The delay electronics of the delayed egress locking system shall deactivate upon loss of power controlling the lock or lock mechanism, allowing immediate free egress.
3. The delayed egress locking system shall have the capability of being deactivated at the *fire command center* and other *approved* locations.
4. An attempt to egress shall initiate an irreversible process that shall allow such egress in not more than 15 seconds when a physical effort to exit is applied to the egress side door hardware for not more than 3 seconds. Initiation of the irreversible process shall activate an audible signal in the vicinity of the door. Once the delay electronics have been deactivated, rearming the delay electronics shall be by manual means only. **Exception:** Where *approved*, a delay of not more than 30 seconds is permitted on a delayed egress door.
5. The egress path from any point shall not pass through more than one delayed egress locking system.

Exceptions:

1. In Group I-2 or I-3 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided that the combined delay does not exceed 30 seconds.
2. In Group I-1 or I-4 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided the combined delay does not exceed 30 seconds and the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
6. A sign shall be provided on the door and shall be located above and within 12 inches (305 mm) of the door exit hardware:
 - 6.1. For doors that swing in the direction of egress, the sign shall read: PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.

6.2. For doors that swing in the opposite direction of egress, the sign shall read: PULL UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.

6.3. The sign shall comply with the visual character requirements in ICC A117.1.

Exception: Where *approved*, in Group I occupancies, the installation of a sign is not required where care recipients who because of clinical needs require restraint or containment as part of the function of the treatment area.

7. Emergency lighting shall be provided on the egress side of the door.

8. The delayed egress locking system units shall be *listed* in accordance with UL 294

Section 1015.8 Window openings; amend 1 to read as follows:

1. Operable windows where the top of the sill of the opening is located more than ~~75 feet (22 860 mm)~~ 55 feet (16 764 mm) above the finished grade or other surface below and that are provided with window fall prevention devices that comply with ASTM F 2006.

Section 1020.1 Construction; add exception 6 to read as follows:

6. In group B occupancies, corridor walls and ceilings need not be of fire-resistive construction within a single tenant space when the space is equipped with approved automatic smoke-detection within the corridor. The actuation of any detector shall activate self-annunciating alarms audible in all areas within the corridor. Smoke detectors shall be connected to an approved automatic fire alarm system where such system is provided.

Section 1101.1 Scope; Add exception to read as follows:

Exception: Components of projects regulated by and registered with Architectural Barriers Division of Texas Department of Licensing and Regulation shall be deemed to be in compliance with the requirements of this chapter.

Section 1203.1; amend to read as follows:

1203.1 General. Buildings shall be provided with natural ventilation in accordance with Section 1203.4, or mechanical ventilation in accordance with the *International Mechanical Code*.

Where air infiltration rate in a *dwelling unit* is 5 air changes or less per hour when tested with a blower door at a pressure 0.2 inch w.c. (50 Pa) in accordance with Section 402.4.1.2 of the *International Energy Conservation Code*, the *dwelling unit* shall be ventilated by mechanical means in accordance with Section 403 of the *International Mechanical Code*.

Table 1505.1; delete footnote c and amend footnote b to read as follows:

b. Non-classified roof coverings shall be permitted on buildings of U occupancies having not more than 120 sq. ft. of protected roof area. When exceeding 120 sq. ft. of protected roof area, buildings of U occupancies may use non-rated non-combustible roof coverings.

c. deleted

Section 1505.7; delete the section

Section 1510.1; add a sentence to read as follows:

1510.1 General. Materials and methods of applications used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15. All individual replacement shingles or shakes shall be in compliance with the rating required by Table 1505.1.

{text of exception unchanged}

Section 1704.2 Special inspections and tests; amend to read as follows:

1704.2 Special inspections and tests. Where application is made to the Building Official for construction as specified in Section 105, the owner or the owner's authorized agent, or the registered design professional in responsible charge, other than the contractor, shall employ one or more approved agencies to provide special inspections and tests during construction on the types of work listed under Section 1705 and identify the approved agencies to the Building Official. The special inspector shall not be employed by the contractor. These special inspections and tests are in addition to the inspections identified by the Building Official that are identified in Section 110.

Section 1704.2.1, Special inspector qualifications; amend to read as follows:

1704.2.1 Special inspector qualifications. Prior to the start of construction and or upon request, the approved agencies shall provide written documentation to the registered design professional in responsible charge and the building official demonstrating the competence and relevant experience or training of the special inspectors who will perform the special inspections and tests during construction. [Remainder unchanged]

Section 1704.2.4, Report requirement; amend to read as follows:

1704.2.4 Report requirement. Approved agencies shall keep records of special inspections and tests. The approved agency shall submit reports of special inspections and tests to the Building Official upon request, and to the registered design professional in responsible charge. Individual inspection reports ~~[Reports]~~ shall indicate that work inspected or tested was or was not completed in conformance to approved construction documents. [Remainder unchanged]

Section 1704.2.5.1, Fabricator approval; amend to read as follows:

1704.2.5.1 Fabricator approval. Special inspections during fabrications required by Section 1704 are not required where the work is done on the premises of a fabricator registered and approved to perform such work without special inspection. Approval shall be based upon review of the fabricator's written procedural and quality control manuals and periodic auditing of fabrication practices by an approved agency, or a fabricator that is enrolled in a nationally accepted inspections program. At completion of fabrication, the acceptable or approved fabricator shall submit a certificate of compliance to the owner or the owner's authorized agent or the registered design professional in responsible charge, for submittal to the building official as specified in Section 1704.5 stating that the work was performed in accordance with the approved construction documents. The certificate of compliance shall also be made available to the Building Official upon request.

Section 2901.1 Scope; add a sentence to read as follows:

[P] 2901.1 Scope. *{existing text to remain}* The provisions of this Chapter are meant to work in coordination with the provisions of Chapter 4 of the International Plumbing Code. Should any conflicts arise between the two chapters, the Building Official shall determine which provision applies.

Section 2902.1 Minimum number of fixtures; add a second paragraph to read as follows:

In other than E Occupancies, the minimum number of fixtures in Table 2902.1 may be lowered, if requested in writing, by the applicant stating reasons for a reduced number and approved by the Building Official.

Section 2902.1 Minimum number of fixtures; add new Section 2902.1.3 to read as follows:

2902.1.3 Additional fixtures for food preparation facilities. In addition to the fixtures required in this Chapter, all food service facilities shall be provided with additional fixtures set out in this section.

2902.1.3.1 Hand washing lavatory. At least one hand washing lavatory shall be provided for use by employees that is accessible from food preparation, food dispensing and ware washing areas. Additional hand washing lavatories may be required based on convenience of use by employees.

2902.1.3.2 Service sink. In new or remodeled food service establishments, at least one service sink or one floor sink shall be provided so that it is conveniently located for the cleaning of mops or similar wet floor cleaning tool and for the disposal of mop water and similar liquid waste. The location of the service sink(s) and/or mop sink(s) shall be approved by the **City of Celina** Health Department.

Section 2902.1 Table 2902.1; add footnote f to read as follows:

f. Drinking fountains are not required in M Occupancies with an occupant load of 100 or less, B Occupancies with an occupant load of 25 or less, and for dining and/or drinking establishments.

Section 3002.1 Hoistway Enclosure Protection; add exceptions to read as follows:

Exceptions:

1. Elevators wholly located within atriums complying with Section 404 shall not require hoistway enclosure protection.

2. Elevators in open or enclosed parking garages that serve only the parking garage, and complying with Sections 406.5 and 406.6, respectively, shall not require hoistway enclosure protection.

Section 3005.4 Machine rooms, control rooms, machinery spaces and control spaces; amend to read as follows:

Elevator machine rooms, control rooms, control spaces and machinery spaces shall be enclosed with fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. [Remainder unchanged]

Section 3005 Machine Rooms; add Section 3005.7 to read as follows:

3005.7 Fire Protection in Machine rooms, control rooms, machinery spaces and control spaces.

3005.7.1 Automatic sprinkler system. The building shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, except as otherwise permitted by Section 903.3.1.1.1 and as prohibited by Section 3005.7.2.1.

3005.7.2.1 Prohibited locations. Automatic sprinklers shall not be installed in machine rooms, elevator machinery spaces, control rooms, control spaces and elevator hoist-ways.

3005.7.2.2 Sprinkler system monitoring. The sprinkler system shall have a sprinkler control valve supervisory switch and water-flow initiating device provided for each floor that is monitored by the building's fire alarm system.

3005.7.3 Water protection. An approved method to prevent water from infiltrating into the hoistway enclosure from the operation of the automatic sprinkler system outside the elevator lobby shall be provided.

3005.7.4 Shunt trip. Means for elevator shutdown in accordance with Section 3005.5 shall not be installed.

Section 3005 Machine rooms; add Section 3005.8 to read as follows:

3005.8 Storage. Storage shall not be allowed within the elevator machine room, control room, machinery spaces and or control spaces. Provide approved signage at each entry to the above listed locations stating: "No Storage Allowed."

Section 3006.2 Hoistways opening protection required; amend 5. to read as follows:

5. The building is a high rise and the elevator hoistway is more than ~~75 feet (22 860 mm)~~ 55 feet (16 764 mm) in height. The height of the hoistway shall be measured from the lowest floor at or above grade to the highest floors served by the hoistway.

Section 3109.1 General; amend to read as follows:

3109.1 General. Swimming pools shall comply with the requirements of sections 3109.2 through 3109.5 and other applicable sections of this code and complying with applicable state laws.

DIVISION 3. FIRE CODE

Section 3.02.101 International Fire Code amendments:

The following noted portions of the International Fire Gas Code are hereby amended to read as follows.

Section 102.1 Construction and design provisions; amend #3 to read as follows:

3. Existing structures, facilities, and conditions when required in Chapter 11 or in specific sections of this code.

Section 105.3.3 Occupancy prohibited before approval; amend to read as follows:

105.3.3 Occupancy Prohibited before Approval. The building or structure shall not be occupied prior to the fire code official issuing a permit when required and conducting associated inspections indicating the applicable provisions of this code have been met.

Section 105.4.6 Retention of construction documents; amend to read as follows:

105.4.6 Retention of construction documents. One set of construction documents (printed or digital) shall be retained by the fire code official for a period of not less than 180 days from the date of the completion of the permitted work, or as required by state or local laws. One set of approved construction documents shall be returned to the applicant and said set, along with the fire department permit, and plan review comments, if any, shall be kept on the site of the building or work from the date issued and until the completion of the permits associated inspections and the Fire Department's Final Certificate of Occupancy Inspection, where applicable.

Section 105.7 Required construction permits; add sections 105.7.19 to read as follows:

105.7.19 Electronic access control systems. Construction permits are required for the installation or modification of an electronic access control system, as specified in Chapter 10. A separate construction permit is required for the installation or modification of a fire alarm system that may be connected to the access control system. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

Section 106 Inspections; add Section 106.5 and 106.5.1 to read as follows:

106.5 Inspection of existing premises. The fire code official or designated representative shall inspect all buildings, premises, or portions thereof as often as may be necessary to ensure continued compliance with the provisions of this code. An initial inspection and one (1) re-inspection shall be made at no charge to the responsible party. If the fire code official or designated representative(s) are required to make follow-up inspections after the initial and first re-inspection to verify correction of noted violation(s) during the previous inspections, a fee shall be charged. The occupant, lessee, or person making use of the building or premise shall pay said fee(s), as established in Section 113.2, within thirty (30) days of being billed as a condition to continue lawful occupancy of the building

or premise. Continued non-compliance may result in the issuance of a citation and subject to the penalties established in Section 109.4.

106.5.1 Habitual violations. An occupant, lessee, or person making use of a building or premise that has been cited for a violation of this code, or previous code for the same violation over multiple initial maintenance inspections shall waive right to notice of violation in Section 109.3 and may be immediately issued a citation subject to the penalties as established by Section 109.4

Section 109.4 Violation penalties; amend to read as follows:

109.4 Violation penalties. Any person, firm, or corporation violating any of the provisions or terms of this Article or Code adopted herein shall be guilty of a misdemeanor and upon conviction in the Municipal Court of the City of Celina, shall be subjected to a fine not to exceed two thousand and no/100 dollars (\$2,000.00) for each offense, and each and every day any such violation exist be deemed to constitute a separate offense.

Section 111.4 Failure to comply; amend to read as follows:

111.4 Failure to comply. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe work condition, shall be liable to a fine of not more than two thousand and no/100 dollars (\$2,000.00) for each offense, and each and every day such violation shall continue shall be deemed to constitute a separate offense.

Section 113.2 Schedule of permit fees; amend to read as follows:

113.2 Schedule of Fees. A fee for each permit, inspection, or re-inspection shall be paid as required, in accordance with the schedule provided in City of Celina adopted fee schedule, or future ordinance(s) amending or repealing said ordinance.

Section 113.3 Work commencing before permit issuance; add second paragraph to read as follows:

Work commencing before permit issuance. shall also be known as working without a permit and shall include non-compliance by the permit holder of Sections 105.3.5 and 105.4.6. Fees for working without a permit are established in City of Celina adopted fee schedule or future ordinance(s) amending or repealing said ordinance.

Section 202 Definitions; amend and add definitions to read as follows:

AMBULATORY CARE FACILITY. Buildings or portions thereof used to provide medical, surgical, psychiatric, nursing, or similar care on a less than 24-hour basis to persons who are rendered incapable of self-preservation by the services provided. This group may include but not limited to the following:

- Dialysis centers
- Sedation dentistry
- Surgery centers
- Colonic centers
- Psychiatric centers

ATRIUM. An opening connecting three or more stories ... {remaining text unchanged}

DEFEND IN PLACE. A method of emergency response that engages building components and trained staff to provide occupant safety during an emergency. Emergency response involves remaining in place, relocating within the building, or both, without evacuating the building.

FIRE WATCH. A temporary measure intended to ensure continuous and systematic surveillance of a building or portion thereof by one or more qualified individuals or standby personnel when required by the fire code official, for the purpose of identifying and controlling fire hazards, detecting early signs of unwanted fire, raising an alarm of fire and notifying the fire department.

FIREWORKS. Any composition or device for the purpose of producing a visible or an audible effect for entertainment purpose by combustion, deflagration, detonation, and/or activated by ignition with a match or other heat producing device that meets the definition of 1.4G fireworks or 1.3G fireworks as set forth herein ... {remainder of text unchanged}.

HIGH-PILED COMBUSTIBLE STORAGE. {add second paragraph} Any building classified as a group S Occupancy or Speculative Building exceeding 6,000 sq.ft. that has a clear height in excess of 14 feet, making it possible to be used for storage in excess of 12 feet, shall be considered to be high-piled storage. When a specific product cannot be identified, a fire protection system and life safety features shall be installed as for Class IV commodities, to the maximum pile height.

HIGH-RISE BUILDING. A building with an occupied floor located more than 55 feet (16,764 mm) above the lowest level of fire department vehicle access.

REPAIR GARAGE. A building, structure or portion thereof used for servicing or repairing motor vehicles. This occupancy shall also include garages involved in minor repair, modification and servicing of motor vehicles for items such a lube changes, inspections, windshield repair or replacement, shocks, minor part replacement and other such minor repairs.

SELF-SERVICE STORAGE FACILITY. Real property designed and used for the purpose of renting or leasing individual storage spaces to customers for the purpose of storing and removing personal property on a self-service basis.

STANDBY PERSONNEL. Qualified fire service personnel approved by the Fire Chief. When utilized, the number required shall be as directed by the Fire Chief. Charges for utilization shall be as normally calculated by the jurisdiction.

UPGRADED OR REPLACED FIRE ALARM SYSTEM. A fire alarm system that is upgraded or replaced includes, but is not limited to the following:

- Replacing one single board or fire alarm control unit component with a newer model
- Installing a new fire alarm control unit in addition to or in place of an existing one
- Conversion from a horn system to an emergency voice/alarm communication system
- Conversion from a conventional system to one that utilizes addressable or analog devices

The following are not considered an upgrade or replacement:

- Firmware updates
- Software updates
- Replacing boards of the same model with chips utilizing the same or newer firmware

Section 307.1.1 Prohibited open burning; amend to read as follows:

307.1.1 Prohibited Open Burning. Open burning ~~shall be prohibited~~ that is offensive or objectionable because of smoke emissions or when atmospheric conditions or local circumstances make such fires hazardous shall be prohibited.

Exception: {No change.}

Section 307.2 Permit required; amend to read as follows:

307.2 Permit required. A permit shall be obtained from the fire code official in accordance with Section 105.6 prior to kindling a fire for recognized silviculture or range or wildlife management practices, prevention or control of disease or pests, or open burning. Application for such approval shall only be presented by and permits issued to the owner of the land upon which the fire is to be kindled.

Examples of state or local law, or regulations referenced elsewhere in this section may include but not be limited to the following:

1. Texas Commission on Environmental Quality guidelines and/or restrictions
2. State, County, or local temporary or permanent bans on open burning.
3. Local written policies as established by the fire code official.

Section 307.2 Permit required; add Section 307.2.2 to read as follows:

307.2.2 Acceptable material. Materials acceptable to burn are trees, brush, grass, and other dry plant growth for land clearing operations where no practical alternative to burning exists and the materials being burned are only from that property.

Section 307.3 Extinguishment authority; amend to read as follow;

307.3 Extinguishment Authority. ~~When open burning creates or adds to a hazardous situation, or a required permit for open burning has not been obtained, the fire code official is authorized to order the extinguishment of the open burning operation.~~ The fire code official is authorized to order the extinguishment by the permit holder, another person responsible or the fire department of open burning that creates or adds to a hazardous or objectionable situation.

Section 307.4 Location; amend to read as follows:

307.4 Location. The location for open burning shall not be less than 300 feet (91,440 mm) from any structure, and provisions shall be made to prevent the fire from spreading to within 300 feet (91,440 mm) of any structure.

Exceptions: {no change}

Section 307.4.3 Portable outdoor fireplaces; add exception #2 to read as follows:

Exceptions:

1. unchanged
2. Where buildings, balconies and decks are protected by an approved automatic sprinkler system.

Section 307.4 Locations; add Section 307.4.4 and 307.4.5 to read as follows:

307.4.4 Permanent outdoor firepit. Permanently installed outdoor firepit's for recreational fire purposes shall not be installed within 10 feet of a structure or combustible material.

Exception: Permanent installed outdoor fireplaces constructed in accordance with the International Building Code

307.4.5 Trench Burns. Trench burns shall be conducted in air curtain trenches and in accordance with Section 307.2.

Section 307.5 Attendance; changed to read as follows:

307.5 Attendance. Open burning, trench burns, bonfires or recreational fires shall be constantly attended until the . . . {remainder of section unchanged}.

Section 308.1.4 Open-flame cooking devices; is amended to read as follows:

308.1.4 Open-flame cooking devices. Open-flame cooking devices, charcoal grills and other similar devices used for cooking shall not be located or used on combustible balconies, decks, or within 10 feet (3048 mm) of combustible construction.

Exceptions:

1. One- and two-family dwellings, except that LP-gas containers are limited to a water capacity not greater than 50 pounds (22.68 kg) [nominal 20 pounds (9.08 kg) LP-gas capacity] with an aggregate LP-gas capacity not to exceed 100 lbs. (5 containers).
2. Where buildings, balconies and decks are protected by an approved automatic sprinkler system except that LP-gas containers are limited to a water capacity not greater than 50 pounds (22.68 kg) [nominal 20 pound (9.08 kg) LP-gas capacity], with an aggregate LP-gas capacity not to exceed 40 lbs. (2 containers).
3. {no change}

Section 308.1.6.2 Portable fueled open-flame devices, Exception #3; amended to read as follows:

Exceptions:

3. Torches or flame producing devices in accordance with Section 308.1.3.

Section 308.1.6.3 Sky lanterns; amend to read as follows:

308.1.6.3 Sky Lanterns. A person shall not release or cause to be released an ~~untethered~~ unmanned free-floating devices containing an open flame or other heat source, such as but not limited to a sky lantern.

Section 311.5 placards; amend to read as follows:

311.5 Placards. The fire code official is authorized to require marking of any vacant or abandon buildings or structures determined to be unsafe pursuant to Section 110 of this code relating to structural or interior hazards as required by Section 311.5.1 through 311.5.5.

Section 403.5 Group E Occupancies; amend to read as follows:

403.5 Group E Occupancies. An approved fire safety and evacuation plan in accordance with Section 404 shall be prepared and maintained for Group E occupancies and for buildings containing both a Group E occupancy and an atrium. A diagram depicting two evacuation routes shall be posted in a conspicuous location in each classroom. Group E occupancies shall also comply with Sections 403.5.1 through 403.5.3.

Section 404.2.2 Fire safety plans; add Number 4.10 to read as follows:

4.10 Fire extinguishing system controls.

Section 405.4 Time; amend Section 405.4 to read as follows:

405.4 Time. The fire code official may require an evacuation drill at any time. Drills shall be held at unexpected times and under varying conditions to simulate the unusual conditions that occur in case of fire.

Section 501.4 Timing of installation; amend to read as follows:

501.4 Timing of Installation. When fire apparatus access roads or a water supply for fire protection is required to be installed for any structure or development, they shall be installed, tested, and approved prior to the time of which construction has progressed beyond completion of the foundation of any structure. ~~such protection shall be installed and made serviceable prior to and during the time of construction except when approved alternative methods of protection are provided. Temporary street signs shall be installed at each street intersection when construction of new roadways allows passage by vehicles in accordance with Section 505.2.~~

Section 503.1.1 Building and facilities; add sentence to read as follows:

Except for one- or two-family dwellings, the path of measurement shall be along a minimum of a ten feet (10') wide unobstructed pathway around the external walls of the structure, with exceptions for trees, mechanical units, and other structures of limited size that do not block pathways.

Section 503.2.1 Dimensions; amend to read as follows:

503.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 24 feet (7,315 mm), except for approved security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 14 feet (4,267 mm). When servicing a structure of greater than two stories in height, a 26 foot fire lane is required. Any such fire lane easement shall either connect both ends to a dedicated street or be provided with a turnaround having a minimum outer radius of 50 feet.

Exception: Vertical clearance may be reduced; provided such reduction does not impair access by fire apparatus and approved signs are installed and maintained indicating the established vertical clearance when approved.

Section 503.2.2 Authority; amend to read as follows:

503.2.2 Authority. The fire code official shall have the authority to require an increase in the minimum access width, vertical clearances, and radius where they are inadequate for fire or rescue operations.

Section 503.2.3 Surface; amend to read as follows:

503.2.3 Surface. Fire apparatus access roads shall be designed and maintained to support imposed loads of 80,000 Lbs for fire apparatus and shall be surfaced so as to provide all-weather driving capabilities.

Section 503.3 Marking; amend to read as follows:

503.3 Marking. Striping, signs, or other markings, when approved by the code official, shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. Striping, signs and other markings shall be maintained in a clean and legible condition at all times and be replaced or repaired when necessary to provide adequate visibility.

1. Striping. Fire apparatus access roads shall be continuously marked by painted lines of red traffic paint six inches (6") in width to show the boundaries of the lane. The words "NO PARKING FIRE LANE" or "FIRE LANE NO PARKING" shall appear in four inch (4") white letters at 25 feet intervals on the red border markings along both sides of the fire lanes. Where a curb is available, the striping shall be on the vertical face of the curb.

2. Sign. Signs shall read "NO PARKING FIRE LANE" or "FIRE LANE NO PARKING" and shall be 12" wide and 18" high. Signs shall be painted on a white background with letters and borders in red, using not less than 2" lettering. Signs shall be permanently affixed to a stationary post and the bottom of the sign shall be six feet, six inches (6'6") above finished grade. Signs shall be spaced not more than fifty feet (50') apart. Signs may be installed on permanent buildings or walls or as approved by the Fire Chief.

Section 503.4 Obstruction of fire apparatus access roads; amend to read as follows:

503.4 Obstruction of fire apparatus access roads. Fire apparatus access roads shall not be obstructed in any manner, including the parking of vehicles. The minimum widths and clearances established in Section 503.2.1 and any area marked as a fire lane as described in Section 503.3 shall be maintained at all times.

Section 505.1 Address identification; amend to read as follows:

505.1 Address identification. New and existing buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than ~~4 inches (102 mm)~~ 6 inches (152.4 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where required by the fire code official, address numbers shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road, buildings do not immediately front a street, and/or the building cannot be viewed from the public way, a monument, pole or other sign with approved 6 inch (152.4 mm) height building numerals or addresses and 4 inch (101.6 mm) height suite/apartment numerals of a color contrasting with the background of the building or other approved means shall be used to identify the structure. Numerals or addresses shall be posted on a minimum 20 inch (508 mm) by 30 inch (762 mm) background on border. Address identification shall be maintained.

Exception: R-3 Single Family occupancies shall have approved numerals of a minimum 3 ½ inches (88.9 mm) in height and a color contrasting with the background clearly visible and legible from the street fronting the property and rear alleyway where such alleyway exists.

Section 507.4 Water supply test; amend to read as follows:

507.4 Water supply test date and information. The water supply test used for hydraulic calculation of fire protection systems shall be conducted in accordance with NFPA 291 “Recommended Practice for Fire Flow Testing and Marking of Hydrants” and within one year of sprinkler plan submittal. The fire code official shall be notified prior to the water supply test. Water supply tests shall be witnessed by the fire code official, as required or approved documentation of the test shall be provided to the fire code official prior to final approval of the water supply system. The exact location of the static/residual hydrant and the flow hydrant shall be indicated on the design drawings. All fire protection plan submittals shall be accompanied by a hard copy of the waterflow test report, or as approved by the fire code official. The report must indicate the dominant water tank level at the time of the test and the maximum and minimum operating levels of the tank, as well, or identify applicable water supply fluctuation. The licensed contractor must then design the fire protection system based on this fluctuation information, as per the applicable referenced NFPA standard. Reference Section 903.3.5 for additional design requirements

Section 507.5.4 Obstruction; amend to read as follows:

507.5.4 Obstruction. Unobstructed access to fire hydrants shall be maintained at all times. Posts, fences, vehicles, growth, trash, storage and other materials or objects shall not be placed or kept near fire hydrants, fire department inlet connections or fire protection system control valves in a manner that would prevent such equipment or fire hydrants from being immediately discernible. The fire department shall not be deterred or hindered from gaining immediate access to fire protection equipment or fire hydrants.

Section 509.1 Identification; add new section 509.1.2 to read as follows:

509.1.2 Sign Requirements. Unless more stringent requirements apply, lettering for signs required by this section shall have a minimum height of 2 inches (50.8 mm) when located inside a building and 4 inches (101.6 mm) when located outside, or as approved by the fire code official. The letters shall be of a color that contrasts with the background.

Section 603.3.2.1 Quantity limits, Exception; amend exception to read as follows:

Exception: The aggregate capacity limit shall be permitted to be increased to 3,000 gallons (11,356 L) in accordance with all requirements of Chapter 57. {delete remainder of Exception}

Section 603.3.2.2 Restricted use and connection; amend to read as follows:

603.3.2.2 Restricted use and connection. Tanks installed in accordance with Section 603.3.2 shall be used only to supply fuel oil to fuel-burning equipment installed in accordance with Section 603.3.2.4. Connections between tanks and equipment supplied by such tanks shall be made using closed piping systems.

Section 604; amend and add to read as follows:

SECTION 604 EMERGENCY AND STANDBY POWER SYSTEMS

604.1.1 Stationary Generators. Stationary emergency and standby power generators required by this code shall be listed in accordance with UL 2200.

604.1.2 Installation. Emergency power systems and standby power systems shall be installed in accordance with the *International Building Code*, NFPA 70, NFPA 110 and NFPA 111. Existing installations shall be maintained in accordance with the original approval, except as specified in Chapter 11.

604.1.3 through 604.1.8 {No changes to these sections.}

604.1.9 Critical Operations Power Systems (COPS). For Critical Operations Power Systems necessary to maintain continuous power supply to facilities or parts of facilities that require continuous operation for the reasons of public safety, emergency management, national security, or business continuity, see NFPA 70.

604.2 Where Required. Emergency and standby power systems shall be provided where required by Sections 604.2.1 through ~~604.2.16~~ 604.2.24 or elsewhere identified in this code or any other referenced code.

604.2.1 through 604.2.3 {No change.}

604.2.4 ~~Group A occupancies.~~ Emergency Voice/alarm Communications Systems. Emergency power shall be provided for emergency voice/alarm communications systems in the following occupancies, or as specified elsewhere in this code, as required in Section 907.5.2.2.5. The system shall be capable of powering the required load for a duration of not less than 24 hours, as required in NFPA 72.

Covered and Open Malls, Section 907.2.20 and 914.2.3

Group A Occupancies, Sections 907.2.1 and 907.5.2.2.4.

Special Amusement Buildings, Section 907.2.12.3

High-rise Buildings, Section 907.2.13

Atriums, Section 907.2.14

Deep Underground Buildings, Section 907.2.19

604.2.5 through 604.2.11 {No change.}

604.2.12 Means of Egress Illumination. Emergency power shall be provided for *means of egress* illumination in accordance with Sections 1008.3 and 1104.5.1. (90 minutes)

604.2.13 Membrane Structures. Emergency power shall be provided for exit signs in temporary tents and membrane structures in accordance with Section 3103.12.6.1. (90 minutes) Standby power shall be provided for auxiliary inflation systems in permanent membrane structures in accordance with Section 2702 of the *International Building Code*. (4 hours) Auxiliary inflation systems shall be provided in temporary air-supported and air-inflated membrane structures in accordance with section 3103.10.4.

604.2.14 {No change.}

604.2.15 Smoke Control Systems. Standby power shall be provided for smoke control systems in the following occupancies, or as specified elsewhere in this code, as required in Section 909.11:

Covered Mall Building, International Building Code, Section 402.7

Atriums, International Building Code, Section 404.7

Underground Buildings, International Building Code, Section 405.8

Group I-3, International Building Code, Section 408.4.2

Stages, International Building Code, Section 410.3.7.2

Special Amusement Buildings (as applicable to Group A's), International Building Code, Section 411.1

Smoke Protected Seating, Section 1029.6.2.1

604.2.17 Covered and Open Mall Buildings. Emergency power shall be provided in accordance with Section 907.2.20 and 914.2.3.

604.2.18 Airport Traffic Control Towers. A standby power system shall be provided in airport traffic control towers more than 65 ft. in height. Power shall be provided to the following equipment:

1. Pressurization equipment, mechanical equipment and lighting.
2. Elevator operating equipment.
3. Fire alarm and smoke detection systems.

604.2.19 Smokeproof Enclosures and Stair Pressurization Alternative. Standby power shall be provided for smokeproof enclosures, stair pressurization alternative and associated automatic fire detection systems as required by the International Building Code, Section 909.20.6.2.

604.2.20 Elevator Pressurization. Standby power shall be provided for elevator pressurization system as required by the International Building Code, Section 909.21.5.

604.2.21 Elimination of Smoke Dampers in Shaft Penetrations. Standby power shall be provided when eliminating the smoke dampers in ducts penetrating shafts in accordance with the International Building Code, Section 717.5.3, exception 2.3.

604.2.22 Common Exhaust Systems for Clothes Dryers. Standby power shall be provided for common exhaust systems for clothes dryers located in multistory structures in accordance with the International Mechanical Code, Section 504.10, Item 7.

604.2.23 Hydrogen Cutoff Rooms. Standby power shall be provided for mechanical ventilation and gas detection systems of Hydrogen Cutoff Rooms in accordance with the International Building Code, Section 421.8.

604.2.24 Means of Egress Illumination in Existing Buildings. Emergency power shall be provided for means of egress illumination in accordance with Section 1104.5 when required by the fire code official. (90 minutes in I-2, 60 minutes elsewhere.)

604.3 through 604.7 {No change.}

604.8 Energy Time Duration. Unless a time limit is specified by the fire code official, in this chapter or elsewhere in this code, or in any other referenced code or standard, the emergency and standby power system shall be supplied with enough fuel or energy storage capacity for not less than 2-hour full-demand operation of the system.

Exception: Where the system is supplied with natural gas from a utility provider and is approved.

Section 609.2 Where required; amend to read as follows:

609.2 Where Required. A Type I hood shall be installed at or above all commercial cooking appliances and domestic cooking appliances used for commercial purposes that produce grease vapors, including but not limited to cooking equipment used in fixed, mobile, or temporary concessions, such as trucks, buses, trailers, pavilions, or any form of roofed enclosure, as required by the fire code official.

Exceptions:

1. Tents, as provided for in Chapter 31.
2. {No change to existing Exception.}

Additionally, fuel gas and power provided for such cooking appliances shall be interlocked with the extinguishing system, as required by Section 904.12.2. Fuel gas containers and piping/hose shall be properly maintained in good working order and in accordance with all applicable regulations.

Section 704.1 Enclosure; amend to read as follows:

704.1 Enclosure. Interior vertical shafts, including but not limited to stairways, elevator hoistways, service and utility shafts, that connect two or more stories of a building shall be enclosed or protected in accordance with the codes in effect at the time of construction but, regardless of when constructed, not less than as required in Chapter 11. New floor openings in existing buildings shall comply with the International Building Code.

Section 807.3 Combustible decorative material; amend to read as follows:

807.3 Combustible Decorative Materials. ~~In other than Group I-3~~ In occupancies in Groups A, E, I, and R-1, and dormitories in Group R-2, curtains, draperies, fabric hangings and other similar combustible decorative materials

suspended from walls or ceilings shall comply with Section 807.4 and shall not exceed 10 percent of the specific wall or ceiling area to which they are attached.

Section 807.5.2.2 Artwork in corridors and 807.5.2.3 Artwork in classrooms; amend to read as follows:

807.5.2.2 Artwork in Corridors. Artwork and teaching materials shall be limited on the walls of corridors to not more than 20 percent of the wall area. Such materials shall not be continuous from floor to ceiling or wall to wall. Curtains, draperies, wall hangings, and other decorative material suspended from the walls or ceilings shall meet the flame propagation performance criteria of NFPA 701 in accordance with Section 807 or be noncombustible.

Exception: Corridors protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 shall be limited to 50 percent of the wall area.

807.5.2.3 Artwork in Classrooms. Artwork and teaching materials shall be limited on walls of classrooms to not more than 50 percent of the specific wall area to which they are attached.

Curtains, draperies, wall hangings and other decorative material suspended from the walls or ceilings shall meet the flame propagation performance criteria of NFPA 701 in accordance with Section 807 or be noncombustible.

Section 901.6.1 Standards; add Section 901.6.1.1 to read as follows:

901.6.1.1 Standpipe Testing. Building owners/managers must maintain and test standpipe systems as per NFPA 25 requirements. The following additional requirements shall be applied to the testing that is required every 5 years:

1. The piping between the Fire Department Connection (FDC) and the standpipe shall be backflushed when foreign material is present, and also hydrostatically tested for all FDC's on any type of standpipe system. Hydrostatic testing shall also be conducted in accordance with NFPA 25 requirements for the different types of standpipe systems.
2. For any manual (dry or wet) standpipe system not having an automatic water supply capable of flowing water through the standpipe, the tester shall connect hose from a fire hydrant or portable pumping system (as approved by the fire code official) to each FDC, and flow water through the standpipe system to the roof outlet to verify that each inlet connection functions properly. Confirm that there are no open hose valves prior to introducing water into a dry standpipe. There is no required pressure criteria at the outlet. Verify that check valves function properly and that there are no closed control valves on the system.
3. Any pressure relief, reducing, or control valves shall be tested in accordance with the requirements of NFPA 25. All hose valves shall be exercised.
4. If the FDC is not already provided with approved caps, the contractor shall install such caps for all FDC's as required by the fire code official.
5. Upon successful completion of standpipe test, place a blue tag (as per Texas Administrative Code, Fire Sprinkler Rules for Inspection, Test and Maintenance Service (ITM) Tag) at the bottom of each standpipe riser in the building. The tag shall be check-marked as "Fifth Year" for Type of ITM, and the note on the back of the tag shall read "5 Year Standpipe Test" at a minimum.
6. The procedures required by Texas Administrative Code Fire Sprinkler Rules with regard to Yellow Tags and Red Tags or any deficiencies noted during the testing, including the required notification of the local Authority Having Jurisdiction (fire code official) shall be followed.
7. Additionally, records of the testing shall be maintained by the owner and contractor, if applicable, as required by the State Rules mentioned above and NFPA 25.
8. Standpipe system tests where water will be flowed external to the building shall not be conducted during freezing conditions or during the day prior to expected night time freezing conditions.

9. Contact the fire code official for requests to remove existing fire hose from Class II and III standpipe systems where employees are not trained in the utilization of this firefighting equipment. All standpipe hose valves must remain in place and be provided with an approved cap and chain when approval is given to remove hose by the fire code official.

Section 901.6 Inspection, testing and maintenance; add Section 901.6.3 to read as follows:

901.6.3 False Alarms and Nuisance Alarms. False alarms and nuisance alarms shall not be given, signaled or transmitted or caused or permitted to be given, signaled or transmitted in any manner.

Section 901.7 Systems out of service; amend to read as follows:

901.7 Systems Out of Service. Where a required fire protection system is out of service or in the event of an excessive number of activations, the fire department and the fire code official shall be notified immediately and, where required by the fire code official, the building shall either be evacuated or an approved fire watch shall be provided for all occupants left unprotected by the shut down until the fire protection system has been returned to service. ... {remaining text unchanged}

Section 901.8.2 Removal of existing occupant-use hose lines; amend to read as follows:

901.8.2 Removal of existing Occupant-use Hose Lines. The fire code official is authorized to permit the removal of existing occupant-use hose lines and hose valves where all of the following conditions exist:

1. ~~Installation is not required by this code or the International Building Code.~~
2. The hose line(s) would not be utilized by trained personnel or the fire department.
3. If the remaining outlets occupant-use hose lines are removed, but the hose valves are required to remain as per the fire code official, such shall be ~~are~~ compatible with local fire department fittings.

Section 903.1.1 Alternative protection; amend to read as follows:

903.1.1 Alternative Protection. Alternative automatic fire-extinguishing systems complying with Section 904 shall be permitted ~~instead of~~ in addition to automatic sprinkler protection where recognized by the applicable standard ~~and~~, or as approved by the fire code official.

Section 903.2 Where required; add paragraph to read as follows:

Automatic sprinklers shall not be installed in elevator machine rooms, elevator machine spaces, and elevator hoistways, other than pits where such sprinklers would not necessitate shunt trip requirements under any circumstances. Storage shall not be allowed within the elevator machine room. Signage shall be provided at the entry door to the elevator machine room indicating “ELEVATOR MACHINERY – NO STORAGE ALLOWED.”

Section 903.2 Where required; delete the exception.

Section 903.2.9 Group S-1; add section 903.2.9.3 to read as follows:

903.2.9.3 Self-service storage facility. An automatic sprinkler system shall be installed throughout all self-service storage facilities.

Section 903.2.11 Specific buildings areas and hazards; amend 903.2.11.3 and add 903.2.11.7, 903.2.11.8, and 903.2.11.9 as follows:

903.2.11.3 Buildings 35 feet or more in height. An automatic sprinkler system shall be installed throughout buildings that have one or more stories, other than penthouses in compliance with Section 1510 of the International Building Code that is located 35 feet (10,668 mm) or more above the lowest level of fire department vehicle access measured to the finished floor.

Exceptions: # 1. Open parking structures in compliance with Section 406.5 of the International Building Code having no other occupancies above the subject garage.

903.2.11.7 High-Piled Combustible Storage. For any building with a clear height exceeding 12 feet (4572mm), see Chapter 32 to determine if those provisions apply.

903.2.11.8 Spray Booths and Rooms. New and existing spray booths and spray rooms shall be protected by an approved automatic fire-extinguishing system.

903.2.11.9 Buildings over 6,000 sq. ft. An automatic fire sprinkler system shall be installed throughout all buildings with a building area 6,000 sq. ft. or greater, in all existing buildings that are enlarged to be 6,000 sq. ft. or greater, and in all existing buildings that the cumulative remodel over any period of time that is equal to or greater than 6,000 sq. ft.. For the purpose of this provision, fire walls shall not define separate buildings.

Exception: Open parking garages in compliance with Section 406.5 of the International Building Code.

Section 903.3.1.1.1 Exempt locations; amend to read as follows:

903.3.1.1.1 Exempt locations. When approved by the fire code official, automatic sprinklers shall not be required in the following rooms or areas where such . . . {text unchanged} . . . because it is damp, of fire-resistance-rated construction or contains electrical equipment.

1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.
2. Any room or space where sprinklers are considered undesirable because of the nature of the contents, when approved by the code official.
3. Generator and transformer rooms, under the direct control of a public utility, separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours.
4. Elevator machine rooms, machinery space, and hoistways, other than pits where such sprinklers would not necessitate shunt trip requirements under any circumstances.

Section 903.3.1.2 NFPA 13R sprinkler systems; add section 903.3.1.2.3 to read as follows:

Section 903.3.1.2.3 Attics and Attached Garages. Sprinkler protection is required in attic spaces of such buildings two or more stories in height, in accordance with NFPA 13 and or NFPA 13R requirements, and attached garages.

Section 903.3.1.3 NFPA 13D sprinkler systems; amend to read as follows:

903.3.1.3 NFPA 13 D sprinkler systems. Where allowed, automatic sprinkler systems installed in one- and two-family dwellings and townhomes shall be installed throughout in accordance with NFPA 13D or in accordance with state law.

Section 903.3.1 Standards; add section 903.3.1.4 to read as follows

903.3.1.4 Freeze protection. Freeze protection systems for automatic fire sprinkler systems shall be in accordance with the requirements of the applicable referenced NFPA standard and this section.

903.3.1.4.1 Attics. Only dry-pipe, preaction, or listed antifreeze automatic fire sprinkler systems shall be allowed to protect attic spaces.

Exception: Wet-pipe fire sprinkler systems shall be allowed to protect non-ventilated attic spaces where:

1. The attic sprinklers are supplied by a separate floor control valve assembly to allow ease of draining the attic system without impairing sprinklers throughout the rest of the building, and
2. Adequate heat shall be provided for freeze protection as per the applicable referenced NFPA standard, and

3. The attic space is a part of the building's thermal, or heat, envelope, such that insulation is provided at the roof deck, rather than at the ceiling level.

903.3.1.4.2 Heat trace/insulation. Heat trace/insulation shall only be allowed where approved by the fire code official for small sections of large diameter water-filled pipe.

Section 903.3.5 Water supplies; add a second paragraph to read as follows:

Water supply as required for such systems shall be provided in conformance with the supply requirements of the respective standards; however, every water-based fire protection system shall be designed with a 10 psi safety factor. Reference Section 507.4 for additional design requirements.

Section 903.4 Sprinkler system supervision and alarms; add a second paragraph after the exceptions to read as follows:

Sprinkler and standpipe system water-flow detectors shall be provided for each floor tap to the sprinkler system and shall cause an alarm upon detection of water flow for more than 45 seconds. All control valves in the sprinkler and standpipe systems except for fire department hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering.

Section 903.4.2 Alarms; add a second paragraph to read as follows:

The alarm device required on the exterior of the building shall be a weatherproof horn/strobe notification appliance with a minimum 75 candela strobe rating, installed as close as practicable to the fire department connection.

Section 905.2 Installation standards; amend to read as follows:

905.2 Installation standards. Standpipe systems shall be installed in accordance with this section and NFPA 14. Manual dry standpipe systems shall be supervised with a minimum of 10 psig and a maximum of 40 psig air pressure with a high/low alarm.

Section 905.3 Required installations; add Section 905.3.9 and exception to read as follows:

905.3.9 Buildings Exceeding 10,000 sq. ft. In buildings exceeding 10,000 square feet in area per story and where any portion of the building's interior area is more than 200 feet (60960 mm) of travel, vertically and horizontally, from the nearest point of fire department vehicle access, Class I automatic wet or manual wet standpipes shall be provided.

Exceptions:

1. Automatic dry and semi-automatic dry standpipes are allowed as provided for in NFPA 14.
2. R-2 occupancies of four stories or less in height having no interior corridors.

Section 905.4 location of Class I standpipe hose connection; amend item 1, 3 and 5, add item 7 to read as follows:

1. In every required ~~interior~~ exit stairway, a hose connection shall be provided for each story above and below grade plane. Hose connections shall be located at an intermediate landing between stories, unless otherwise approved by the fire code official.
2. {No change.}
3. In every exit passageway, at the entrance from the exit passageway to other areas of a building.
Exception: Where floor areas adjacent to an exit passageway are reachable from an ~~interior~~ exit stairway hose connection by a {No change to rest.}
4. {No change.}
5. Where the roof has a slope less than four units vertical in 12 units horizontal (33.3-percent slope), each standpipe shall be provided with a two-way a-hose connection shall be located to serve the roof or at the highest landing of an ~~interior~~ exit stairway with stair access to the roof provided in accordance with Section 1011.12.
6. {No change.}

7. When required by this Chapter, standpipe connections shall be placed adjacent to all required exits to the structure and at two hundred feet (200') intervals along major corridors thereafter, or as otherwise approved by the fire code official.

Section 905.9 Valve supervision; add a second paragraph after the exception to read as follows:

Sprinkler and standpipe system water-flow detectors shall be provided for each floor tap to the sprinkler system and shall cause an alarm upon detection of water flow for more than 45 seconds. All control valves in the sprinkler and standpipe systems except for fire department hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering.

Section 907.1 General; add Section 907.1.4 to read as follows:

907.1.4 Design Standards. Where a new fire alarm system is installed, the devices shall be addressable. Fire alarm systems utilizing more than 20 smoke detectors shall have analog initiating devices.

Section 907.2.1 Group A; amend to read as follows:

907.2.1 Group A. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group A occupancies having an occupant load of 300 or more persons or more than 100 persons above or below the lowest level of exit discharge. Group A occupancies not separated from one another in accordance with Section 707.3.10 of the *International Building Code* shall be considered as a single occupancy for the purpose of applying this section. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy.

Activation of fire alarm modification appliances shall:

1. Cause illumination of the means of egress with light of not less than 1 foot-candle (11 lux) at the walking surface level, and
2. Stop any conflicting or confusing sounds and visual distractions.

Section 907.2.3 Group E; amend to read as follows:

907.2.3 Group E. A manual fire alarm system that initiates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6 shall be installed in Group E educational occupancies. When *automatic sprinkler systems* or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system. An approved smoke detection system shall be installed in Group E day care occupancies. Unless separated by a minimum of 100' open space, all buildings, whether portable buildings or the main building, will be considered one building for alarm occupant load consideration and interconnection of alarm systems.

Exceptions:

1. {No change.}
- 1.1. Residential In-Home day care with not more than 12 children may use interconnected single station detectors in all habitable rooms. (For care of more than five children 2 1/2 or less years of age, see Section 907.2.6.) {No change to remainder of exceptions.}

Section 907.2.13 High-rise buildings, Exception #3; amend to read as follows:

3. Open air portions of buildings with an occupancy in Group A-5 in accordance with Section 303.1 of the International Building Code; however, this exception does not apply to accessory uses including but not limited to sky boxes, restaurants, and similarly enclosed areas.

Section 907.4.2 Manual fire alarm boxes; add Section 907.4.2.7 to read as follows:

907.4.2.7 Type. Manual alarm initiating devices shall be an approved double action type.

Section 907.6.1 Wiring; add Section 907.6.1.1 to read as follows:

907.6.1.1 Wiring Installation. All fire alarm systems shall be installed in such a manner that a failure of any single initiating device or single open in an initiating circuit conductor will not interfere with the normal operation of other such devices. All signaling line circuits (SLC) shall be installed in such a way that a single open will not interfere with the operation of any addressable devices (Class A). Outgoing and return SLC conductors shall be installed in accordance with NFPA 72 requirements for Class A circuits and shall have a minimum of four feet separation horizontal and one foot vertical between supply and return circuit conductors. The initiating device circuit (IDC) from a signaling line circuit interface device may be wired Class B, provided the distance from the interface device to the initiating device is ten feet or less.

Section 907.6.3 Initiating device identification; delete all four Exceptions.

Section 909 Smoke Control Systems; add Section 909.22 to read as follows:

909.22 Stairway or Ramp Pressurization Alternative. Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and the stair pressurization alternative is chosen for compliance with Building Code requirements for a smokeproof enclosure, interior exit stairways or ramps shall be pressurized to a minimum of 0.10 inches of water (25 Pa) and a maximum of 0.35 inches of water (87 Pa) in the shaft relative to the building measured with all interior exit stairway and ramp doors closed under maximum anticipated conditions of stack effect and wind effect. Such systems shall comply with Section 909, including the installation of a separate fire-fighter's smoke control panel as per Section 909.16, and a Smoke Control Permit shall be required from the fire department as per Section 105.7.

[F] 909.22.1 Ventilating equipment. The activation of ventilating equipment for the stair or ramp pressurization system shall be by smoke detectors installed at each floor level at an approved location at the entrance to the smokeproof enclosure. When the closing device for the stairway or ramp shaft and vestibule doors is activated by smoke detection or power failure, the mechanical equipment shall activate and operate at the required performance levels. Smoke detectors shall be installed in accordance with Section 907.3.

909.22.1.1 Ventilation Systems. Smokeproof enclosure ventilation systems shall be independent of other building ventilation systems. The equipment, control wiring, power wiring and ductwork shall comply with one of the following:

1. Equipment, control wiring, power wiring and ductwork shall be located exterior to the building and directly connected to the smokeproof enclosure or connected to the smokeproof enclosure by ductwork enclosed by not less than 2-hour fire barriers constructed in accordance with Section 707 of the Building Code or horizontal assemblies constructed in accordance with Section 711 of the Building Code, or both.
2. Equipment, control wiring, power wiring and ductwork shall be located within the smokeproof enclosure with intake or exhaust directly from and to the outside or through ductwork enclosed by not less than 2-hour barriers constructed in accordance with Section 707 of the Building Code or horizontal assemblies constructed in accordance with Section 711 of the Building Code, or both.
3. Equipment, control wiring, power wiring and ductwork shall be located within the building if separated from the remainder of the building, including other mechanical equipment, by not less than 2-hour fire barriers constructed in accordance with Section 707 of the Building Code or horizontal assemblies constructed in accordance with Section 711 of the Building Code, or both.

Exceptions:

1. Control wiring and power wiring utilizing a 2-hour rated cable or cable system.
2. Where encased with not less than 2 inches (51 mm) of concrete.
3. Control wiring and power wiring protected by a listed electrical circuit protective systems with a fire-resistance rating of not less than 2 hours.

909.22.1.2 Standby Power. Mechanical vestibule and stairway and ramp shaft ventilation systems and automatic fire detection systems shall be provided with standby power in accordance with Section 2702 of the Building Code.

909.22.1.3 Acceptance and Testing. Before the mechanical equipment is approved, the system shall be tested in the presence of the fire code official to confirm that the system is operating in compliance with these requirements.

Section 910.2 Where required; amend Exception 2 and 3 to read as follows:

2. Only manual smoke and heat removal shall ~~not~~ be required in areas of buildings equipped with early suppression fast-response (ESFR) sprinklers. Automatic smoke and heat removal is prohibited.
3. Only manual smoke and heat removal shall ~~not~~ be required in areas of buildings equipped with control mode special application sprinklers with a response time index of $50(m^*S)^{1/2}$ or less that are listed to control a fire in stored commodities with 12 or fewer sprinklers. Automatic smoke and heat removal is prohibited.

Section 910.2 Where required; add subsection 910.2.3 with exceptions to read as follows:

910.2.3 Group H. Buildings and portions thereof used as a Group H occupancy as follows:

1. In occupancies classified as Group H-2 or H-3, any of which are more than 15,000 square feet (1394 m²) in single floor area.

Exception: Buildings of noncombustible construction containing only noncombustible materials.

2. In areas of buildings in Group H used for storing Class 2, 3, and 4 liquid and solid oxidizers, Class 1 and unclassified detonable organic peroxides, Class 3 and 4 unstable (reactive) materials, or Class 2 or 3 water-reactive materials as required for a high-hazard commodity classification.

Exception: Buildings of noncombustible construction containing only noncombustible materials..

Section 910.3 Smoke and heat vents; add section 910.3.4 to read as follows:

910.3.4 Vent Operation. Smoke and heat vents shall be capable of being operated by approved automatic and manual means. Automatic operation of smoke and heat vents shall conform to the provisions of Sections 910.3.2.1 through 910.3.2.3.

[F] 910.3.4.1 Sprinklered buildings. Where installed in buildings equipped with an approved automatic sprinkler system, smoke and heat vents shall be designed to operate automatically.

The automatic operating mechanism of the smoke and heat vents shall operate at a temperature rating at least 100 degrees F (approximately 38 degrees Celsius) greater than the temperature rating of the sprinklers installed.

Exception: Manual only systems per Section 910.2.

910.3.4.2 Nonsprinklered Buildings. Where installed in buildings not equipped with an approved automatic sprinkler system, smoke and heat vents shall operate automatically by actuation of a heat-responsive device rated at between 100°F (56°C) and 220°F (122°C) above ambient.

Exception: Listed gravity-operated drop out vents.

Section 910.4.3.1 Make up air; amend to read as follows:

910.4.3.1 Makeup Air. Makeup air openings shall be provided within 6 feet (1829 mm) of the floor level. Operation of makeup air openings shall be ~~manual or~~ automatic. The minimum gross area of makeup air inlets shall be 8 square feet per 1,000 cubic feet per minute (0.74 m² per 0.4719 m³/s) of smoke exhaust

Section 910.4.4 Activation; amend to read as follows:

910.4.4 Activation. The mechanical smoke removal system shall be activated ~~by manual controls only~~ automatically by the automatic sprinkler system or by an approved fire detection system. Individual manual controls shall also be provided.

Exception: Manual only systems per Section 910.2.

Section 912.2 location; add Section 912.2.3 to read as follows:

Section 912.2.3 Hydrant distance. An approved fire hydrant shall be located within 100 feet of the fire department connection as the fire hose lays along an unobstructed path.

Section 913.2.1 Protection of fire pump rooms; add second paragraph and exception to read as follows:

When located on the ground level at an exterior wall, the fire pump room shall be provided with an exterior fire department access door that is not less than 3 ft. in width and 6 ft. – 8 in. in height, regardless of any interior doors that are provided. A key box shall be provided at this door, as required by Section 506.1.

Exception: When it is necessary to locate the fire pump room on other levels or not at an exterior wall, the corridor leading to the fire pump room access from the exterior of the building shall be provided with equivalent fire resistance as that required for the pump room, or as approved by the fire code official. Access keys shall be provided in the key box as required by Section 506.1.

Section 914.3.1.2 Water supply to required fire pumps; amend to read as follows:

914.3.1.2 Water Supply to required Fire Pumps. In buildings that are more than ~~420~~ 120 feet (128 m) in building height, required fire pumps shall be supplied by connections to no fewer than two water mains located in different streets. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate. **Exception:** {No change to exception.}

Section 1006.2.2 Egress based on use; add Section 1006.2.2.6 to read as follows:

1006.2.2.6 Electrical Rooms. For electrical rooms, special exiting requirements may apply. Reference the Electrical Code as adopted.

Section 1009.1 Accessible means of egress required; add Exception 4 to read as follows:

Exceptions:

{previous exceptions unchanged}

4. Buildings regulated under State Law and built in accordance with State registered plans, including any variances or waivers granted by the State, shall be deemed to be in compliance with the requirements of Section 1009.

Section 1010.1.4 Special doors; Add section 1010.1.5 to read as follows:

1010.1.4.5 Locking arrangements in educational occupancies.

In Group E and Group B educational occupancies, egress doors from classrooms, offices and other occupied rooms shall be permitted to be provided with locking arrangements designed to keep intruders from entering the room where all of the following conditions are met:

1. The door shall be capable of being unlocked from outside the room with a key or other *approved* means.
2. The door shall be openable from within the room in accordance with Section 1010.1.9.
3. Modifications shall not be made to listed *panic hardware*, fire door hardware or door closers.

Section 1010.1.9.4 Bolt Locks; amend Exceptions 3 and 4 to read as follows:

Exceptions:

3. Where a pair of doors serves an *occupant load* of less than 50 persons in a Group B, F, M or S occupancy. {*Remainder unchanged*}
4. Where a pair of doors serves a Group A, B, F, M or S occupancy {*Remainder unchanged*}

Section 1010.1.9.7 Delayed egress; amend to read as follows:

1010.1.9.7 Delayed egress.

Delayed egress locking systems shall be permitted to be installed on doors serving the following occupancies in buildings that are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or an *approved automatic smoke or heat detection system* installed in accordance with Section 907.

1. Group B, F, I, M, R, S and U occupancies.
2. Group E classrooms with an *occupant load* of less than 50.

Exception: Delayed egress locking systems shall be permitted to be installed on exit or *exit access* doors, other than the main exit or *exit access* door, serving a courtroom in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.

1010.1.9.7.1 Delayed egress locking system.

The delayed egress locking system shall be installed and operated in accordance with all of the following:

1. The delay electronics of the delayed egress locking system shall deactivate upon actuation of the *automatic sprinkler system* or *automatic fire detection system*, allowing immediate free egress.
 2. The delay electronics of the delayed egress locking system shall deactivate upon loss of power controlling the lock or lock mechanism, allowing immediate free egress.
 3. The delayed egress locking system shall have the capability of being deactivated at the *fire command center* and other *approved* locations.
 4. An attempt to egress shall initiate an irreversible process that shall allow such egress in not more than 15 seconds when a physical effort to exit is applied to the egress side door hardware for not more than 3 seconds. Initiation of the irreversible process shall activate an audible signal in the vicinity of the door. Once the delay electronics have been deactivated, rearming the delay electronics shall be by manual means only. **Exception:** Where *approved*, a delay of not more than 30 seconds is permitted on a delayed egress door.
 5. The egress path from any point shall not pass through more than one delayed egress locking system.
- Exceptions:**
1. In Group I-2 or I-3 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided that the combined delay does not exceed 30 seconds.
 2. In Group I-1 or I-4 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided the combined delay does not exceed 30 seconds and the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
6. A sign shall be provided on the door and shall be located above and within 12 inches (305 mm) of the door exit hardware:
 - 6.1. For doors that swing in the direction of egress, the sign shall read: PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.
 - 6.2. For doors that swing in the opposite direction of egress, the sign shall read: PULL UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.
 - 6.3. The sign shall comply with the visual character requirements in ICC A117.1.

Exception: Where *approved*, in Group I occupancies, the installation of a sign is not required where care recipients who because of clinical needs require restraint or containment as part of the function of the treatment area.

7. Emergency lighting shall be provided on the egress side of the door.

8. The delayed egress locking system units shall be *listed* in accordance with UL 294

Section 1015.8 Window Openings; amend number 1 to read as follows:

1. Operable windows where the top of the sill of the opening is located more than ~~75 feet (22 860 mm)~~ 55 (16 764 mm) above the finished grade or other surface below and that are provided with window fall prevention devices that comply with ASTM F 2006.

Section 1020.1 Construction; add Exception 6 to read as follows:

6. In group B occupancies, corridor walls and ceilings need not be of fire-resistive construction within a single tenant space when the space is equipped with approved automatic smoke-detection within the corridor. The actuation of any detector shall activate self-annunciating alarms audible in all areas within the corridor. Smoke detectors shall be connected to an approved automatic fire alarm system where such system is provided.

Section 1031.2 Reliability; amend to read as follows:

1031.2 Reliability. Required *exit accesses, exits and exit discharges* shall be continuously maintained free from obstructions or impediments to full instant use in the case of fire or other emergency ~~when the building area served by the means of egress is occupied.~~ An *exit or exit passageway* shall not be used for any purpose that interferes with a means of egress.

Section 1103.3 existing elevators; add sentence to end of paragraph as follows:

Provide emergency signage as required by Section 607.3

Section 1103.5 Sprinkler systems; add Section 1103.5.4 to read as follows:

1103.5.4 Spray Booths and Rooms. Existing spray booths and spray rooms shall be protected by an approved automatic fire-extinguishing system in accordance with Section 2404.

Section 1103.7 Fire alarm systems; add Section 1103.7.8 and 1103.7.8.1 to read as follows:

1103.7.8 Fire Alarm System Design Standards. Where an existing fire alarm system is upgraded or replaced, the devices shall be addressable. Fire alarm systems utilizing more than 20 smoke and/or heat detectors shall have analog initiating devices.

Exception: Existing systems need not comply unless the total building, or fire alarm system, remodel or expansion exceeds 30% of the building. When cumulative building, or fire alarm system, remodel or expansion initiated after the date of original fire alarm panel installation exceeds 50% of the building, or fire alarm system, the fire alarm system must comply within 18 months of permit application.

1103.7.8.1 Communication requirements. Refer to Section 907.6.6 for applicable requirements.

Section 2304.1 Supervision of dispensing; amend to read as follows.

2304.1 Supervision of Dispensing. The dispensing of fuel at motor fuel-dispensing facilities shall be ~~conducted by a qualified attendant or shall be under the supervision of a qualified attendant at all times or shall be~~ in accordance with ~~Section 2204.3, the following:~~

1. Conducted by a qualified attendant; and/or,

2. Shall be under the supervision of a qualified attendant; and/or
3. Shall be an unattended self-service facility in accordance with Section 2304.3.

At any time the qualified attendant of item Number 1 or 2 above is not present, such operations shall be considered as an unattended self-service facility and shall also comply with Section 2304.3.

Section 2401.2 Nonapplicability; delete this section entirely

Table 3206.2 General Fire Protection and Life Safety Requirements, footnote j; amend to read as follows:

- j. ~~Not required~~ Where storage areas are protected by either early suppression fast response (ESFR) sprinkler systems or control mode special application sprinklers with a response time index of 50 (m • s) 1/2 or less that are listed to control a fire in the stored commodities with 12 or fewer sprinklers, installed in accordance with NFPA 13, manual smoke and heat vents or manually activated engineered mechanical smoke exhaust systems shall be required within these areas.

Section 3310.1 Required access; add sentence to end of paragraph to read as follows:

When fire apparatus access roads are required to be installed for any structure or development, they shall be approved prior to the time of which construction has progressed beyond completion of the foundation of any structure.

Section 5601.1.3 Fireworks; amend to read as follows:

5601.1.3 Fireworks. The possession, manufacture, storage, sale, handling and use of fireworks are prohibited.

Exceptions:

1. Only when approved fireworks displays, storage and handling are allowed in Section 5604 and 5608,
2. The use of fireworks for approved fireworks displays allowed in Section 5608.

Section 5703.6 piping systems; add a sentence to read as follows:

5703.6 Piping system. Piping systems, and their component parts, for flammable and combustible liquids shall be in accordance with Sections 5703.6.1 through 5703.6.11. An approved method of secondary containment shall be provided for underground tank and piping systems.

Section 5704.2.9.5 Above-ground tanks inside of a building; amend Section 5704.2.9.5 and add Section 5704.2.9.5.3 to read as follows:

5704.2.9.5 Above-ground Tanks Inside of Buildings. Above-ground tanks inside of buildings shall comply with Section 5704.2.9.5.1 ~~and 5704.2.9.5.2~~ through 5704.2.9.5.3.

5704.2.9.5.1 {No change.}

5704.2.9.5.2 {No change.}

5704.2.9.5.3 Combustible Liquid Storage Tanks Inside of Buildings. The maximum aggregate allowable quantity limit shall be 3,000 gallons (11 356 L) of Class II or III combustible liquid for storage in protected aboveground tanks complying with Section 5704.2.9.7 when all of the following conditions are met:

1. The entire 3,000 gallon (11 356 L) quantity shall be stored in protected above-ground tanks;
2. The 3,000 gallon (11 356 L) capacity shall be permitted to be stored in a single tank or multiple smaller tanks;
3. The tanks shall be located in a room protected by an automatic sprinkler system complying with Section 903.3.1.1; and

4. Tanks shall be connected to fuel-burning equipment, including generators, utilizing an *approved* closed piping system.

The quantity of combustible liquid stored in tanks complying with this section shall not be counted towards the maximum allowable quantity set forth in Table 5003.1.1(1), and such tanks shall not be required to be located in a control area. Such tanks shall not be located more than two stories below grade.

Section 5704.2.11.4 Leak prevention; add a sentence to read as follows:

Leak prevention for underground tanks shall comply with Sections 5704.2.11.4.1 ~~and 5704.2.11.5.2~~ through 5704.2.11.4.3. An *approved* method of secondary containment shall be provided for underground tank and piping systems.

Section 5704.2.11.4.2 Leak detection; amend to read as follows:

5704.2.11.4.2 Leak Detection. Underground storage tank systems shall be provided with an *approved* method of leak detection from any component of the system that is designed and installed in accordance with NFPA 30 and as specified in Section 5704.2.11.4.3.

Section 5704.2.11.4 Leak prevention; add Section 5704.2.11.4.3 to read as follows:

5704.2.11.4.3 Observation Wells. Approved sampling tubes of a minimum 4 inches in diameter shall be installed in the backfill material of each underground flammable or combustible liquid storage tank. The tubes shall extend from a point 12 inches below the average grade of the excavation to ground level and shall be provided with suitable surface access caps. Each tank site shall provide a sampling tube at the corners of the excavation with a minimum of 4 tubes. Sampling tubes shall be placed in the product line excavation within 10 feet of the tank excavation and one every 50 feet routed along product lines towards the dispensers, a minimum of two are required.

Section 6103.2.1 Portable containers; add Section 6103.2.1.8 to read as follows:

6103.2.1.8 Jewelry Repair, Dental Labs and Similar Occupancies. Where natural gas service is not available, portable LP-Gas containers are allowed to be used to supply approved torch assemblies or similar appliances. Such containers shall not exceed 20-pound (9.0 kg) water capacity. Aggregate capacity shall not exceed 60-pound (27.2 kg) water capacity. Each device shall be separated from other containers by a distance of not less than 20 feet.

Section 6104.2 Maximum capacity within established limits, Exception; add an exception 2 to read as follows:

Exceptions:

1. {existing text unchanged}
2. Except as permitted in 308 and 6104.3.2, LP-gas containers are not permitted in residential areas.

Section 6104.3 Container location; add Section 6104.3.2 to read as follows:

6104.3.2 Spas, Pool Heaters, and Other Listed Devices. Where natural gas service is not available, an LP-gas container is allowed to be used to supply spa and pool heaters or other listed devices. Such container shall not exceed 250-gallon water capacity per lot. See Table 6104.3 for location of containers.

Exception: Lots where LP-gas can be off-loaded wholly on the property where the tank is located may install up to 500 gallon above ground or 1,000 gallon underground approved containers.

Section 6107.4 and 6109.13; amend to read as follows:

6107.4 Protecting Containers from Vehicles. Where exposed to vehicular damage due to proximity to alleys, driveways or parking areas, LP-gas containers, regulators and piping shall be protected in accordance with NFPA 58 Section 312.

6109.13 Protection of Containers. LP-gas containers shall be stored within a suitable enclosure or otherwise protected against tampering. Vehicle impact protection shall be provided as required by Section 6107.4.

Exception: ~~Vehicle impact protection shall not be required for protection of LP gas containers where the containers are kept in lockable, ventilated cabinets of metal construction.~~

Appendix B Fire-Flow requirements for buildings Table B105.2; Amend footnote a. to read as follows:

- a. The reduced fire-flow shall be not less than ~~1,000~~ 1,500 gallons per minute.

DIVISION 4 RESIDENTIAL CODE

Sec. 3.02.151 - International Residential Code amendments:

The following noted portions of the International Residential Code are hereby amended to read as follows:

Section R102.4 Referenced codes and standards; amend to read as follows:

R102.4 Referenced codes and standards. The ~~codes, when specifically adopted,~~ and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections R102.4.1 and R102.4.2. Whenever amendments have been adopted to the referenced codes and standards, each reference to said code and standard shall be considered to reference the amendments as well. Any reference made to NFPA 70 or the Electrical Code shall mean the Electrical Code as adopted.

Section R104.10.1; Flood Hazard areas; delete this section

Section R105.2; Work exempt from permit: Building: Delete # 1, 2, 3, 5 and 10, re-number as follows

Building:

1. ~~One-story detached accessory structures, provided that the floor area does not exceed 200 square feet (18.58 m²).~~
2. ~~_____ Fences not over 7 feet (2134 mm) high.~~
3. ~~_____ Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.~~
4. 1. Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallons (18 927 L) and the ratio of height to diameter or width does not exceed 2 to 1.
5. ~~_____ Sidewalks and driveways.~~
6. 2. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.
7. 3. Prefabricated swimming pools that are less than 24 inches (610 mm) deep.
8. 4. Swings and other playground equipment.
9. 5. Window awnings supported by an exterior wall that do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.
10. ~~_____ Decks not exceeding 200 square feet (18.58 m²) in area, that are not more than 30 inches (762 mm) above grade at any point, are not attached to a dwelling do not serve the exit door required by Section R311.4.~~

Section R105.3.1.1& R106.1.4; delete these sections

Section R106.1 Submittal documents; Add section 106.1.5 to read as follows:

R106.1.5 Information on storm shelters. Construction documents shall include the information required for storm shelters in ICC 500.

Section R108.7 Re-Inspection Fee; add Section 108.7 to read as follows:

R108.7 Re-Inspection Fee. A fee as established by City Council resolution may be charged when:

1. The inspection called for is not ready when inspector arrives; "Not Ready" is defined as being obviously incomplete. (Example; required element is missing, such as brick ties, on framing/brick-tie inspection, no water on DWV water test)
2. No building address is clearly posted; Address must be posted to the following minimums: **T-Pole / Plumbing Rough-in:** On T-Pole brace, **Framing/MEP:** Clearly posted on structure, trash container or sign, **Meter Release or other inspection after dry-in:** Permanent address displayed on structure
3. The project fails twice for the same item
4. Failure to maintain erosion control, trash control or tree protection

Any re-inspection fees assessed shall be paid before any more inspections are made on that job site.

Section R202 Definitions; change definition of "Townhouse" and add Storm Shelter to read as follows:

TOWNHOUSE. A single-family dwelling unit constructed in a group of three or more attached units separated by property lines in which each unit extends from foundation to roof and with a yard or public way on at least two sides.

[BS] STORM SHELTER. A building, structure or portions thereof, constructed in accordance with ICC 500 and designated for use during a severe wind storm event, such as a hurricane or tornado.

Table R301.2 (1) Climatic and geographic design criteria; amend in as follows:

GROUND SNOW LOAD	WIND DESIGN				SEISMIC DESIGN CATEGORY ^f	SUBJECT TO DAMAGE FROM			WINTER DESIGN TEMP ^e	ICE BARRIER UNDER- LAYMENT ^h	FLOOD HAZARDS ^g	AIR FREEZING INDEX ⁱ	MEAN ANNUAL TEMP ^j
	SPEED ^d (MPH)	Topographic Effects ^k	Special Wind Region ^l	Windborne Debris Zone ^m		Weathering ^a	Frost Line Depth ^b	Termite ^c					
5 lb/ft					A								
	115 (3 sec- gust)/ 76 fastest mile	No	No	No		Moderate	6"	Very Heavy	22 ^o F	No	Local Code	150	64.9 ^o F

Section R302.1 Exterior walls; add exception #6 to read as follows:

Exceptions: {previous exceptions unchanged}

6. Open non-combustible carport structures may be constructed when also approved within adopted ordinances.

Section R302.3 Two-family dwellings; add Exception #3 to read as follows:

Exceptions:

1. {Existing text unchanged}
2. {Existing text unchanged}

3. two-family dwelling units that are also divided by a property line through the structure shall be separated as required for townhouses.

Section R302.5.1 Opening protection; amend to read as follows:

R302.5.1 Opening protection. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 13/8 inches (35 mm) in thickness, solid or honeycomb core steel doors not less than 13/8 inches (35 mm) thick, or 20-minute fire-rated doors ~~equipped with a self-closing device.~~

Section R303.3 Bathrooms; Exception: amend to read as follows:

Exception: {existing text unchanged} Exhaust air from the space shall be exhaust out to the outdoors unless the space contains only a water closet, a lavatory, or water closet and a lavatory may be ventilated with an approved mechanical recirculating fan or similar device designed to remove odors from the air.

Section R313 Automatic Fire Sprinkler Systems; Delete entire section:

Section R315.2.2 Alterations, repairs and additions. Amend to read as follows:

Exception:

2. Installation, alteration or repairs of electrical powered {remaining text unchanged}

Section R322 Flood Resistant Construction. Deleted Section

Section 323 Storm Shelters; amend section to read as follows:

R323.1 General. This section applies to storm shelters where constructed as separate detached buildings or where constructed ~~as safe rooms~~ within buildings for the purpose of providing refuge from storms that produce high winds, such as tornados and hurricanes. In addition to other applicable requirements in this code, storm shelters shall be constructed in accordance with ICC/NSA-500.

R323.1.1 Sealed documentation. The construction documents for all structural components and impact-protective systems of the storm shelter shall be prepared and sealed by a registered design professional indicating that the design meets the criteria of ICC-500.

Exception: Structural components and impact-protective systems that are listed and labeled as complying with ICC-500.

Section R401.2, amended by adding a new paragraph following the existing paragraph to read as follows.

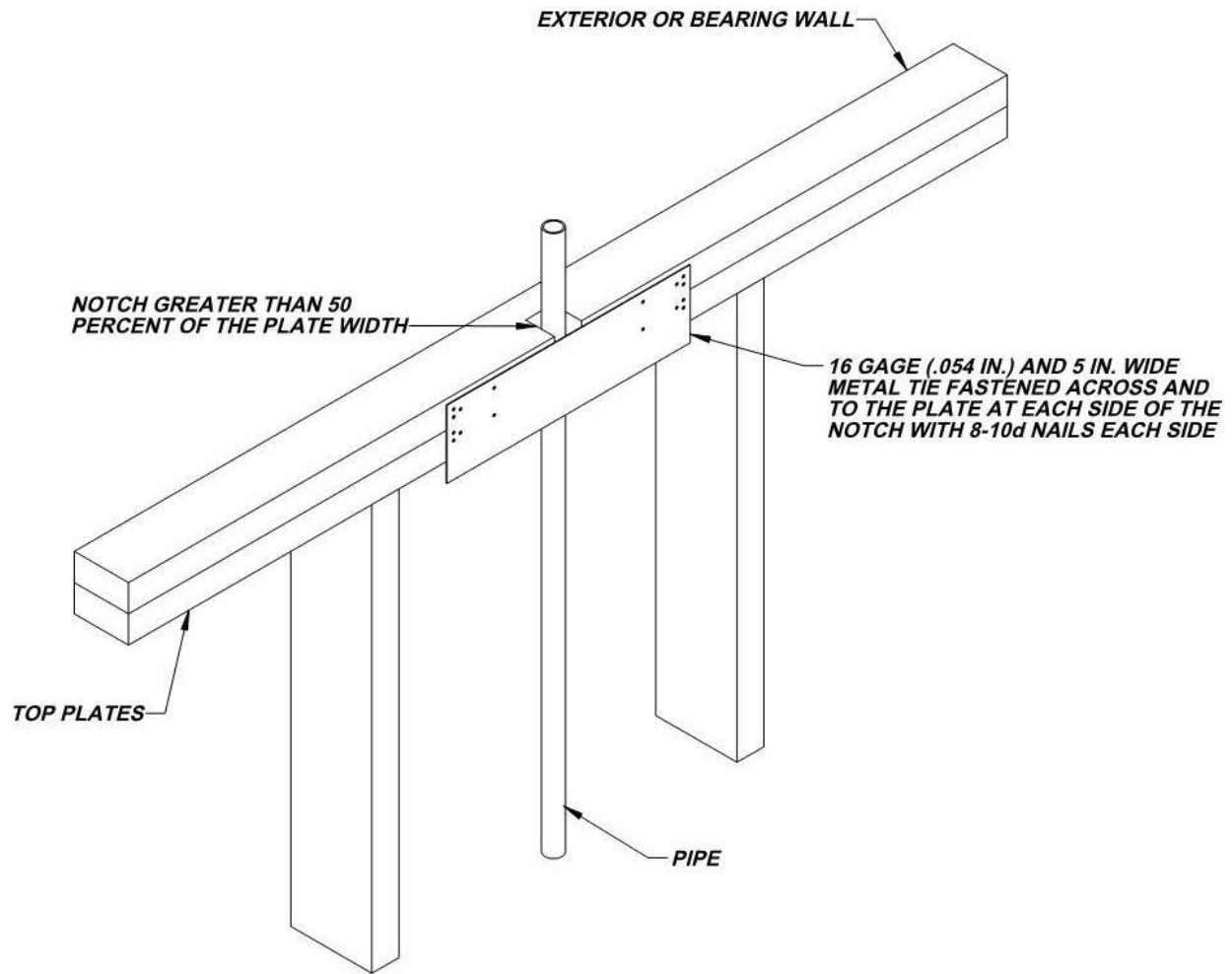
Section R401.2. Requirements. {Existing text unchanged} ...

Every foundation and/or footing, or any size addition to an existing post-tension foundation, regulated by this code shall be designed and sealed by a Texas-registered engineer.

Section 602.6.1; amend the following:

R602.6.1 Drilling and notching of top plate. When piping or ductwork is placed in or partly in an exterior wall or interior load-bearing wall, necessitating cutting, drilling or notching of the top plate by more than 50 percent of its width, a galvanized metal tie not less than 0.054 inch thick (1.37 mm) (16 Ga) and ~~1 1/2 inches (38 mm)~~ 5 inches (127 mm) wide shall be fastened across and to the plate at each side of the opening with not less than eight 10d (0.148 inch diameter) having a minimum length of 1 1/2 inches (38 mm) at each side or equivalent. Fasteners will be offset to prevent splitting of the top plate material. The metal tie must extend a minimum of 6 inches past the opening. See figure R602.6.1. {Remainder unchanged}

Figure R602.6.1; delete the figure and insert the following figure:



Section R703.8.4.1; add a second paragraph to read as follows:

In stud framed exterior walls, all ties shall be anchored to studs as follows:

1. When studs are 16 in (407 mm) o.c., stud ties shall be spaced no further apart than 24 in (737 mm) vertically starting approximately 12 in (381 mm) from the foundation; or
2. When studs are 24 in (610 mm) o.c., stud ties shall be spaced no further apart than 16 in (483 mm) vertically starting approximately 8 in (254 mm) from the foundation.

Section R902.1; Amend and add exception #5 to read as follows:

R902.1 Roofing covering materials. Roofs shall be covered with materials as set forth in Sections R904 and R905. Class A, B, or C roofing shall be installed ~~in areas designated by law as requiring their use or when the edge of the roof is less than 3 feet from a lot line.~~ {Remainder unchanged}

Exceptions:

1. {Text unchanged}

2. *{Text unchanged}*

3. *{Text unchanged}*

4. *{Text unchanged}*

5. Non-classified roof coverings shall be permitted on one-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed (area defined by jurisdiction).

Section R908.3 Roof replacement; amend to read as follows:

R908.3 Roof replacement. Roof replacement shall include the removal of all existing layers of roof coverings down to the roof deck.

Sections R908.3.1, R908.3.1.1 and R908.4; deleted in its entirety

Chapter 11 [RE] – Energy Efficiency is deleted in its entirety and replaced with the following:

N1101.1 Scope. This chapter regulates the energy efficiency for the design and construction of buildings regulated by this code.

N1101.2 Compliance. Compliance shall be demonstrated by meeting the requirements of the residential provisions of 2015 International Energy Conservation Code.

Section M1305.1.3 Appliances in attics; amend to read as follows:

M1305.1.3 Appliances in attics. Attics containing appliances requiring access shall be provided . . . *{bulk of paragraph unchanged}* . . . sides of the appliance where access is required. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm), or larger and large enough to allow removal of the largest appliance. A walkway to an appliance shall be rated as a floor as approved by the building official. As a minimum, for access to the attic space, provide one of the following:

1. A permanent stair.
2. A pull down stair with a minimum 300 lb. (136 kg) capacity and pulled to the open position prior to inspection for attic access.
3. An access door from an upper floor level.

Exceptions:

1. The passageway and level service space are not required where the appliance can be serviced and removed through the required opening.
2. Where the passageway is unobstructed...*{remaining text unchanged}*

Section M1411.3 Condensate disposal; change to read as follows:

M1411.3 Condensate disposal. Condensate from all cooling coils or evaporators shall be conveyed from the drain pan outlet to a sanitary sewer through a trap, by means of a direct or indirect drain. *{Remaining text unchanged}*

Section M1411.3.1 Auxiliary and secondary drain systems, Items 3 and 4; add text to read as follows:

M1411.3.1 Auxiliary and secondary drain systems. *{bulk of paragraph unchanged}*

1. {text unchanged}
2. {text unchanged}
3. An auxiliary drain pan... {bulk of text unchanged}... with Item 1 of this section. A water level detection device may be installed only with prior approval of the building official.
4. A water level detection device... {bulk of text unchanged}... overflow rim of such pan. A water level detection device may be installed only with prior approval of the building official.

Section M1411.3.1.1 Water-level monitoring devices; add text to read as follows:

M1411.3.1.1 Water-level monitoring devices. On down-flow units ...{bulk of text unchanged}... installed in the drain line. A water level detection device may be installed only with prior approval of the building official.

Section M1503.4 Makeup Air Required; amend and add exception as follows:

M1503.4 Makeup air required. Exhaust hood systems capable of exhausting in excess of 400 cubic feet per minute (0.19 m³/s) shall be provided with makeup air at a rate approximately equal to the difference between the exhaust air rate and 400 cubic feet per minute. Such makeup air systems shall be equipped with a means of closure and shall be automatically controlled to start and operate simultaneously with the exhaust system.

Exception: Where all appliances in the house are of sealed combustion, power-vent, unvented, or electric, the exhaust hood system shall be permitted to exhaust up to 600 cubic feet per minute (0.28 m³/s) without providing makeup air. Exhaust hood systems capable of exhausting in excess of 600 cubic feet per minute (0.28 m³/s) shall be provided with a makeup air at a rate approximately equal to the difference between the exhaust air rate and 600 cubic feet per minute.

Section M2005.2 Prohibited locations; amend to read as follows:

M2005.2 Prohibited locations. Fuel-fired water heaters shall not be installed in a room used as a storage closet. Water heaters located in a bedroom or bathroom shall be installed in a sealed enclosure so that *combustion air* will not be taken from the living space. Access to such enclosure may be from the bedroom or bathroom when through a solid door, weather-stripped in accordance with the exterior door air leakage requirements of the *International Energy Conservation Code* and equipped with an approved self-closing device. Installation of direct-vent water heaters within an enclosure is not required

Section G2408.3 (305.5) Private garages; delete entire section

Section G2415.2 (404.2) CSST; add a second paragraph and exception to read as follows:

Both ends of each section of medium pressure gas piping shall identify its operating gas pressure with an approved tag. The tags are to be composed of aluminum or stainless steel and the following wording shall be stamped into the tag:

"WARNING
1/2 to 5 psi gas pressure
Do Not Remove"

Exception: Corrugated stainless steel tubing (CSST) shall be a minimum of 1/2" (18 EDH).

Section G2415.12 (404.12) Minimum burial depth; amend to read as follows:

G2415.12 (404.12) Minimum burial depth. Underground *piping systems* shall be installed a minimum depth of ~~12 inches (305 mm)~~ 18 inches (457 mm) below grade, ~~except as provided for in Section G2415.12.1.~~

Section G2415.12.1 (404.12.1) Individual outside appliances; amend to read as follows:

G2415.12.1) Individual outside appliances. Individual lines to outside lights, grills or other appliances shall be installed a minimum of 8-12 inches (203 mm) below finished grade.... Rest unchanged.

Section G2417.1 (406.1) General; amend to read as follows:

G2417.1 (406.1) General. Prior to acceptance and initial operation, all *piping* installations shall be inspected and *pressure tested* to determine that the materials, design, fabrication, and installation practices comply with the requirements of this *code*. The permit holder shall make the applicable tests prescribed in Sections 2417.1.1 through 2417.1.5 to determine compliance with the provisions of this code. The permit holder shall give reasonable advance notice to the building official when the piping system is ready for testing. The equipment, material, power and labor necessary for the inspections and test shall be furnished by the permit holder and the permit holder shall be responsible for determining that the work will withstand the test pressure prescribed in the following tests.

Section G2417.4 (406.4) Test pressure measurements; amend to read as follows:

G2417.4 (406.4) Test pressure measurement. Test pressure shall be measured with a manometer or with a pressure-measuring device designed and calibrated to read, record, or indicate a pressure loss caused by leakage during the *pressure test* period. The source of pressure shall be isolated before the *pressure tests* are made. ~~Mechanical gauges~~ gauges used to measure... {remainder unchanged}

Section G2417.4.1 (406.4.1) Test pressure; amend to read as follows:

G2417.4.1 (406.4.1) Test pressure. The test pressure to be used shall be no less than 3 psig (20 kPa gauge), or at the discretion of the Code Official, the piping and valves may be tested at a pressure of at least six (6) inches (152 mm) of mercury, measured with a manometer or slope gauge. ~~irrespective of design pressure. Where the test pressure exceeds 125 psig (862 kPa gauge), the test pressure shall not exceed a value that produces a hoop stress in the piping greater than 50 percent of the specified minimum yield strength of the pipe. For tests requiring a pressure of 3 psig, diaphragm gauges shall utilize a dial with a minimum diameter of three and one half inches (3 ½”), a set hand, 1/10 pound incrementation and pressure range not to exceed 6 psi for tests requiring a pressure of 3 psig. For tests requiring a pressure of 10 psig, diaphragm gauges shall utilize a dial with a minimum diameter of three and one-half inches (3 ½”), a set hand, a minimum of 2/10 pound incrementation and a pressure range not to exceed 20 psi. For welded piping, and for piping carrying gas at pressures in excess of fourteen (14) inches water column pressure (3.48 kPa) (1/2 psi) and less than 200 inches of water column pressure (52.2 kPa) (7.5 psi), the test pressure shall not be less than ten (10) pounds per square inch (69.6 kPa). For piping carrying gas at a pressure that exceeds 200 inches of water column (52.2 kPa) (7.5 psi), the test pressure shall be not less than one and one-half times the proposed maximum working pressure.~~

Diaphragm gauges used for testing must display a current calibration and be in good working condition. The appropriate test must be applied to the diaphragm gauge used for testing

Section G2417.4.2 Test duration; amend to read as follows:

G2417.4.2 (406.4.2) Test duration. The test duration shall be held for a length of time satisfactory to the *Building Official*, but in no case for ~~be not~~ less than ~~10~~-fifteen (15) minutes. For welded piping, and for piping carrying gas at pressures in excess of fourteen (14) inches water column pressure (3.48 kPa), the test duration shall be held for a length of time satisfactory to the Building Official, but in no case for less than thirty (30) minutes.

Section G2420.1 (406.1) General; add Section G2420.1.4 to read as follows:

G2420.1.4 Valves in CSST installations. Shutoff valves installed with corrugated stainless steel (CSST) piping systems shall be supported with an approved termination fitting, or equivalent support, suitable for the size of the valves, of adequate strength and quality, and located at intervals so as to prevent or damp out excessive vibration but in no case greater than 12-inches from the center of the valve. Supports shall be installed so as not to interfere with

the free expansion and contraction of the system's piping, fittings, and valves between anchors. All valves and supports shall be designed and installed so they will not be disengaged by movement of the supporting piping.

Section G2420.1.1 (409.1.1) Valve approval; Add sentence to paragraph to read as follows:

Section G2420.1.1 (409.1.1) Valve approval. All valves servicing cooktops, stovetops, ranges and ovens shall be approved ANSI Z 21.15 valves with full shut off handles. Keyed/handles (Clive) valves will not be allowed for the appliances mentioned only.

Section G2420.1.3 (409.1.3) Access to shutoff valves; Add sentence to paragraph to read as follows:

Section G2420.1.3 (409.1.3) Access to shutoff valves. Shutoff valves for cooktops, stovetops, ovens and ranges shall be readily accessible unless approved by Building Official or Chief Building Inspector on per case basis.

Section G2420.5.1 (409.5.1) Located within same room; add text to read as follows:

G2420.5.1 (409.5.1) Located within the same room. The shutoff valve *{bulk of paragraph unchanged}*... in accordance with the appliance manufacturer's instructions. A secondary shutoff valve must be installed within 3 feet (914 mm) of the firebox if appliance shutoff is located in the firebox.

Section G2421.1 (410.1) Pressure regulators; add text and Exception to read as follows:

G2421.1 (410.1) Pressure regulators. A line pressure regulator shall be ... *{bulk of paragraph unchanged}*... approved for outdoor installation. Access to regulators shall comply with the requirements for access to appliances as specified in Section M1305.

Exception: A passageway or level service space is not required when the regulator is capable of being serviced and removed through the required attic opening.

Section G2422.1.2.3 (411.1.3.3) Prohibited locations and penetrations; delete Exception 1 and Exception 4.

Section G2445.2 (621.2) Prohibited use; add Exception to read as follows:

G2445.2 (621.2) Prohibited use. One or more *unvented room heaters* shall not be used as the sole source of comfort heating in a *dwelling unit*.

Exception: Existing approved unvented room heaters may continue to be used in dwelling units, in accordance with the code provisions in effect when installed, when approved by the Building Official unless an unsafe condition is determined to exist as described in International Fuel Gas Code Section 108.7 of the Fuel Gas Code.

Section G2448.1.1 (624.1.1) Installation requirements; amend to read as follows:

G2448.1.1 (624.1.1) Installation requirements. The requirements for water heaters relative to access, sizing, relief valves, drain pans and scald protection shall be in accordance with this code

P2605.1 General; add text and #5 to list:

P2605.1 General. Piping and expansion tanks ... remainder unchanged...

5. Thermal expansion tanks shall be supported to not allow sagging, hangers and anchors shall be of sufficient strength to support tanks and attached to building construction in an approved manner.

Section P2801.6.1 Pan size and drain; amend to read as follows:

Section P2801.6.1 Pan Size and drain. The pan shall be not less than 1 1/2 inches (38 mm) in depth and shall be of sufficient size and shape to receive all dripping or condensate from the tank or water heater. The pan shall be

drained by an indirect waste pipe having a diameter of not less than 3/4 inch (19 mm). Piping for safety pan drains shall be of those materials listed in Table 605.4. Multiple pan drains may terminate to a single discharge piping system when approved by the administrative authority and permitted by the manufactures installation instructions and installed with those instructions.

Section P2801.7; amend Exceptions to read as follows:

Exceptions:

1. Elevation of the ignition source is not required for appliances that are listed as flammable vapor ignition resistant
2. Electric Water Heater

Section P2804.6.1 Requirements for discharge piping; amend to read as follows:

Section P2804.6.1 Requirements for discharge piping. The discharge piping serving a pressure relief valve, temperature relief valve or combination thereof shall:

1. Not be directly connected to the drainage system.
2. Discharge through an air gap ~~located in the same room as the water heater.~~
3. Not be smaller than the diameter of the outlet of the valve served and shall discharge full size to the air gap.
4. Serve a single relief device and shall not connect to piping serving any other relief device or equipment.

Exception: Multiple relief devices may be installed to a single T & P discharge piping system when approved by the administrative authority and permitted by the manufactures installation instructions and installed with those instructions.

5. Discharge ~~to the floor,~~ to an indirect waste receptor or to the outdoors.

[remainder unchanged]

Section P2902.5.3; amend to read as follows:

P2902.5.3 Lawn irrigation systems. The potable water supply to lawn irrigation systems shall be protected against backflow by an atmospheric-type vacuum breaker, a pressure-type vacuum breaker, a double-check assembly or a reduced pressure principle backflow preventer. A valve shall not be installed downstream from an atmospheric vacuum breaker. Where chemicals are introduced into the system, the potable water supply shall be protected against backflow by a reduced pressure principle backflow preventer.

Section P3009.9 Solvent cementing; amend to read as follows:

P3003.9. Solvent cementing. Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F 656 shall be applied. ~~Solvent cement not purple in color and conforming to ASTM D 2564, CSA B137.3, CSA B181.2 or CSA B182.1 shall be applied to all joint surfaces.~~ The joint shall be made while the cement is wet and shall be in accordance with ASTM D 2855. Solvent cement joints shall be permitted above or below ground.

~~Exception: A primer is not required where both of the following conditions apply:~~

- ~~1. The solvent cement used is third party certified as conforming to ASTM D 2564~~
- ~~2. The solvent cement is used only for joining PVC drain, waste, and vent pipe and fittings in not pressure applications in sizes up to and including 4 inches (102mm) in~~

Section P3111Combination waste and vent system; delete section entirely

Section P3112.2 Vent connection; delete and replace with the following:

P3112.2 Vent connection. Traps for island sinks and similar equipment shall be roughed in above the floor and may be vented by extending the vent as high as possible, but not less than the drain board height and then returning it downward and connecting it to the horizontal sink drain immediately downstream from the vertical fixture drain. The return vent shall be connected to the horizontal drain through a wye-branch fitting and shall, in addition, be provided with a foot vent taken off the vertical fixture vent by means of a wye-branch immediately below the floor and extending to the nearest partition and then through the roof to the open air or may be connected to other vents at a point not less than six (6) inches (152 mm) above the flood level rim of the fixtures served. Drainage fittings shall be used on all parts of the vent below the floor level and a minimum slope of one-quarter (1/4) inch per foot (20.9 mm/m) back to the drain shall be maintained. The return bend used under the drain board shall be a one (1) piece fitting or an assembly of a forty-five (45) degree (0.79 radius), a ninety (90) degree (1.6 radius) and a forty-five (45) degree (0.79 radius) elbow in the order named. Pipe sizing shall be as elsewhere required in this Code. The island sink drain, upstream of the return vent, shall serve no other fixtures. An accessible cleanout shall be installed in the vertical portion of the foot vent.

DIVISION 5 MECHANICAL CODE

Sec. 3.02.201- International Mechanical Code amendments:

The following noted portions of the International Mechanical Code are hereby amended to read as follows

Section 102.8; amend to read as follows:

102.8 Referenced codes and standards. The codes and standards referenced herein shall be those that are listed in Chapter 15 and such codes, when specifically adopted, and standards shall be considered part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and the referenced standards, the provisions of this code shall apply. Whenever amendments have been adopted to the referenced codes and standards, each reference to said code and standard shall be considered to reference the amendments as well. Any reference to NFPA 70 or the ICC *Electrical Code* shall mean the Electrical Code as adopted.

Section 306.3 Appliances in attic; amend to read as follows:

306.3 Appliances in attics. Attics containing appliances requiring access shall be provided . . . {bulk of paragraph unchanged} . . . side of the appliance. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm), or larger where such dimensions are not large enough to allow removal of the largest appliance. A walkway to an appliance shall be rated as a floor as approved by the building official. As a minimum, for access to the attic space, provide one of the following:

1. A permanent stair.
2. A pull down stair with a minimum 300 lb. (136 kg) capacity and pulled to the open position prior to inspection for attic access.
3. An access door from an upper floor level.
4. Access Panel may be used in lieu of items 1, 2, and 3 with prior approval of the code official due to building conditions.

Exceptions:

1. The passageway and level service space are not required where the appliance is capable of being serviced and removed... {remainder of section unchanged}

Section 306.5 Equipment and appliances on roofs or elevated structures; amend to read as follows:

306.5 Equipment and appliances on roofs or elevated structures. . Where *equipment* requiring access or appliances are located on an elevated structure or the roof of a building such that personnel will have to climb higher than 16 feet (4877 mm) above grade to access, a permanent interior or exterior means of access shall be provided. Permanent exterior ladders providing roof access need not extend closer than 12 feet (2438 mm) to the finish grade or floor level below and shall extend to the equipment and appliances' level service space. Such access shall . . . {bulk of section to read the same} . . . on roofs having a slope greater than 4 unit's vertical in 12 unit's horizontal (33-percent slope). ... {Bulk of section to read the same}.

Section 306.5.1 Sloped roofs; amend to read as follows:

306.5.1 Sloped roofs. Where appliances, *equipment*, fans or other components that require service are installed on roofs having slopes greater than 4 units vertical in 12 units horizontal and having an edge more than 30 inches (762 mm) above grade at such edge, a catwalk at least 16 inches in width with substantial cleats spaced not more than 16 inches apart shall be provided from the roof access to a level platform at the appliance. The level platform shall be provided on each side of the appliance to which access is required for service, repair or maintenance. The platform shall be not less than 30 inches (762 mm) in any dimension and shall be provided with guards. The guards shall extend not less than 42 inches (1067 mm) above the platform, shall be constructed so as to prevent the passage of a 21-inch-diameter (533 mm) sphere and shall comply with the loading requirements for guards specified in the International Building Code.

Section 306 Access and service space; add Section 306.6 to read as follows:

306.6 Water heaters above ground or floor. When the mezzanine or platform in which a water heater is installed is more than eight (8) feet (2438 mm) above the ground or floor level, it shall be made accessible by a stairway or permanent ladder fastened to the building.

Exception: A max 10 gallon water heater (or larger with approval) is capable of being accessed through a lay-in ceiling and a water heater is installed is not more than ten (10) feet (3048 mm) above the ground or floor level and may be reached with a portable ladder.

306.6.1 Whenever the mezzanine or platform is not adequately lighted or access to a receptacle outlet is not obtainable from the main level, lighting and a receptacle outlet shall be provided in accordance with Section 306.3.1.

Section 307.2.2 Drain pipe material and sizes; amend to read as follows:

307.2.2 Drain pipe materials and sizes. Components of the condensate disposal system shall be cast iron, galvanized steel, copper, cross-linked polyethylene, polybutylene, polyethylene, ABS, CPVC or schedule 80 PVC pipe or tubing when exposed to ultra violet light. All components shall be selected for the pressure, temperature, and exposure rating of the installation. {Remaining language unchanged}

Section 307.2.3 Auxiliary and secondary drain system; amend item 2 to read as follows:

2. A separate overflow drain line shall be connected to the drain pan provided with the equipment. Such overflow drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The overflow drain line shall connect to the drain pan at a higher level than the primary drain connection. However, the conspicuous point shall not create a hazard such as dripping over a walking surface or other areas so as to create a nuisance.

Section 403.2.1 Recirculation of air; add an item 5 to read as follows:

5. Toilet rooms within private dwellings that contain only a water closet, lavatory or combination thereof may be ventilated with an approved mechanical recirculating fan or similar device designed to remove odors from the air.

Section 501.3 Exhaust discharge; add an exception to read as follows:

501.3 Exhaust Discharge. The air removed by every mechanical exhaust system shall be discharged outdoors at a point where it will not cause a public nuisance and not less than the distances specified in Section 501.3.1. The air shall be discharged to a location from which it cannot again be readily drawn in by a ventilating system. Air shall not be exhausted into an attic, crawl space, or be directed onto walkways.

Exceptions:

1. Whole-house ventilation-type attic fans shall be permitted to discharge into the attic space of dwelling units having private attics.
2. Commercial cooking recirculating systems.
3. Where installed in accordance with the manufacturer's instructions and where mechanical or natural ventilation is otherwise provided in accordance with Chapter 4, listed and labeled domestic ductless range hoods shall not be required to discharge to the outdoors.
4. Toilet room exhaust ducts may terminate in a warehouse or shop area when infiltration of outside air is present.

Section 607.5.1 Fire walls; amend to read as follows:

607.5.1 Fire Walls. Ducts and air transfer openings permitted in fire walls in accordance with Section 705.11 of the International Building Code shall be protected with listed fire dampers installed in accordance with their listing. For hazardous exhaust systems see Section 510.1-510.9 IMC.

DIVISION 6 FUEL GAS CODE

Sec. 3.02.251 - International Fuel Gas Code amendments:

The following noted portions of the International Fuel Gas Code are hereby amended to read as follows

Section 102.2 Existing installations; add an exception to read as follows:

Exception: Existing dwelling units shall comply with Section 621.2.

Section 102.8 Referenced codes and standards; amend to read as follows:

102.8 Referenced codes and standards. The codes and standards referenced in this code shall be those that are listed in Chapter 8 and such codes, when specifically adopted, and standards shall be considered part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and the referenced standards, the provisions of this code shall apply. Whenever amendments have been adopted to the referenced codes and standards, each reference to said code and standard shall be considered to reference the amendments as well. Any reference to NFPA 70 or the ICC Electrical Code shall mean the Electrical Code as adopted.

Section 306.3 Appliances in attic; amend to read as follows:

[M] 306.3 Appliances in attics. Attics containing appliances requiring access shall be provided . . . {bulk of paragraph unchanged} . . . side of the appliance. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm), or larger where such dimensions are not large enough to allow removal of the largest appliance. A walkway to an appliance shall be rated as a floor as approved by the building official. As a minimum, for access to the attic space, provide one of the following:

1. A permanent stair.
2. A pull down stair with a minimum 300 lb. (136 kg) capacity and pulled to the open position prior to inspection for attic access
4. An access door from an upper floor level.
5. Access Panel may be used in lieu of items 1, 2, and 3 with prior approval of the code official due to building conditions.

Exceptions:

1. The passageway and level service space are not required where the *appliance* is capable of being serviced and removed through the required opening.
2. Where the passageway is not less than *{bulk of section to read the same}*.

Section 306.5 Equipment and appliances on roofs or elevated structures; amend to read as follows:

[M] 306.5 Equipment and appliances on roofs or elevated structures. Where *equipment* requiring *access* or appliances are located on an elevated structure or the roof of a building such that personnel will have to climb higher than 16 feet (4877 mm) above grade to access, ~~an~~ a permanent interior or exterior means of access shall be provided. Permanent exterior ladders providing roof access need not extend closer than 12 feet (2438 mm) to the finish grade or floor level below and shall extend to the equipment and appliances' level service space. Such *access* shall . . . *{bulk of section to read the same}* . . . on roofs having a slope greater than 4 unit's vertical in 12 unit's horizontal (33-percent slope). ... *{Bulk of section to read the same}*.

Section 306.5.1 Sloped roofs; amend to read as follows:

[M] 306.5.1 Sloped roofs. Where appliances, *equipment*, fans or other components that require service are installed on roofs having slopes greater than 4 units vertical in 12 units horizontal and having an edge more than 30 inches (762 mm) above grade at such edge, a catwalk at least 16 inches in width with substantial cleats spaced not more than 16 inches apart shall be provided from the roof access to a level platform at the appliance. The level platform shall be provided on each side of the appliance to which *access* is required for service, repair or maintenance. The platform shall be not less than 30 inches (762 mm) in any dimension and shall be provided with guards. The guards shall extend not less than 42 inches (1067 mm) above the platform, shall be constructed so as to prevent the passage of a 21-inch-diameter (533 mm) sphere and shall comply with the loading requirements for guards specified in the *International Building Code*.

Section 306 Access and service space; add Section 306.7 with exception and subsection 306.7.1 to read as follows:

306.7 Water heaters above ground or floor. When the attic, roof, mezzanine or platform in which a water heater is installed is more than eight (8) feet (2438 mm) above the ground or floor level, it shall be made accessible by a stairway or permanent ladder fastened to the building.

Exception: A max 10 gallon water heater (or larger when approved by the code official) is capable of being accessed through a lay-in ceiling and a water heater is installed is not more than ten (10) feet (3048 mm) above the ground or floor level and may be reached with a portable ladder.

306.7.1. Illumination and convenience outlet. Whenever the mezzanine or platform is not adequately lighted or access to a receptacle outlet is not obtainable from the main level, lighting and a receptacle outlet shall be provided in accordance with Section 306.3.1.

Section 401.5 Identification; add a second paragraph to read as follows:

Both ends of each section of medium pressure corrugated stainless steel tubing (CSST) shall identify its operating gas pressure with an approved tag. The tags are to be composed of aluminum or stainless steel and the following wording shall be stamped into the tag:

"WARNING
1/2 to 5 psi gas pressure
Do Not Remove"

Section 402.3 Sizing; add an exception to read as follows:

Exception: Corrugated stainless steel tubing (CSST) shall be a minimum of 1/2" (18 EHD).

Section 404.12 Minimum burial depth; amend to read as follows:

404.12 Minimum burial depth. Underground piping systems shall be installed a minimum depth of 18 inches (458 mm) top of pipe below grade-

Section 404.12.1 Individual outside appliances; amend to read as follows:

404.12.1 Individual outside appliances. Individual lines to outside lights, grills or other appliances shall be installed a minimum of 12 inches (203 mm) top of pipe below finished grade, provided that such installation is approved and is installed in locations not susceptible to physical damage.

Section 406.1 General; amend to read as follows:

406.1 General. Prior to acceptance and initial operation, all piping installations shall be inspected and pressure tested to determine that the materials, design, fabrication, and installation practices comply with the requirements of this code. The permit holder shall make the applicable tests prescribed in Sections 406.1.1 through 406.1.5 to determine compliance with the provisions of this code. The permit holder shall give reasonable advance notice to the code official when the piping system is ready for testing. The equipment, material, power and labor necessary for the inspections and test shall be furnished by the permit holder and the permit holder shall be responsible for determining that the work will withstand the test pressure prescribed in the following tests.

Section 406.4 Test pressure measurement; amend to read as follows:

406.4 Test pressure measurement. Test pressure shall be measured with a monometer or with a pressure-measuring device designed and calibrated to read, record, or indicate a pressure loss caused by leakage during the pressure test period. The source of pressure shall be isolated before the pressure tests are made.

Section 406.4.1 Test pressure; amend to read as follows:

406.4.1 Test pressure. The test pressure to be used shall be no less than 3 psig (20 kPa gauge), or at the discretion of the Code Official, the piping and valves may be tested at a pressure of at least six (6) inches (152 mm) of mercury, measured with a manometer or slope gauge. For tests requiring a pressure of 3 psig, diaphragm gauges shall utilize a dial with a minimum diameter of three and one half inches (3 1/2"), a set hand, 1/10 pound incrementation and pressure range not to exceed 6 psi for tests requiring a pressure of 3 psig. For tests requiring a pressure of 10 psig, diaphragm gauges shall utilize a dial with a minimum diameter of three and one-half inches (3 1/2"), a set hand, a minimum of 2/10 pound incrementation and a pressure range not to exceed 20 psi. For welded piping, and for piping carrying gas at pressures in excess of fourteen (14) inches water column pressure (3.48 kPa) (1/2 psi) and less than 200 inches of water column pressure (52.2 kPa) (7.5 psi), the test pressure shall not be less than ten (10) pounds per square inch (69.6 kPa). For piping carrying gas at a pressure that exceeds 200 inches of water column (52.2 kPa) (7.5 psi), the test pressure shall be not less than one and one-half times the proposed maximum working pressure.

Section 406.4.2 Test duration; change to read as follows:

406.4.2 Test duration. Test duration shall be held for a length of time satisfactory to the Code Official, but in no case for less than fifteen (15) minutes. For welded piping, and for piping carrying gas at pressures in excess of fourteen (14) inches water column pressure (3.48 kPa), the test duration shall be held for a length of time satisfactory to the Code Official, but in no case for less than thirty (30) minutes. (Delete remainder of section.)

Section 409.1 Valve approval; add Section 409.1.4 to read as follows:

409.1.4 Valves in CSST installations. Shutoff valves installed with corrugated stainless steel (CSST) piping systems shall be supported with an approved termination fitting, or equivalent support, suitable for the size of the valves, of adequate strength and quality, and located at intervals so as to prevent or damp out excessive vibration but in no case greater than 12-inches from the center of the valve. Supports shall be installed so as not to interfere with the free expansion and contraction of the system's piping, fittings, and valves between anchors. All valves and supports shall be designed and installed so they will not be disengaged by movement of the supporting piping.

Section 409.1.1 Valve approval; add sentence to paragraph to read as follows:

Section 409.1.1 Valve approval. All valves servicing cooktops, stovetops, ranges and ovens shall be approved ANSI Z 21.15 valves with full shut off handles. Keyed/handless (Clive) valves will not be allowed for the appliances mentioned only.

Section 409.1.3 Access to shutoff valves; Add sentence to paragraph to read as follows:

Section 409.1.3 Access to shutoff valves. Shutoff valves for cooktops, stovetops, ovens and ranges shall be readily accessible unless approved by Building Official or Chief Building Inspector on per case basis.

Section 410.1 Pressure regulators; add a second paragraph and exception to read as follows:

Access to regulators shall comply with the requirements for access to appliances as specified in Section 306.

Exception: A passageway or level service space is not required when the regulator is capable of being serviced and removed through the required attic opening.

Section 621.2 Prohibited use; add exception as follows:

621.2 Prohibited use. One or more unvented room heaters shall not be used as the sole source of comfort heating in a dwelling unit.

Exception: Existing approved unvented heaters may continue to be used in dwelling units, in accordance with the code provisions in effect when installed, when approved by the Code Official unless an unsafe condition is determined to exist as described in Section 108.7.

Section 624.1.1 Installation requirements; amend to read as follows:

624.1.1 Installation requirements. The requirements for water heaters relative to access, sizing, relief valves, drain pans and scald protection shall be in accordance with the *International Plumbing Code*.

DIVISION 7 PLUMBING CODE

Sec. 3.02.301 - International Plumbing Code amendments:

The following noted portions of the International Plumbing Code are hereby amended to read as follows

Table of Contents, Chapter 7, Section 714; amend to read as follows:

714 Engineered Drainage Design 69

Section 102.8 referenced codes and standards; amend to read as follows:

102.8 Referenced codes and standards. The codes and standards referenced in this code shall be those that are listed in Chapter 13 and such codes, when specifically adopted, and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference. Where the differences occur between provisions of this code and the referenced standards, the provisions of this code shall be the minimum requirements. Whenever amendments have been adopted to the referenced codes and standards, each reference to said code and standard shall be considered to reference the amendments as well. Any reference to NFPA 70 or the ICC *Electrical Code* shall mean the Electrical Code as adopted.

Sections 106.6.2 Fee schedule and 106.6.3 fee refunds; amend to read as follows:

106.6.2 Fee schedule. The fees for all plumbing work shall be as adopted by resolution of the governing body of the jurisdiction.

106.6.3 Fee Refunds. The code official shall establish a policy for authorizing the refunding of fees.. *{Delete balance of section}*

Section 109 Means of Appeal; Delete entire section and insert the following:

**SECTION 109
MEANS OF APPEAL**

109.1 Application for appeal. Any person shall have the right to appeal a decision of the code official to the board of appeals established by ordinance. The board shall be governed by the enabling ordinance.

Section 305.4.1 sewer depth; amend to read as follows:

305.4.1 Sewer depth. Building sewers that connect to private sewage disposal systems shall be a minimum of 12 inches (304 mm) below finished grade at the point of septic tank connection. Building sewers shall be a minimum of 12 inches (304 mm) below grade.

Section 305.7 Protection of components of plumbing system; amend to read as follows:

305.7 Protection of components of plumbing system. Components of a plumbing system installed within 3 feet along alleyways, driveways, parking garages or other locations in a manner in which they would be exposed to damage shall be recessed into the wall or otherwise protected in an *approved* manner.

Section 314.2.1 Condensate disposal; amend to read as follows:

314.2.1 Condensate disposal. Condensate from all cooling coils and evaporators shall be conveyed from the drain pan outlet to an *approved* place of disposal. ... {text unchanged} ... Condensate shall not discharge into a street, alley, sidewalk, rooftop, or other areas so as to cause a nuisance.

Section 314.2.2 Drain pipe materials and sizes; amend to read as follows:

314.2.2 Drain pipe materials and sizes. Components of the condensate disposal system shall be cast iron, galvanized steel, copper, cross-linked polyethylene, polyethylene, ABS, CPVC, or schedule 80 PVC pipe or tubing when exposed to ultra violet light. All components shall be selected for the pressure, temperature and exposure rating of the installation. Joints and connections shall be made in accordance with the applicable provisions of Chapter 7 relative to the material type. Condensate waste and drain line size shall not be less than ¾-inch (19 mm) internal diameter and shall not decrease in size from the drain pan connection to the place of condensate disposal.

Where the drain pipes from more than one unit are manifolded together for condensate drainage, the pipe or tubing shall be sized in accordance with Table 314.2.2. All horizontal sections of drain piping shall be installed in uniform alignment at a uniform slope.

Section 401.1 Scope; add a sentence to read as follows:

401.1 Scope. This chapter shall govern the materials, design and installation of plumbing fixtures, faucets and fixture fittings in accordance with the type of *occupancy*, and shall provide for the minimum number of fixtures for various types of occupancies. The provisions of this Chapter coordinate with the provisions of the *Building Code*. Should any conflicts arise between the two chapters, the *Code Official* shall determine which provision applies.

Section 409.2 Water connection; amend to read as follows:

409.2 Water connection. The water supply to a commercial dishwashing machine shall be protected against backflow by an air gap or backflow preventer in accordance with Section 608. (Remainder of section unchanged)

Section 412.4 Public laundries and central washing facilities; amend to read as follows:

412.4 Required location for floor drains ~~Public laundries and central washing facilities.~~ Floor drains shall be installed in the following areas.

1. In public coin-operated laundries and in the central washing facilities of multiple family dwellings, the rooms containing automatic clothes washers shall be provided with floor drains located to readily drain the entire floor area. Such drains shall have a minimum outlet of not less than 3 inches (76 mm) in diameter.
2. Commercial kitchens. In lieu of floor drains in commercial kitchens, the code official may accept floor sinks.
3. Public restrooms.

Section 419.3 Surrounding material; amend to read as follows:

419.3 Surrounding material. Wall and floor space to a point 2 feet (610 mm) in front of a urinal lip and 4 feet (1219 mm) above the floor and at least 2 feet (610 mm) to each side of the urinal shall be waterproofed with a smooth, readily cleanable, hard, nonabsorbent material.

Section 502.3 Water heaters installed in attic; amend to read as follows:

502.3 Appliances in attics. Attics containing a water heater shall be provided . . . {bulk of paragraph unchanged} . . . side of the water heater. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm), or larger where such dimensions be not less than 20 inches by 30 inches (508mm by 762mm) where such dimensions are large enough to allow removal of the water heater. A walkway to an appliance shall be rated as a floor as approved by the building official. As a minimum, for access to the attic space, provide one of the following:

1. A permanent stair.
2. A pull down stair with a minimum 300 lb (136 kg) capacity and pulled down in open position prior to inspection for attic access
3. An access door from an upper floor level.
4. Access Panel may be used in lieu of items 1, 2, and 3 with prior approval of the code official due to building conditions.

Exceptions:

1. The passageway and level service space are not required where the appliance is capable of being serviced and removed... {remainder of section unchanged}

Section 502 Installation; Add Section 502.6 to read as follows:

502.6 Water heaters above ground or floor. When the attic, roof, mezzanine or platform in which a water heater is installed is more than eight (8) feet (2438 mm) above the ground or floor level, it shall be made accessible by a stairway or permanent ladder fastened to the building.

Exception: A max 10 gallon water heater (or larger with approval) is capable of being accessed through a lay-in ceiling and a water heater is installed is not more than ten (10) feet (3048 mm) above the ground or floor level and may be reached with a portable ladder.

Section 504.6 Requirements for discharge piping; change to read as follows:

504.6 Requirements for discharge piping. The discharge piping serving a pressure relief valve, temperature relief valve or combination thereof shall:

1. Not be directly connected to the drainage system.
2. Discharge through an air gap.
3. Not be smaller than the diameter of the outlet of the valve served and shall discharge full size to the air gap.
4. Serve a single relief device and shall not connect to piping serving any other relief device or equipment.
5. Discharge to an indirect waste receptor or to the outdoors. Where discharging to the outdoors in areas subject to freezing, discharge piping shall be first piped to an indirect waste receptor through an air gap located in a conditioned area.
6. Discharge in a manner that does not cause personal injury or structural damage.
7. Discharge to a termination point that is readily observable by the building occupants.
8. Not be trapped.
9. Be installed so as to flow by gravity.
10. Not terminate less than 6 inches or more than 24 inches (152 mm) above grade nor more than 6 inches above the waste receptor.
11. Not have a threaded connection at the end of such piping.
12. Not have valves or tee fittings.
13. Be constructed of those materials listed in Section 605.4 or materials tested, rated and *approved* for such use in accordance with ASME A112.4.1.

Section 504.7.1 Pan size and drain; amend to read as follows:

Section 504.7.1 Pan size and drain. The pan shall be not less than 11/2 inches (38 mm) in depth and shall be of sufficient size and shape to receive all dripping or condensate from the tank or water heater. The pan shall be drained by an indirect waste pipe having a diameter of not less than 3/4 inch (19 mm). Piping for safety pan drains shall be of those materials listed in Table 605.4. Multiple pan drains may terminate to a single discharge piping

system when approved by the administrative authority and permitted by the manufactures installation instructions and installed with those instructions.

Section 604.4 Maximum flow and water consumption; add Section 604.4.1 to read as follows:

604.4.1 State maximum flow rate. Where the State mandated maximum flow rate is more restrictive than those of this section, the State flow rate shall take precedence.

Section 604.8 Water pressure-reducing valve or regulator; add Section 604.8.3 and section 604.8.3.1 to read as follows:

604.8.3 Thermal expansion control. An expansion tank or approved device shall be installed for the water heater with the addition of a pressure reducing valve or regulator creating a closed system.

604.8.3.1 Thermal expansion tank support. Thermal expansion tanks shall be supported to not allow sagging, hangers and anchors shall be of sufficient strength to support tanks and attached to building construction in an approved manner.

Section 606.1 Location of full open valves; delete items #4 and #5.

Section 606.2 Location of shutoff valves; amend to read as follows:

606.2 Location of shutoff valves. Shutoff valves shall be installed in the following locations:

1. On the fixture supply to each plumbing fixture other than bathtubs and showers in one- and two-family residential occupancies, and other than in individual sleeping units that are provided with unit shutoff valves in hotels, motels, boarding houses and similar occupancies.
2. On the water supply pipe to each appliance or mechanical equipment.

Section 608.1 General; amend to read as follows:

608.1 General. A potable water supply system shall be designed, installed and maintained in such a manner so as to prevent contamination from non-potable liquids, solids or gases being introduced into the potable water supply through cross-connections or any other piping connections to the system. Backflow preventer applications shall conform to applicable local regulations, Table 608.1, and as specifically stated in Sections 608.2 through 608.16.10.

Section 608.16.5 Connections to lawn irrigation systems; amend to read as follows:

608.16.5 Connections to lawn irrigation systems.

The potable water supply to lawn irrigation systems shall be protected against backflow by an atmospheric-type vacuum breaker, a pressure-type vacuum breaker, a double-check assembly or a reduced pressure principle backflow preventer. A valve shall not be installed downstream from an atmospheric vacuum breaker. Where chemicals are introduced into the system, the potable water supply shall be protected against backflow by a reduced pressure principle backflow preventer.

Section 608.17 Protection of individual water supplies; amend to read as follows:

608.17 Protection of individual water supplies. An individual water supply shall be located and constructed so as to be safeguarded against contamination in accordance with applicable local regulations. Installation shall be in accordance with Sections 608.17.1 through 608.17.8.

Section 610.1 General; add exception to read as follows:

610.1 General. New or repaired potable water systems shall be purged of deleterious matter and disinfected prior to utilization. The method to be followed shall be that prescribed by the health authority or water purveyor having jurisdiction or, in the absence of a prescribed method, the procedure described in either AWWA C651 or AWWA C652, or as described in this section. This requirement shall apply to “on-site” or “in plant” fabrication of a system or to a modular portion of a system.

1. The pipe system shall be flushed with clean, potable water until dirty water does not appear at the points of outlet.
2. The system or part thereof shall be filled with a water/chlorine solution containing at least 50 parts per million (50 mg/L) of chlorine, and the system or part thereof shall be valved off and allowed to stand for 24 hours; or the system or part thereof shall be filled with a water/chlorine solution containing at least 200 parts per million (200 mg/L) of chlorine and allowed to stand for 3 hours.
3. Following the required standing time, the system shall be flushed with clean potable water until the chlorine is purged from the system.
4. The procedure shall be repeated where shown by a bacteriological examination that contamination remains present in the system.

Exception: With prior approval the Code Official may wave this requirement when deemed un-necessary.

Section 703.6 Combined sanitary and storm public sewer; Delete entire section

Section 704 Drainage piping installation; add section 704.5 to read as follows:

704.5 Single stack fittings. Single stack fittings with internal baffle, PVC schedule 40 or cast iron single stack shall be designed by a registered engineer and comply to a national recognized standard

Section 705.11.2 Solvent cementing; amend to read as follows:

705.11.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F 656 shall be applied. ~~Solvent cement not purple in color and conforming to ASTM D 2564, CSA B137.3, CSA B181.2 or CSA B182.1 shall be applied to all joint surfaces.~~ The joint shall be made while the cement is wet and shall be in accordance with ASTM D 2855. Solvent cement joints shall be permitted above or below ground.

~~Exception: A primer is not required where both of the following conditions apply:~~

- ~~1. The solvent cement used is third party certified as conforming to ASTM D 2564~~
- ~~2. The solvent cement is used only for joining PVC drain, waste, and vent pipe and fittings in non-pressure applications in sizes up to and including 4 inches (102mm) in~~

Section 712.3.3.1 Material; amend to read as follows:

712.3.3.1 Materials. Pipe and fitting materials shall be constructed of brass, copper, CPVC, ductile iron, stainless steel, galvanized iron, PE, or PVC.

Section 712.5; add Section 712.5 to read as follows:

712.5 Dual Pump System. All sumps shall be automatically discharged and, when in any “public use” occupancy where the sump serves more than 10 fixture units, shall be provided with dual pumps or ejectors arranged to function independently in case of overload or mechanical failure. For storm drainage sumps and pumping systems, see Section 1113.

Section 714 Computerized drainage design and 714.1 design of drainage system; amend to read as follows:

**SECTION 714
ENGINEERED DRAINAGE DESIGN**

714.1 Design of drainage system. The sizing, design and layout of the drainage system shall be designed by a registered engineer using approved design methods.

Section 804 Materials, joints and connections; add section 804.2 to read as follows:

804.2 Special waste pipe, fittings, and components. Pipes, fittings, and components receiving or intended to receive the discharge of any fixture into which acid or corrosive chemicals are placed shall be constructed of CPVC, high silicone iron, PP, PVDF, chemical resistant glass, or glazed ceramic materials

Section 903.1 Roof extension; amend to read as follows:

903.1 Roof extension. All open vent pipes that extend through a roof shall be terminated at least six (6) inches (152 mm) above the roof, except that where a roof is to be used for any purpose other than weather protection, the vent extensions shall be run at least 7 feet (2134 mm) above the roof.

Section 917 Single stack vent system; delete entire section

Section 1002.10 Plumbing in mental health centers; delete entire section

Section 1101.8 Cleanout requirements; amend to read as follows:

1101.8 Cleanouts required. Cleanouts or manholes shall be installed in the storm drainage system and shall comply with the provisions of this code for sanitary drainage pipe cleanouts.

Section 1106.1 General; amend to read as follows:

1106.1 General. The size of the vertical conductors and leaders, building storm drains, building storm sewers, and any horizontal branches of such drains or sewers shall be based on six (6) inches per hour rainfall rate.

Section 1108.3 Sizing of secondary drains; amend to read as follows:

1108.3 Sizing of secondary drains. Secondary (emergency) roof drain systems shall be sized in accordance with Section 1106 Scuppers shall be sized to prevent the depth of ponding water from exceeding that for which the roof was designed as determined by Section 1101.7. Scuppers shall not have an opening dimension of less than 4 inches (102 mm). The flow through the primary system shall not be considered when sizing the secondary roof drain system.

Section 1109 Controlled flow roof drain systems; Delete entire section

Section 1202.1 Nonflammable medical gases; delete Exception 2.

DIVISION 8 NATIONAL ELECTRIC CODE

Sec. 3.02.351 - National Electrical Code amendments:

The following noted portions of the National Electrical Code are hereby amended to read as follows

Article 100 Definitions; add the following to definitions:

Engineering Supervision: Supervision by a Qualified State of Texas Licensed Professional Engineer engaged primarily in the design or maintenance of electrical installations.

Article 100; amend the following definition to read as follows:

Intersystem Bonding Termination. A device that provides a means for connecting intersystem bonding conductors for communication systems to the grounding electrode system.

Article 110.2 Approval; amend the following to read as follows:

110.2 Approval. The conductors and equipment required or permitted by this *Code* shall be acceptable only if approved. Approval of equipment may be evident by listing and labeling of equipment by a Nationally Recognized Testing Lab (NRTL) with a certification mark of that laboratory or a qualified third party inspection agency approved by the AHJ.

Exception: Unlisted equipment that is relocated to another location within a jurisdiction or is field modified is subject to the approval by the AHJ. This approval may be by a field evaluation by a NRTL or qualified third party inspection agency approved by the AHJ.

Informational Note No. 1: See 90.7, Examination of Equipment for Safety, and 110.3, Examination, Identification, Installation, and Use of Equipment. See definitions of *Approved*, *Identified*, *Labeled*, and *Listed*.

Informational Note No. 2: Manufacturer's self-certification of equipment may not necessarily comply with US product safety standards as certified by a Nationally Recognized Testing Lab

Informational Note No. 3: NFPA 790 and 791 provide an example of an approved method for qualifying a third party inspection agency.

Article 210.52(G) (1) Garages: amend the following to read as follows:

(1) Garages. In each attached garage and in each detached garage with electric power. At least one receptacle outlet shall be installed for each car space.

Article 500.8 (A) (3) Equipment; amend to read as follows:

500.8 Equipment. Articles 500 through 504 require equipment construction and installation that ensure safe performance under conditions of proper use and maintenance.

Informational Note No. 1: It is important that inspection authorities and users exercise more than ordinary care with regard to installation and maintenance.

Informational Note No. 2: Since there is no consistent relationship between explosion properties and ignition temperature, the two are independent requirements.

Informational Note No. 3: Low ambient conditions require special consideration. Explosion proof or dust-ignition proof equipment may not be suitable for use at temperatures lower than -25°C (-13°F) unless they are identified for low-temperature service. However, at low ambient temperatures, flammable concentrations of vapors may not exist in a location classified as Class I, Division 1 at normal ambient temperature.

(A) Suitability. Suitability of identified equipment shall be determined by one of the following:

- (1) Equipment listing or labeling
- (2) Evidence of equipment evaluation from a qualified testing laboratory or inspection agency concerned with product evaluation

- (3) Evidence acceptable to the authority having jurisdiction such as a manufacturer's self-evaluation or an engineering judgment signed and sealed by a qualified licensed Professional Engineer in the State of Texas.

Informational Note: Additional documentation for equipment may include certificates demonstrating compliance with applicable equipment standards, indicating special conditions of use, and other pertinent information.

Article 505.7 (A) Implementation of Zone classification systems; amend to read as follows:

- (A) **Implementation of Zone Classification System.** Classification of areas, engineering and design, selection of equipment and wiring methods, installation, and inspection shall be performed by a qualified licensed Professional Engineer in the State of Texas.

Article 517.31 (G) Coordination; amend to read as follows:

(G) **Coordination.** Overcurrent protective devices serving the equipment branch of the essential electrical system shall be coordinated for the period of time that a fault's duration extends beyond 0.1 second.

Exception No. 1: Between transformer primary and secondary overcurrent protective devices, where only one overcurrent protective device or set of overcurrent protective devices exists on the transformer secondary.

Exception No. 2: Between overcurrent protective devices of the same size (ampere rating) in series.

Informational Note: The terms coordination and coordinated as used in this section do not cover the full range of overcurrent conditions.

Article 600.6(A) (1) At Point of Entry to a Sign; Exception 1; amend to read as follows:

Exception No.1: A disconnect shall not be required for branch circuits(s) or feeder conductor(s) passing through the sign where enclosed in a Chapter 3 listed raceway or metal-jacketed cable identified for the location. The conductor(s) shall not serve the sign body or sign enclosure where passing through.

Article 600.6(A) (1) At Point of Entry to a Sign; add new Exception No. 3 to read as follows:

Exception No. 3: A disconnect shall not be required at the point of entry to a sign body, sign enclosure, or pole for branch circuit conductor(s). The conductor(s) shall be enclosed in a Chapter 3 listed raceway or metal-jacketed cable identified for location. The conductor(s) shall be routed to a device box which contains the disconnect. A field applied permanent warning label that is visible during servicing shall be applied to the raceway at or near the point of entry into the sign enclosure or sign body. The warning label shall comply with 110.21(B) and state the following, "Danger – this raceway contains energized conductors". The marking shall include the location of the disconnecting means for energized conductor(s). The disconnecting means shall be capable of being locked in the open position in accordance with 110.25.

Article 680.25(A) Feeders; amend to read as follows; delete the exception

680.25 Feeders.

These provisions shall apply to any feeder on the supply side of panel boards supplying branch circuits for pool equipment covered in Part II of this article and on the load side of the service equipment or the source of a separately derived system.

(A) Wiring Methods.

Feeders shall be installed in rigid metal conduit, intermediate metal conduit. The following wiring methods shall be permitted if not subject to physical damage:

- (1) Liquid tight flexible nonmetallic conduit

- (2) Rigid polyvinyl chloride conduit
- (3) Reinforced thermosetting resin conduit
- (4) Electrical metallic tubing where installed on or in a building
- (5) Electrical nonmetallic tubing where installed within a building
- (6) Type MC Cable where installed within a building and if not subject to corrosive environment

DIVISION 9 ENERGY CONSERVATION CODE

Sec. 3.02.401 - International Energy Conservation Code amendments:

The following noted portions of the International Energy Conservation Code are hereby amended to read as follows

Section C102/R102; add Section C102.1.2 and R102.1.2 to read as follows:

C102.1.2 Alternative compliance. A building certified by a national, state, or local accredited energy efficiency program and determined by the Energy Systems Laboratory to be in compliance with the energy efficiency requirements of this section may, at the option of the Code Official, be considered in compliance. The United States Environmental Protection Agency's Energy Star Program certification of energy code equivalency shall be considered in compliance.

R102.1.2 Alternative compliance. A building certified by a national, state, or local accredited energy efficiency program and determined by the Energy Systems Laboratory to be in compliance with the energy efficiency requirements of this section may, at the option of the Code Official, be considered in compliance. The United States Environmental Protection Agency's Energy Star Program certification of energy code equivalency shall be considered in compliance. Regardless of the program or the path to compliance, each 1- and 2-family dwelling shall be tested for air and duct leakage as prescribed in Section R402.4 and R403.3.3 respectively.

Section C202 and R202; add the following definition:

PROJECTION FACTOR. The ratio of the horizontal depth of the overhang, eave or permanently attached shading device, divided by the distance measured vertically from the bottom of the fenestration glazing to the underside of the overhang, eave or permanently attached shading device.

DYNAMIC GLAZING. Any fenestration product that has the fully reversible ability to change its performance properties, including *U*-factor, solar heat gain coefficient (SHGC), or visible transmittance (VT).

Section C402.2/R402.2; Add Section C402.2.7 and R402.2.14 to read as follows:

Section C402.2.7/R402.2.14 Insulation installed in walls. To insure that insulation remains in place, insulation batts installed in walls shall be totally secured by an enclosure on all sides consisting of framing lumber, gypsum, sheathing, wood structural panel sheathing, netting or other equivalent material approved by the building official.

Section R402.3.2 Glazed fenestration SHGC; amend by adding a paragraph and table following the exception to read as follows:

Where vertical fenestration is shaded by an overhang, eave, or permanently attached shading device, the SHGC required in Table R402.1.2 shall be reduced by using the multipliers in Table R402.3.2 SHGC Multipliers for Permanent Projections.

Table R402.3.2 SHGC Multipliers for Permanent Projections ^a

Projection Factor	SHGC Multiplier (all Other Orientation)	SHGC Multiplier (North Oriented)
0 - 0.10	1.00	1.00

>0.10 – 0.20	0.91	0.95
>0.20 – 0.30	0.82	0.91
>0.30 – 0.40	0.74	0.87
>0.40 – 0.50	0.67	0.84
>0.50 – 0.60	0.61	0.81
>0.60 – 0.70	0.56	0.78
>0.70 – 0.80	0.51	0.76
>0.80 – 0.90	0.47	0.75
>0.90 – 1.00	0.44	0.73

^a North oriented means within 45 degrees of true north.

R402.4.1.2 Testing; Add a last paragraph to read as follows:

Mandatory testing shall only be performed by individuals that are certified to perform air infiltration testing certified by national or state organizations as approved by the building official. The certified individuals must be an independent third-party entity, and may not be employed; or have any financial interest in the company that constructs the structure.

C402.4.2 Minimum skylight fenestration area; add exception # 6 to read as follows:

6. Storm shelters complying with ICC 500.

C402.4.3 Maximum U-factor and SHGC; add exception to read as follows:

Exception: The maximum U-factor and solar heat gain coefficient (SHGC) for fenestration shall not be required in storm shelters complying with ICC 500.

R403.3.3 Duct Testing (Mandatory) Add a last paragraph to read as follows:

Mandatory testing shall only be performed by individuals that are certified to perform duct testing leakage testing certified by national or state organizations as approved by the building official. The certified individuals must be an independent third-party entity, and may not be employed; or have any financial interest in the company that constructs the structure.

Section R405.6.2; add the following sentence to the end of paragraph:

Acceptable performance software simulation tools may include, but are not limited to, REM Rate™, Energy Gauge and IC3. Other performance software programs accredited by RESNET BESTEST and having the ability to provide a report as outlined in R405.4.2 may also be deemed acceptable performance simulation programs and may be considered by the building official.

DIVISION 10 PROPERTY MAINTENANCE CODE

Sec. 3.02.451 - International Property Maintenance Code amendments:

The International Property Maintenance Code is hereby adopted as it is written.

DIVISION 11 SWIMMING POOL AND SPA CODE

Sec. 3.02.501 - International Swimming Pool and Spa Code amendments:

The following noted portions of the International Swimming Pool and Spa Code are hereby amended to read as follows

Section 102.9 Other laws; amend to read as follows:

Section 102.9 Other laws. The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law, to include but not limited to:

1. Texas Department of State Health Services (TDSHS); Standards for Public Pools and Spas; §285.181 through §285.208, (TDSHS rules do not apply to pools serving one- and two family dwellings).
2. Texas Department of Licensing and Regulation (TDLR); 2012 Texas Accessibility Standards (TAS), TAS provide the scoping and technical requirements for accessibility for Swimming Pool, wading pools and spas and shall comply with 2012 TAS, Section 242. (TAS rules do not apply to pools serving one- and two family dwellings).

Exception: Elements regulated under Texas Department of Licensing and Regulation (TDLR) and built in accordance with TDLR approved plans, including any variances or waivers granted by the TDLR, shall be deemed to be in compliance with the requirements of this Chapter.

Section 103.1 Creation of enforcement agency; amend to read as follows:

Section 103.1 Creation of enforcement agency. The Building Inspections Department of the City of Celina is hereby created and the official in charge thereof shall be known as the *code official*. The Health Department of the City of Celina is hereby created and the official in charge thereof shall be known as the *code official* for operation and maintenance of any public swimming pool in accordance this code, local and state law.

Section 107.4 Violation penalties; Delete section entirely:

Section 107.5 Stop work orders; amend to read as follows:

107.5 Stop work orders. Upon notice from the code official, work on any system that is being done contrary to the provisions of this code or in a dangerous or unsafe manner shall immediately cease. Such notice shall be in writing and shall be given to the owner of the property, or to the owner's agent, or to the person doing the work. The notice shall state the conditions under which work is authorized to resume. Where an emergency exists, the code official shall not be required to give a written notice prior to stopping the work. Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be in violation of this code.

Section 202 definitions; create definition:

Health Department of City of Celina: The Health Department of the City of Celina shall regulate the operation of public pools. Routine inspections on pools and spas open to the public are conducted to document compliance with the standards set forth in State law.

Section 305.1 General; amend to read as follows:

Section 305.1 General. The provisions of this section shall apply to the design of barriers for all aquatic vessels.

These design controls are intended to provide protection against the potential drowning and near drowning by restricting access to such vessels. These requirements provide an integrated level of protection against potential drowning through the use of physical barriers and warning devices.

Exceptions:

1. In One- and two-family dwellings spas and hot tubs with a lockable safety cover that complies with ASTM F 1346.
2. In One- and two-family dwellings swimming pools with a *powered safety cover* that complies with ASTM F 1346.

Section 305.2 Outdoor swimming pools and spas; amend to read as follows:

Section 305.2 Outdoor swimming pools and spas. All outdoor aquatic vessels and indoor swimming pools shall be surrounded by a barrier that complies with Sections 305.2.1 through 305.7 and in accordance with the Texas Administrative Code, Texas Health and Safety Code 757 for public pools.

Section 305.2.7 Chain link dimensions; add section 305.2.7.1 to read as follows:

Section 305.2.7.1 Chain link fencing prohibited. Chain link fencing is not permitted as a barrier in public pools built after January 1, 1994.

Section 305.4 Structure wall as a barrier; amend to read as follows:

Section 305.4 Structure wall as a barrier. Where a wall of a one and two family dwelling or its accessory structure serves as part of a barrier and where doors or windows provide direct access to the pool or spa through that wall, one of the following shall be required:

1. Unchanged
2. Unchanged
3. Unchanged

The wall of a building with windows in accordance with 2015 International Building Code, Section 1030 in a Group R2 occupancies shall not be used as part of pool enclosure. Other windows that are part of a pool yard enclosure shall be permanently closed and unable to be opened for public pools.

Section 305.6 Natural barriers; amend to read as follows:

Section 305.6 Natural barrier used in one and two family dwellings. In the case where the vessel area abuts the edge of a lake or other natural body of water, public access is not permitted or allowed along the shoreline, and required barriers extend to and beyond the water's edge a minimum of eighteen (18) inches, a barrier is not required between the natural body of water shoreline and the vessel.

Section 307.9 Accessibility; add exception to read as follows:

Exception: Components of projects regulated by and registered with Architectural Barriers Division of Texas Department of Licensing and Regulation shall be deemed to be in compliance with the requirements of this chapter.

Section 310.1 General: amend to read as follows:

310.1 General. Suction entrapment avoidance for aquatic vessels shall be provided in accordance with APSP 7 or for public swimming pools in accordance with State of Texas Rules for Public Swimming Pools and Spas, Title 25 TAC Chapter 265 Subchapter L, Rule §265.190 [remainder unchanged]

Section 313.7 Emergency shutoff switch: amend to read as follows:

313.7 Emergency shutoff switch for spas and hot tubs. A clearly labeled emergency shutoff or control switch for the purpose of stopping the motor(s) that provide power to the recirculation system and jet system shall be installed

at a point readily accessible to the users and not less than 1.5 m (5 ft.) away, adjacent to, and within sight of the spa or hot tub. This requirement shall not apply to one and two family dwellings.

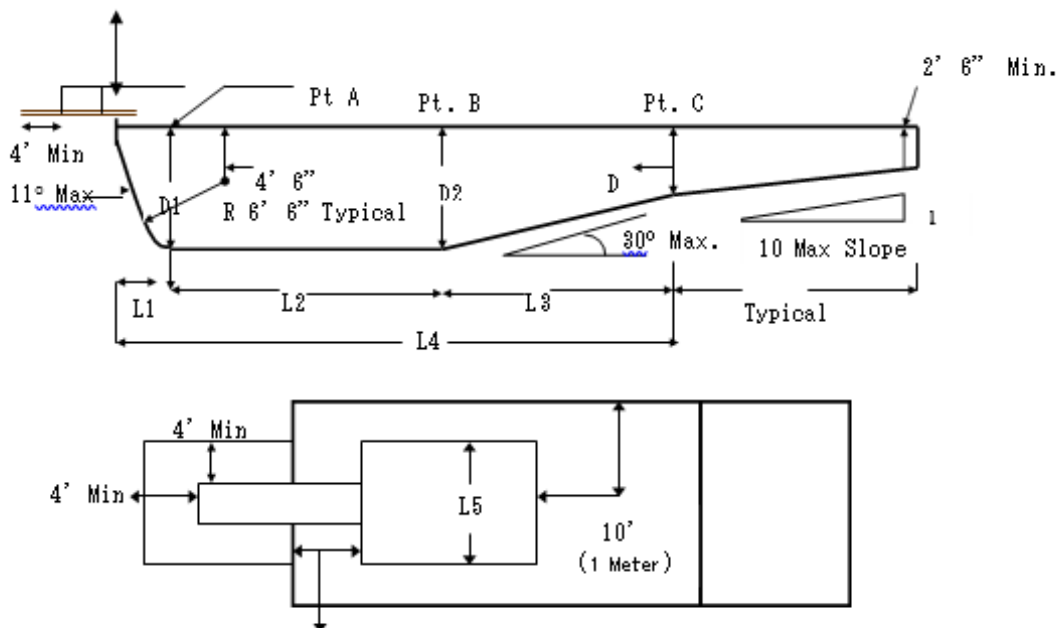
Section 402.12 Water envelopes; amend to read as follows:

Section 402.12 Water envelopes. The minimum diving water envelopes shall be in accordance with ~~Table 402.12~~ Texas department of State Health services, Administrative Code Title 25, Chapter 265, Section 186 (e) and Figure: 25 TAC 256.186 (e) (6). (~~Delete Table 402.12 and Figure 402.12~~)

: Figure: 25 TAC §265.186 (e) (6)

Maximum Diving Board Height Over Water	¾ Meter	1 Meter	3 Meters
Max. Diving Board Length	12 ft.	16 ft.	16 ft.
Minimum Diving Board Overhang	2 ft. 6 in.	5 ft.	5 ft.
D1 Minimum	8 ft. 6 in.	11 ft. 2 in.	12 ft. 2 in.
D2 Minimum	9 ft.	10 ft. 10 in.	11 ft. 10 in.
D3 Minimum	4 ft.	6 ft.	6 ft.
L1 Minimum	4 ft.	5 ft.	5 ft.
L2 Minimum	12 ft.	16 ft. 5 in.	19 ft. 9 in.
L3 Minimum	14 ft. 10 in.	13 ft. 2 in.	13 ft. 11 in.
L4 Minimum	30 ft. 10 in.	34 ft. 7 in.	38 ft. 8 in.
L5 Minimum	8 ft.	10 ft.	13 ft.
H Minimum	16 ft.	16 ft.	16 ft.
From Plumbet to Pool Wall at Side	9 ft.	10 ft.	11 ft. 6 in.
From Plumbet to Adjacent Plumbet	10 ft.	10 ft.	10 ft.

H (Overhead Obstruction or Ceiling)



(Reason: To avoid conflict with 25 TAC Chapter 265)

Section 402.13 Ladders for diving equipment: amend to read as follows:

Section 402.13 Ladders for diving equipment. Ladders shall be provided with two grab rails or two handrails. There shall be a uniform distance between ladder treads with a, 7 inch (178 mm minimum) distance and 12 inch (305 mm) maximum distance. Supports, platforms, steps, and ladders for diving equipment shall be designed to carry the anticipated loads. Steps and ladders shall be of corrosion-resistant material, easily cleanable and with slip-resistant tread;

Exception: The distance between treads for the top and bottom riser can vary.

Section 411.2.1 Tread dimensions and area & 411.2.2 Risers: amend to read as follows:

Section 411.2.1 Tread dimensions and area. Treads shall have a minimum unobstructed horizontal depth (i.e., horizontal run) of 12 inches and a minimum width of 20 inches. ~~not be less than 24 inches (607mm) at the leading edge. Treads shall have an unobstructed surface area of not less than 240 square inches (154838mm²) and an unobstructed horizontal depth of not less than 10 inches (254 mm) at the center line.~~

Section 411.2.2 Risers. Risers for steps shall have a maximum uniform height of 10 inches, with the bottom riser height allowed to taper to zero except for the bottom riser, shall have a uniform height of not greater than 12 inches (305 mm) measured at the center line. The bottom riser height is allowed to vary to the floor

Section 411.5.1 Swimouts & 411.5.2 Underwater seats and benches: amend to read as follows:

Section 411.5.1 Swimouts. Swimouts, located in either the deep or shallow area of a pool, shall comply with all of the following:

1. Unchanged
2. Unchanged
3. Unchanged
4. The leading edge shall be visibly set apart and provided with a horizontal solid or broken stripe at least 1 inch wide on the top surface along the front leading edge of each step. This stripe shall be plainly visible to persons on the pool deck. The stripe shall be a contrasting color to the background on which it is applied, and the color shall be permanent in nature and shall be a slip-resistant surface

Section 411.5.2 Underwater seats and benches. Underwater seats and benches, whether used alone or in conjunction with pool stairs, shall comply with all of the following:

1. Unchanged
2. Unchanged
3. Unchanged
4. Unchanged
5. The leading edge shall be visually set apart and provided with a horizontal solid or broken stripe at least 1 inch wide on the top surface along the front leading edge of each step. This stripe shall be plainly visible to persons on the pool deck. The stripe shall be a contrasting color to the background on which it is applied, and the color shall be permanent in nature and shall be a slip-resistant surface.
6. Unchanged
7. Unchanged

Section 603.2 Class D-2 pools: amend to read as follows:

Section 603.2 Class D-2 pools. Where a Class D-2 pool has a bather accessible depth greater than 4 1/2 feet (1372 mm), the floor shall have a distinctive marking at the 4 1/2 feet (1372 mm) water depth.

Section 603.2 Class A and B pools: Class A and B pools over 5 feet deep: the transition point of the pool from the shallow area to the deep area of the pool shall be visually set apart with a 4-inch minimum width row of floor tile, a painted line, or similar means using a color contrasting with the bottom; and a rope and float line shall be provided between 1 foot and 2 feet on the shallow side of the 5-foot depth along and parallel to this depth from one side of the pool to the other side. The floats shall be spaced at not greater than 7-foot intervals; and the floats shall be secured

so they will not slide or bunch up. The stretched float line shall be of sufficient size and strength to offer a good handhold and support loads normally imposed by users. If the owner or operator of the pool knows or should have known in the exercise of ordinary care that a rope or float is missing, broken, or defective, the problem shall be promptly remedied

Section 610.5.1 Uniform height of 9 inches: amend to read as follows:

610.5.1 Uniform height of 10 inches. Except for the bottom riser, risers at the centerline shall have a maximum uniform height of 10 inches (~~229~~ 254 mm). The bottom riser height shall be permitted to vary from the other risers.

Section 804 Diving Water Envelopes: amend to read as follows:

Section 804.1 General. The minimum diving water envelopes shall be in accordance with ~~Table 804.1 and Figure 804.1. Negative construction tolerances shall not be applied to the dimensions of the minimum diving water envelopes given in table 804.1~~ the manufacturer's specifications.

DIVISION 12 EXISTING BUILDING CODE

Sec. 3.02.551 - International Existing Building Code amendments:

The following noted portions of the International Existing Building Code are hereby amended to read as follows

Section 102.4 Referenced codes and standards; amend to read as follows:

Section 102.4 Referenced codes and standards. The codes, when specifically adopted, and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.4.1 and 102.4.2.

Section 202 Definitions; amend definition of Existing Building to read as follows:

Existing Building - A building, structure, or space, with an approved final inspection issued under a code edition which is at least 2 published code editions preceding the currently adopted building code; or a change of occupancy.

Section 402. Additions; add section 402.6 to read as follows:

402.6 Additions to Group E facilities. For additions to Group E occupancies, storm shelters shall be provided in accordance with Section 1107.1.

Section 405.1.2 Existing fire escapes; amend to read as follows:

Section 405.1.2 Existing fire escapes. Existing fire escapes shall continue to be accepted as a component in the means of egress in existing buildings only. Existing fire escapes shall be permitted to be repaired or replaced.

Section 405.1.3 New fire escapes; delete entire section:

Section 406.2 Replacement window opening control devices; amend to read as follows:

Section 406.2 Replacement window opening control devices. In Group R-2 or R-3 buildings containing dwelling units, window opening control devices complying with ASTM F 2090 shall be installed where an existing window is replaced and where all of the following apply to the replacement window opening control device, after operation to release the control device allowing the window to fully open, shall not reduce the minimum net clear opening area of the window unit to less than the area required by ~~Section 4029.2-1030.2~~ Section 4029.2-1030.2 of the International Building Code.
{Remainder unchanged}

Section 406.3 Replacement window emergency escape and rescue openings; amend to read as follows:

Section 406.3 Replacement window emergency escape and rescue openings. Where windows are required to provide emergency escape and rescue openings in Group R-2 and R-3 occupancies, replacement windows shall be exempt from the requirements of Sections 1030.2, 1030.3 and 1030.5 of the International Building Code provided the replacement window meets the following conditions: **{Remainder unchanged}**

Section 408.3 Flood hazard areas; Delete entire section:

Section 409.1 Conformance; add an exception to read as follows:

Exception: Moved historic buildings need not be brought into compliance with the exception of new construction features required as the result of such movement, including but not limited to foundations and/or other structural elements.

Section 410.1 Scope; adds an exception to read as follows:

Exception: Components of projects regulated by and registered with Architectural Barriers Division of Texas Department of Licensing and Regulation shall be deemed to be in compliance with the requirements of this chapter.

Section 410.4.2 Complete change of occupancy; Add Number 7 to the list of requirements to read as follows:

7. At least one accessible family or assisted use toilet room shall be provided in accordance with Chapter 11 of the International Building Code.

Section 601.3 Flood hazard areas; delete entire section:

Section 602.3 Glazing in hazardous locations; amend to read as follows:

602.3 Glazing in hazardous locations. Replacement glazing in hazardous locations shall comply with the safety glazing requirements of the International Building Code, International Energy Conservation Code, or International Residential Code as applicable.

Section 606.2.4 Flood hazard areas; delete entire section:

Section 607.1 Material; add a code reference to read as follows:

Section 607.1 Material. Existing electrical wiring and equipment undergoing *repair* shall be allowed to be repaired or replaced with like material, in accordance with the requirements of NFPA 70.

Section 701.3 Flood hazard areas; Delete entire section:

Section 702.6 Material and methods; amend to read as follows:

Section 702.6 Materials and methods. All new work shall comply with the materials and methods requirements in the International Building Code, International Energy Conservation Code, International Mechanical Code, National Electrical Code, and International Plumbing Code, as applicable, that specify material standards, detail of installation and connection, joints, penetrations, and continuity of any element, component, or system in the building.

Section 802.1 General; amend to read as follows:

802.1 General. Alteration of buildings classified as special use and occupancy as described in Chapter 4 of the International Building Code shall comply with the requirements of Section 801.1 and the scoping provisions of Chapter 1 where applicable.

Section 803.5.1 Minimum requirement; amend to read as follows:

Section 803.5.1 Minimum requirement. Every portion of open-sided walking surfaces, including mezzanines, equipment platforms, aisles, stairs, ramps and landings that are not provided with guards, or those in which the existing guards are judged to be in danger of collapsing, shall be provided with guards.

Section 804.1 Scope; add sentence to end of paragraph to read as follows:

For the purpose of fire sprinkler protection and fire alarm requirements included in this section, the work area shall be extended to include at least the entire tenant space or spaces bounded by walls capable of resisting the passage of smoke containing the subject work area, and if the work area includes a corridor, hallway, or other exit access, then such corridor, hallway, or other exit access shall be protected in its entirety on that particular floor level.

Section 804.2.2 Groups A, B, E, F-1, H, I, M, R-1, R-2, R-4, S-1 and S-2, Number 2; amend Exception to read as follows:

Exception: Where the building does not have sufficient municipal water supply for design of a fire sprinkler system available to the floor without installation of a new fire pump, fire sprinkler protection shall not be required.

Section 804.2.5 Supervision; amend Exception to read as follows:

Exception: Supervision is not required where the Fire Code does not require such for new construction.

Section 804.3 Standpipes; amend section to read as follows:

804.3 Standpipes. Refer to Section 1103.6 of the Fire Code for retroactive standpipe requirements.
{Delete rest of Section 804.3.}

Section 805.2 General; Remove Exception #1

Exception 1. ~~Where the work area and the means of egress serving it complies with NFPA101.~~
Exception 2: 1.

Section 805.3.1.1 Single exit buildings; delete #4

4. ~~In Group R-4 Occupancies, the maximum occupant load excluding staff is 16.~~

Section 805.3.1.2 Fire escapes required; amend to read as follows:

805.3.1.2 Fire Escapes required. For other than Group I-2, where more than one exit is required an existing fire escape complying with section 805.3.1.2.1, shall be accepted as providing one of the required means of egress.

Section 805.3.1.2.1 Fire escape access and detail; delete # 3 and amend to read as follows:

805.3.1.2.1 Fire Escape access and details.

1. Unchanged
2. Access to a fire escape shall be through a door...
- ~~3. Delete whole section~~
- ~~4-3~~
5. 4. In all building of Group E occupancy up to and including the 12th grade, building of Group I occupancy, boarding houses, and childcare centers, ladders of any type are prohibited on fire escapes used as a required means of egress.

Section 805.3.1.2.2 Construction; delete entire section

Section 805.3.1.2.3 Dimensions; delete entire section.

Section 805.5.2 Transoms; add sentence at end of paragraph to read as follows:

B and E occupancies are not included in the list and consideration should be given to adding them depending on existing buildings stock.

Section 806.2 Stairways and escalators in existing buildings; add an exception to read as follows:

Exception: Components of projects regulated by and registered with Architectural Barriers Division of Texas Department of Licensing and Regulation shall be deemed to be in compliance with the requirements of this chapter.

Section 904.1 Automatic sprinkler systems; add sentence to read as follows:

For the purpose of fire sprinkler protection and fire alarm requirements included in this section, the work area shall be extended to include at least the entire tenant space or spaces bounded by walls containing the subject work area, and if the work area includes a corridor, hallway, or other exit access, then such corridor, hallway, or other exit access shall be protected in its entirety on that particular floor level.

Section 904.1.1 High-rise buildings; amend to read as follows:

904.1.1 High-rise buildings. An automatic sprinkler system shall be provided in work areas of high-rise buildings.

Section 1103.5 Flood hazard areas; delete entire section

Chapter 11 Additions; add section 1107 Storm Shelters to read as follows:

Section 1107 Storm Shelters

1107.1 Addition to a Group E occupancy. Where an addition is added to an existing Group E occupancy located in an area where the shelter design wind speed for tornados is 250 mph in accordance with Figure 304.2(1) of ICC 500 and the occupant load in the addition is 50 or more, the addition shall have a storm shelter constructed in accordance with ICC 500.

Exceptions:

1. Group E day care facilities.
2. Group E occupancies accessory to places of religious worship.
3. Buildings meeting the requirements for shelter design in ICC 500.

1107.1.1 Required occupant capacity. The required occupant capacity of the storm shelter shall include all buildings on the site, and shall be the total occupant load of the classrooms, vocational rooms and offices in the Group E occupancy.

Exceptions:

1. Where an addition is being added on an existing Group E site, and where the addition is not of sufficient size to accommodate the required occupant capacity of the storm shelter for all of the buildings on-site, the storm shelter shall at a minimum accommodate the required capacity for the addition.
2. Where approved by the code official, the required occupant capacity of the shelter shall be permitted to be reduced by the occupant capacity of any existing storm shelters on the site.
3. For public schools, the required occupant capacity of the storm shelter shall be calculated by multiplying 1.05 by the Texas Education Agency maximum student capacity for the classroom and laboratory spaces according to Title 19, Part 2, Chapter 61, Subchapter CC, Section 61.1036 of the Texas Administrative Code. The Design Professional in Responsible Charge shall provide an analysis showing the calculation of the maximum student capacity on the construction documents.

Section 1201.4 Flood hazard areas; delete entire section

Section 1302.7 Flood hazard areas; delete entire section

Section 1401.2 Applicability; amend to read as follows:

1401.2 Applicability. Structures existing prior to the date of an approved final inspection issued under a code edition which is at least two published code editions preceding the currently adopted building code; or a change of occupancy, ~~rest of section un-changed~~.

Section 1401.2.3 Additions; add section 1401.2.3.1 to read as follows:

1401.2.3.1 Additions to Group E facilities. For additions to Group E occupancies, storm shelters shall be provided in accordance with Section 1107.1.

Section 1401.3.2 Compliance with other codes; amend to read as follows:

1401.3.2 Compliance with other codes. Buildings that are evaluated in accordance with this section shall comply with the International Fire Code and International Property Maintenance Code.

Chapter 16 – Referenced Standards ICC; amend to read as follows:

IECC - Edition as adopted by the State of Texas International Energy Conservation Code 301.2, 702.6, 708.1, 811.1, 908.1

DIVISION 13 STORM SHELTER CODE

Section 3.02.601 ICC/NSSA 500-2014 (referenced by the 2015 IBC and 2015 IRC) ***Amendments***

The following noted portions of the International Code Council - National Storm Shelter Association 500 are hereby amended to read as follows

SECTION 106 INSPECTIONS AND STRUCTURAL OBSERVATIONS

106.2 Special inspections. Special inspections shall be provided for construction and installation of materials as required by the authority having jurisdiction in accordance with the applicable building code and Section 106.3 of this standard. It shall be permitted for one statement of special inspections to apply to both host and shelter construction.

Exception: Special inspections and tests are not required for storm shelter construction of a minor nature or as warranted by conditions in the jurisdiction as approved by the building official.

SECTION 202 DEFINITIONS

CRITICAL SUPPORT SYSTEMS. Structures, systems and components required to ensure the health, safety and well-being of occupants. Critical support systems include, but are not limited to, potable and waste water systems, electrical power systems, life safety systems and HVAC ventilation systems.

SECTION 306 COMPONENT DESIGN AND TESTING

306.4.1. Impact-protective systems in tornado shelters. Impact-protective systems in tornado shelters shall be permanently affixed. All operable impact-protective systems shall be manually operable from inside the shelter.

SECTION 309 PENETRATION OF STORM SHELTER ENVELOPE BY SYSTEMS AND UTILITIES

309.1 Penetration of storm shelter envelope by mechanical, electrical and plumbing systems. Penetrations through the storm shelter envelope of mechanical, electrical and plumbing systems, including piping and utility lines, larger than 3 ½ square inches (2258 mm²) in area for rectangular penetrations or 2 ½ 1/16 inches (52.38 63.5 mm) in diameter, shall be considered openings and shall be protected in accordance with Section 306.3. Penetrations of the storm shelter envelope shall not degrade the structural integrity of the storm shelter and missile impact resistance of the storm shelter envelope.

SECTION 402 HAZARDOUS MATERIALS; delete entire section:

SECTION 504 SIGNAGE FOR COMMUNITY SHELTERS

504.1.2.1 Location of identifying sign. The identifying sign shall be posted in a prominent location 60 inches maximum above the finished floor ~~to the centerline of the sign, measured from the baseline of the highest tactile character.~~

SECTION 601 FIRE-RESISTANT CONSTRUCTION

601.1 Fire separation. ~~Fire barriers and horizontal assemblies separating spaces or areas designated as storm shelters from other building areas shall have a minimum fire-resistance rating of 2 hours and shall be constructed in accordance with the applicable building code.~~

Walls or horizontal assemblies between storm shelters and other building areas shall be fire barriers or horizontal assemblies with a minimum fire-resistance rating of 2 hours constructed in accordance with the applicable building code.

Exception: Fire separation assemblies are not required for residential shelters.

CHAPTER 7: SHELTER ESSENTIAL FEATURES AND ACCESSORIES

SECTION 701 GENERAL

701.1 Protection of critical support systems. Critical support systems shall remain functional for the design storm event and minimum period of shelter occupancy (24 hours for hurricane shelters, 2 hours for tornado shelters). Critical support systems located outside of the storm shelter areas shall be protected by a means that meets the wind pressure and missile impact requirements of Chapter 3, and, as applicable, the flood-resistance requirements of Chapter 4.

Exception: The requirements of this section shall not apply to automatic sprinkler systems and fire alarm systems.

SECTION 702 TORNADO SHELTERS

702.2.5 Water supply and storage. The capacity of plumbing and waste disposal systems to supply potable water and contain or dispose of waste water or solid wastes shall be determined in accordance with Table 702.2.5.

<u>Table 702.2.5</u> <u>WATER SUPPLY AND WASTE WATER STORAGE</u> <u>TORNADO SHELTERS</u>		
<u>STORM SHELTER TYPE</u>	<u>POTABLE WATER</u>	<u>WASTE WATER</u>
<u>Residential, one- and two-family dwellings</u>	<u>Not Required</u>	<u>Not Required</u>
<u>Residential, other</u>	<u>Not Required</u>	<u>Not Required</u>

<u>Community (<= 50 occupants)</u>	<u>Not Required</u>	<u>Not Required</u>
<u>Community (> 50 occupants)</u>	<u>1/12 gallon per occupant</u>	<u>1/8 gallon per occupant</u>

SECTION 4

CUMULATIVE REPEALER CLAUSE

This Ordinance shall be cumulative of all other Ordinances and shall not repeal any of the provisions of such Ordinances except for those instances where there are direct conflicts with the provisions of this Ordinance. Ordinances, or parts thereof, in force at the time this Ordinance shall take effect and that are inconsistent with this Ordinance are hereby repealed to the extent that they are inconsistent with this Ordinance. Provided however, that any complaint, action, claim or lawsuit which has been initiated or has arisen under or pursuant to such other Ordinances on this date of adoption of this Ordinance shall continue to be governed by the provisions of such Ordinance and for that purpose the Ordinance shall remain in full force and effect.

SECTION 5

SAVINGS CLAUSE

All rights and remedies of the City of Celina, Texas are expressly saved as to any and all violations of the provisions of any other ordinance affecting zoning which have secured at the time of the effective date of this ordinance; and, as to such accrued violations and all pending litigation, both civil and criminal, whether pending in court or not, under such ordinances same shall not be affected by this Ordinance but may be prosecuted until final disposition by the court.

SECTION 6

SEVERABILITY

The provisions of the Ordinance are severable. However, in the event this Ordinance or any procedure provided in this Ordinance becomes unlawful, or is declared or determined by a judicial, administrative or legislative authority exercising its jurisdiction to be excessive, unenforceable, void, illegal or otherwise inapplicable, in whole or in part, the remaining and lawful provisions shall be of full force and effect and the City shall promptly promulgate new revised provisions in compliance with the authority's decisions or enactment.

SECTION 7

PENALTY

Any person, firm or corporation violating any of the provisions or terms of this ordinance or of the Code of Ordinances as amended hereby, shall be subject to the same penalty as provided for in the Code of Ordinances of the City of Celina, and upon conviction shall be punished by a fine not to exceed Two Thousand Dollars (\$2,000) for each offense, and a separate offense shall be deemed committed upon each day during or on which a violation occurs and continues.

If the governing body of the City of Celina determines that a violation of this Ordinance has occurred, the City of Celina may bring suit in district court to enjoin the person, firm, partnership, corporation, or association from engaging in the prohibited activity.

SECTION 8

PUBLICATION CLAUSE

The City Secretary of the City of Celina is hereby directed to publish in the Official Newspaper of the City of Celina the Caption, and Effective Date Clause of this Ordinance as required by Section 52.013 of the Local Government Code.

SECTION 9
ENGROSSMENT AND ENROLLMENT

The City Secretary is hereby directed to engross and enroll this Ordinance by copying the descriptive Caption in the minutes of the City Council and by filing this Ordinance in the Ordinance records of the City.

SECTION 10
EFFECTIVE DATE

This Ordinance shall become effective from and after its date of passage in accordance with law.

AND IT IS SO ORDAINED.

PASSED AND APPROVED by the City Council of the City of Celina, Texas this ____ day of _____, 2019.

 Sean Terry, Mayor
 City of Celina, Texas

ATTEST:

 Vicki Faulkner, City Secretary
 City of Celina, Texas

[SEAL]

APPROVED AS TO FORM:

 City Attorney
 City of Celina, Texas

Attachment: Ordinance (2015 Model Codes Presentation. (McAfee))



City Secretary
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Vicki Faulkner, City Secretary
Date: February 12, 2019
Re: Staff reports

Action Requested:
Staff Reports attached

Background Information:
Monthly staff reports.

Board Review/Citizen Input:

Alternatives:

Financial Considerations:

Legal Review:

Supporting Documents:

Staff Recommendation:



Celina Fire Department
City of Celina, Texas

MEMORANDUM

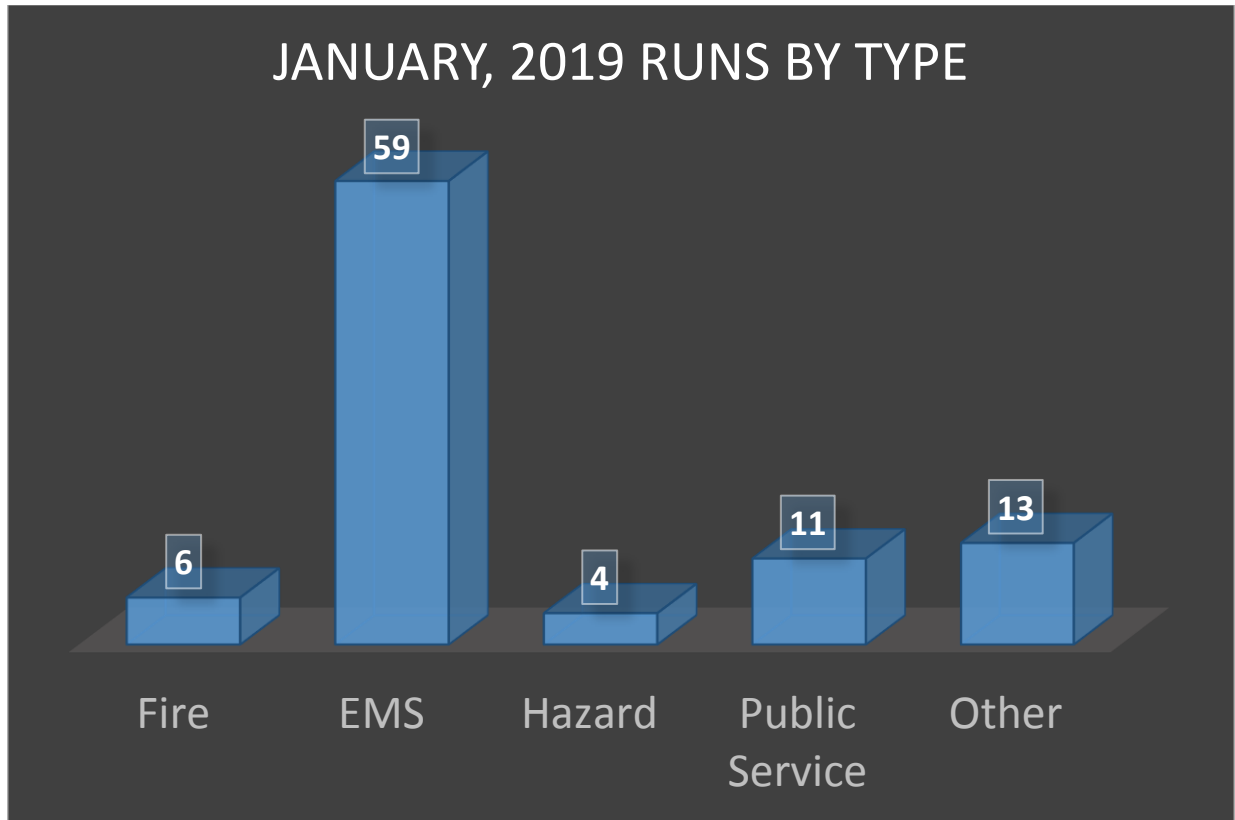
To: Honorable Mayor Sean Terry and the Celina City Council
From: Mark Metdker, Fire Chief/Fire Marshal
CC: Jason Laumer, City Manager
Date: 1/12/2019
Re: January 2019 Fire Department Activity Report

This is the December Fire Department monthly report. It will detail the activity from Operations, EMS, Emergency Management and Fire Prevention. As always, thanks for your continued support of your Fire Department. Please contact me with any questions or comments.

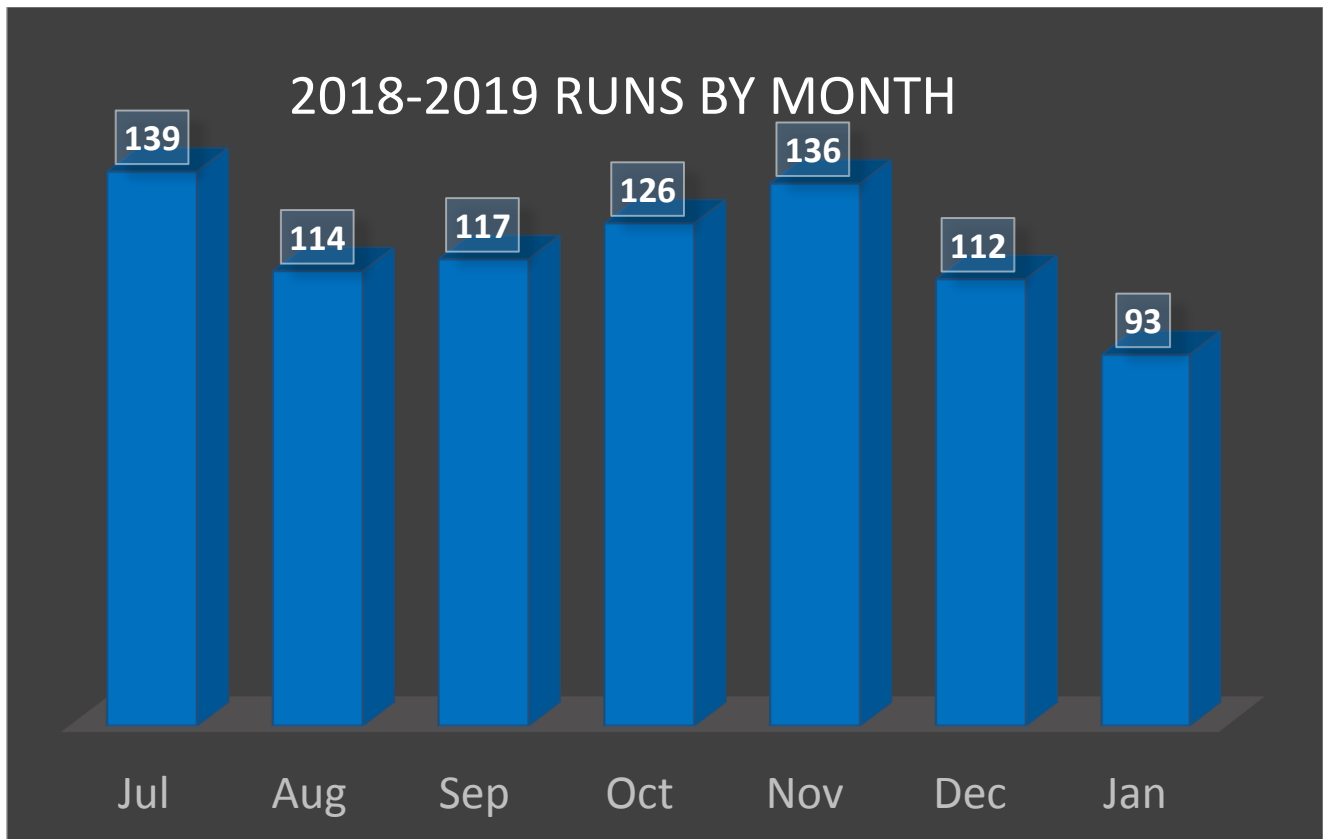
Calls for Service

The cold weather has kept our citizens inside a safer during January. Celina FD had 93 calls for service, with 59 of them being EMS related.

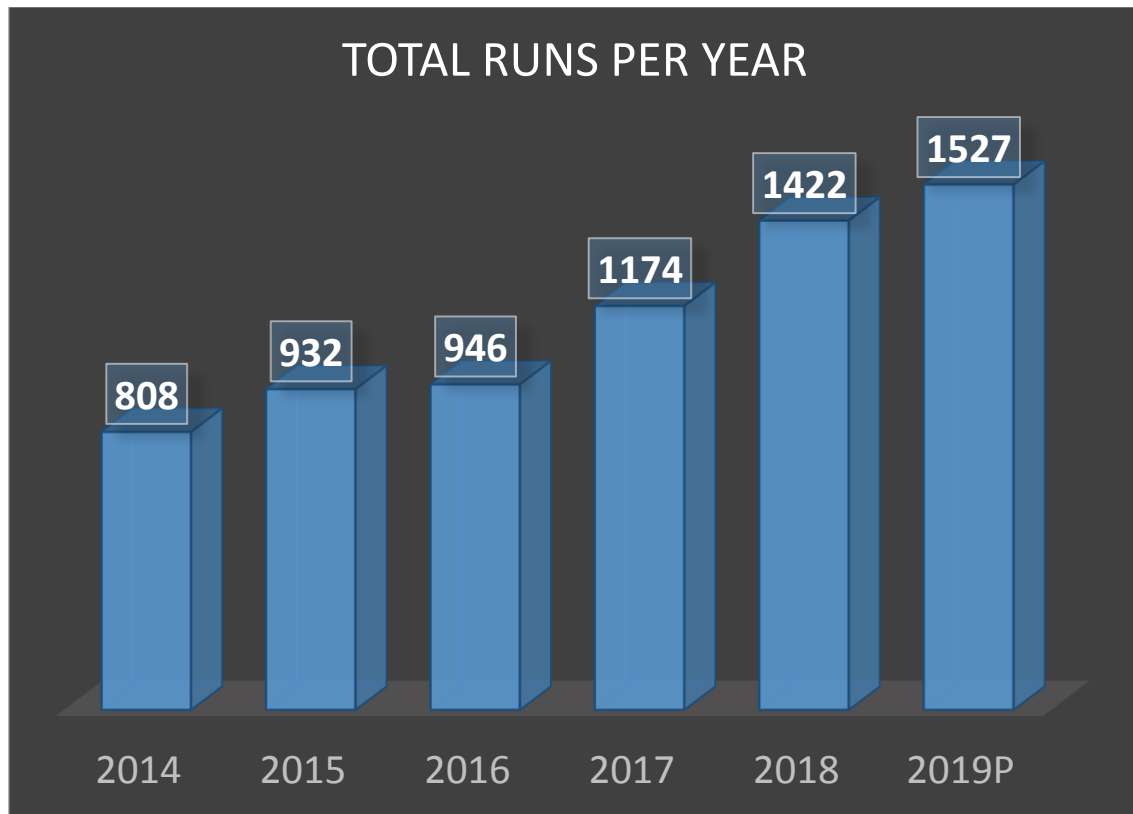
Attachment: FireJanuaryReport2019 (Staff Reports)



This chart shows the trend of call volume over the last half of 2018 and January of 2019.



As the population increases, so does the FD call volume. We begin by predicting a conservative 10% increase.



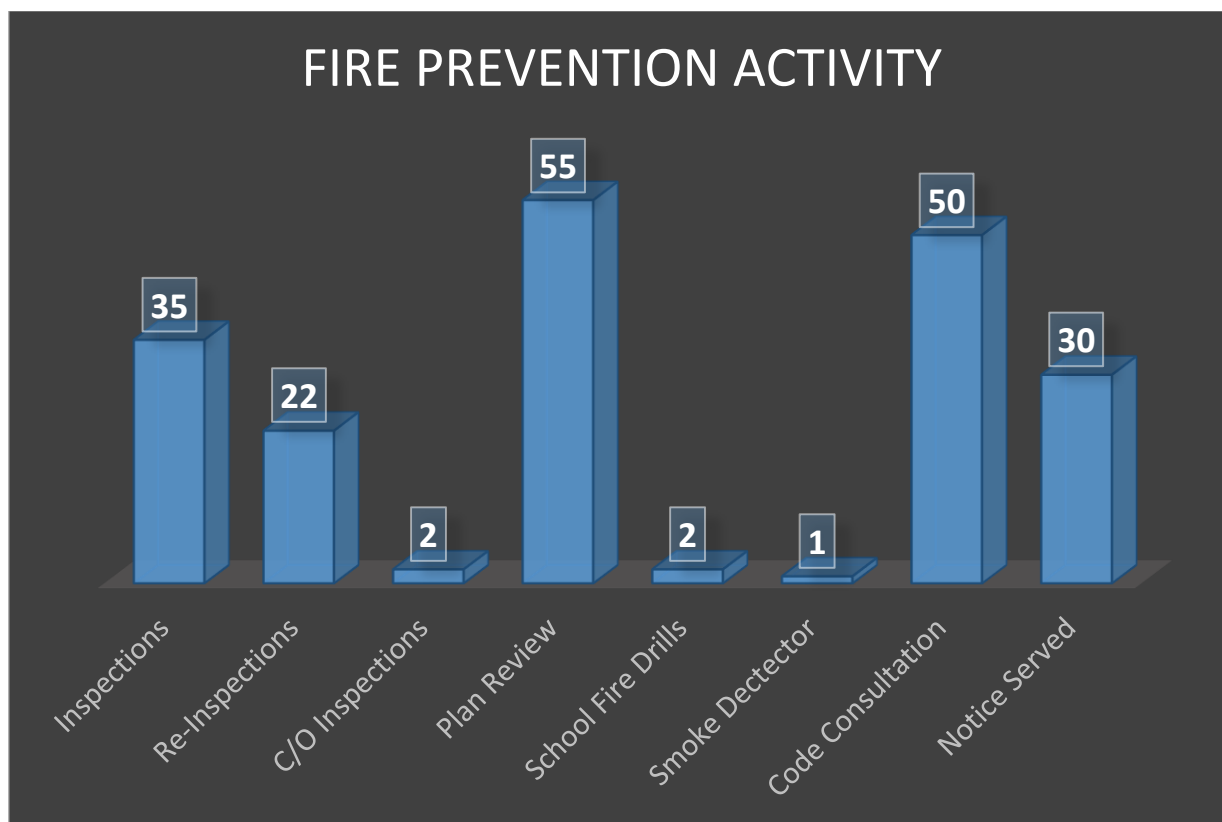
Fire Prevention Monthly Report

Month – January 2019

Fire Prevention and Inspections

Smoke Detector Battery Replacement Program
 Weekly DRC Meetings on New Construction Projects
 Elementary School # 8 Prosper New Project (New Construction)
 Celina Sports Complex (New Construction)
 BGREA Development Malone / Oklahoma (New Construction)
 Keller Williams Building (New Construction)
 Preston Plaza Building (New Construction)
 Celina Plaza Mall (New Construction)
 Kimley Horn Tenant Finish out
 Fire Station # 2
 Fire Station # 3

The Fire Marshal's Office had a total of 197 contacts for January, 2019.



Operations/EMS/Emergency Management/Training

Month – January 2019

Updates

EMS/FIRE

- **North Central Texas Trauma Regional Advisory Council (NCTTRAC)** – Attended a training meeting at the NCTTRAC in Arlington. The subject was the EMS committee meeting. Continued updates on local issues with EMS including inter agency training and collaboration. At this meeting lined up future continuing education opportunities.

- **Baylor Scott and White McKinney Meeting**– Attended EMS/ Hospital partnership meeting discussing Trauma activations and the upcoming infectious disease presentation. Regional meeting of all EMS agencies in the surrounding area.
- **Medical City Plano Medical Director Meeting**- Held monthly meeting with Dr. Meek to discuss trends and overall patient care. Discussed all the new Paramedics that will need to be cleared to act as primary paramedics. QA/QI also covered on all medical calls.
- **CISM Training** – Attended a two-day training session on recognition and dealing with Critical Incident Stress Management. Firefighters are often put in a position where they must deal with the aftermath of very stressful incidents. They sometimes need help working their way through it.
- **TEEX Leadership Symposium** – Several firefighters attended this symposium in Frisco focused on the principles of improving leadership and operations.
- **SGR Servant/Leadership Conference** - Attended the SGR Servant/Leadership Conference in Ft. Worth with several other Celina City Managers.
- **SAFER Grant**- Twelve SAFER grant employees are on shift and are completing various orientation requirements. Six Firefighter/EMT's began Paramedic School at Collin College in January. They will complete their course in August.
- **Smoke Detector Battery Replacement Program**- Continued with the smoke detector battery replacement program to install new smoke detector batteries for all residents.
- **Mutual Aid Gunter and Prosper** – Mutual aid structure fires in Gunter and Prosper.
- **Medical CE** – MCP continued to deliver medical CE's at Station # 1

TRAINING

- **Ropes and Knots Training**- Celina FD conducted 3 days of in house fire training covering the use of ropes and knots. These are skills and knowledge that facilitate much of the rescue, operations and safety activities of every fire department.
- **Extrication** – Ongoing training and practice with the extrication tools to be ready when someone is trapped.
- **Shift Level Training**- All crews participated in shift level training to include all fire ground operations













Public Relations

- 1/27 – Boy Scout Troop Station Tour





Attachment: FireJanuaryReport2019 (Staff Reports)



Attachment: FireJanuaryReport2019 (Staff Reports)



Attachment: FireJanuaryReport2019 (Staff Reports)



Attachment: Fire January Report 2019 (Staff Reports)



Emergency Management

- **Revised Emergency Management EOC Activation Plan** – Revised the draft EOC activation procedure. This includes a ramping up phased approach to EOC activation. This will outline the roles and responsibilities of all major departments within the city and allow for mutual aid from other agencies. This procedure is still a work in progress and will continue to be revised
- **Tested Outdoor Weather Notification-** Tested all LAWS and Warning Sirens in the city. Ensured that all outdoor warning systems are working properly. Updated the monthly testing log to document successful tests
- **Emergency Management Coordinator Meeting** – Attended monthly emergency management coordinator meeting at Collin County Sherriff's Office. Involving all Collin County Emergency managers
- **Tier II Chemical Reports-** Submitted all Tier II chemical storage reports for businesses in the City of Celina to Collin County Emergency Management Department
- **UAV Certification-** Ongoing process for the Federal Aviation certification to operate and deploy a drone UAV. This program will allow for recon of major fires or other extended emergency operations. This drone will have thermal imaging capabilities.
- **Emergency Operations/THIRA Planning-** Continued to refine the City of Celina Specific Emergency Operations plan and Threat/Hazard assessment plan. Currently we are working under Collin County blanket plans. This is the first step in receiving government grants for emergency management projects.

Thanks for your continued support of the Celina Fire Department. If you have any questions or comments, please let me know. mmetdker@celina-tx.gov

Vicki Faulkner

From: Tony Griggs
Sent: Tuesday, February 05, 2019 10:40 AM
To: Department Directors
Subject: Police Department's January 2019 Monthly Report
Attachments: 2019 January Monthly Report.pdf

Attached is the police department's January 2019 Monthly report. We appreciate the support from all of your departments.

Thanks,



Tony Griggs
Chief of Police

Celina Police Department
110 N. Colorado St. Celina, TX 75009
Office: 972.382.2121
FAX: 972.382.3879

tgriggs@celina-tx.gov

Attachment: Police Department's January 2019 Monthly Report (Staff Reports)



CELINA POLICE DEPARTMENT

To: Honorable Mayor, Sean Terry
Celina City Council
Jason Laumer, City Manager

MEMORANDUM

From: Tony Griggs, Chief of Police

Subject: 2018 Racial Profiling Report

Date: January 30, 2019

The Celina Police Department, in accordance with the Texas Racial Profiling Law, collects police contact data for the purpose of identifying and responding (if necessary) to concerns regarding racial profiling practices. The law also requires that the police department submit to their governing body (city council), an annual report of the information collected. The purpose of this report is to provide annual statistical data and analysis of motor vehicle stop data covering the period of January 1, 2018 through December 31, 2018. To accomplish this, this report will focus upon the following topics:

1. How the motor vehicle stop data is collected.
2. An overview of the racial/ethnic data collected.
3. A comprehensive analysis of the data to include any recommendations affecting procedural or policy areas.

How the Motor Vehicle Stop Data Was Collected

The Texas Racial Profiling Law mandates collection of information relating to motor vehicle stops in which a citation is issued and to arrests made as a result of those stops. The collection of this data changed for 2018 to include new reporting requirements. Those requirements added that all warnings be recorded with the same data as citations and whether or not the offender was male or female. The following items were also required to be reported.

1. The race or ethnicity of the individual detained.
2. Whether a search was conducted.
3. Whether the search was consensual.
4. Whether the officer knew the race or ethnicity of the individual detained before detaining that individual.

In 2009, the legislature created law that requires law enforcement agencies to begin collecting data on persons of Middle Eastern decent and report those findings along with other races or ethnicities. In 2017, the legislature retracted the reporting of 'Middle Eastern' and only allowed reporting of Alaska Native / American Indian, Asian, Black, Hispanic/Latino, and White.

Table 1 contains the information collected from motor vehicle stops in 2018 where a citation, warning, arrest, or a combination of those were made. Assignment of race and/or ethnicity to a category is either stated by the stopped person or determined by the officer to best of his or her ability. A consensual search is determined by a request from the officer to conduct a search. The person stopped is under no obligation to consent to the search. If they do not consent, then the officer must have probable cause for the search, which could also be obtained while discovering contraband while conducting a vehicle inventory after an arrest.

Table 1 reads, for example, that we stopped and cited or warned 4059 persons in 2018 with 2971 of them being white. This accounted for 73% of all persons stopped. In 2017, that percentage was also 73%. Of the 4059 stops, only 7% of them were searched and 50% of the searches were consensual. The rest were non-consensual, meaning there was probable cause.

Table 1

YEAR	MALE	FEMALE	TOTAL	ALASKA NATIVE / AMERICAN INDIAN	ASIAN	BLACK	HISPANIC	WHITE	TOTAL	NO	YES	TOTAL
GENDER			4059	RACE					4059	RACE KNOWN PRIOR TO STOP		4059
2018	2593	1466		21	45	369	653	2971		4010	49	
	64%	36%		1%	1%	9%	16%	73%		99%	1%	

MOVING TRAFFIC VIOLATION	PRE-EXISTING KNOWLEDGE	SAME AS OFFENSE	VEHICLE TRAFFIC VIOLATION	VIOLATION OF LAW	TOTAL	CITY STREET	COUNTY ROAD	PRIVATE PROPERTY/OTHER	STATE HIGHWAY	US HIGHWAY	TOTAL
REASON FOR STOP					4059	LOCATION OF STOP					4059
3271	38	7	577	166		2830	286	88	701	154	
81%	1%	0.17%	14%	4%		70%	7%	2%	17%	4%	

NO	YES	TOTAL	NO SEARCH	CONSENT	CONTRABAND IN PLAIN VIEW	INCIDENT TO ARREST	INVENTORY	PROBABLE CAUSE	TOTAL SEARCHES	NO	YES	TOTAL
SEARCH CONDUCTED		4059	REASON OF SEARCH						276	CONTRABAND DISCOVERED?		283
3776	283		3783	137	5	3	4	127		144	139	
93%	7%		93%	50%	1.81%	1.09%	1.45%	46%		51%	49%	

ALCOHOL	DRUGS	OTHER	WEAPONS	TOTAL	CITATION	CITATION AND ARREST	WRITTEN WARNING	WRITTEN WARNING AND ARREST	TOTAL	OUTSTANDING WARRANT	VIOLATION OF PENAL CODE	VIOLATION OF TRAFFIC LAW	TOTAL	NO	YES	TOTAL
DESCRIPTION OF CONTRABAND				153	RESULT OF THE STOP				4059	ARREST BASED ON			90	PHYSICAL FORCED AND BODILY INJURY		4059
44	97	10	2		988	21	3024	26		8	77	5		4059	0	
29%	63%	7%	1%		24%	1%	75%	1%		9%	86%	6%		100%	0%	

Department's Analysis of the Data/Lessons Learned

Agencies across the state are still determining the best and most accurate means of capturing, reporting, and comparing data to achieve meaningful analysis. In addition, collection requirements for 2018 have increased. The data presented in this report contains valuable information regarding police contacts with the public between 1/1/2018 and 12/31/2018. Despite its value, the raw data lacks information relevant to racial profiling trends. Analysis is challenged by a statistically valid comparison variable. The experts in this field identify two sources, census data for our community and DPS data for licensed drivers in our community. Both sources present challenges to any effort made at establishing a fair and accurate analysis. Census data contains information of all residents of a particular community, regardless of the fact they may or may not be among the driving population. Census data is also outdated especially for our city that is growing at a fast rate. DPS data is only available sorted by zip code and 75009 contains driver information for persons living outside the city. DPS data, at least, identifies those persons who ought to be driving in Celina, but certainly cannot account for drivers coming here to work, shop or just passing through. Both of these data integrity issues have a tendency of inflating the overall figures; thus, providing an inaccurate representation of police contacts with the public.

In conclusion, the findings suggest that the Celina Police Department does not currently experience a problem regarding racial profiling practices. There have been (0) complaints of racial profiling from the public. The continuing effort to collect police contact data will enable an on-going evaluation of police practices. Thus, allowing for the citizens of the community to benefit from professional and courteous service from their police department.

Recommendations Addressing Issues of Concern

Beyond the collection of data, the department will continue to publish information about the Racial Profiling Policy to its personnel and the public. Any complaints of racial profiling will be investigated. Most importantly, the department has fully implemented the strategy of Procedural Justice, which requires that all individuals be treated with fairness, given a voice, treated impartially, and within an environment of transparency. Procedural justice fosters trust in the police and the recognition of police authority as legitimate. Procedural justice is a cornerstone of the police department's organizational culture.



Tony Griggs
Chief of Police

Celina Police Department
110 N. Colorado St. Celina, TX 75009
Office: 972.382.2121
FAX: 972.382.3879

tgriggs@celina-tx.gov



**NOTICE OF
CITY COUNCIL REGULAR MEETING
CELINA COUNCIL CHAMBERS 112 N. COLORADO ST., CELINA, TX 75009
Tuesday, January 8, 2019 AT 5:00 PM**

MINUTES

I. CALL TO ORDER AND ANNOUNCE A QUORUM PRESENT:

Attendee Name	Organization	Title	Status	Arrived
Bill Webber	City of Celina	Place 1	Present	
Wayne Nabors	City of Celina	Place 2	Present	
Andy Hopkins	City of Celina	Place 3	Present	
Carmen Roberts	City of Celina	Place 4	Absent	
Mindy Koehne	City of Celina	Place 5	Present	
Chad Anderson	City of Celina	Place 6	Absent	
Sean Terry	City of Celina	Mayor	Present	

Mayor Sean Terry called the meeting to order at 5:00 p.m.

II. PLEDGE OF ALLEGIANCE/INVOCATION:

Mayor Terry led the pledges of allegiance. Pastor Kevin Lykins with First Baptist Church of Celina gave the invocation.

III. PROCLAMATIONS/PRESENTATIONS/OATHS OF OFFICE:

IV. OPEN FORUM:

No public comment was received.

V. WORKSESSION/COMMITTEE REPORTS/STAFF REPORTS:

A. Introduction of new employees. (Toutouchian)

Director of Finance Jay Toutouchian introduced new Purchasing Manager Dawn Berry.

B. Discussion regarding brand standards and positioning/messaging strategy development. (Eisenberg and Associates)

Economic Development Director Alexis Jackson introduced Alan Cooper with Eisenberg and Associates. Mr. Cooper introduced his company and the services they will provide to the Celina.

C. Discussion regarding any and/or all agenda items.

No other items were discussed.

Minutes Acceptance: Minutes of Jan 8, 2019 5:00 PM (Minutes Approval)

VI. EXECUTIVE SESSION:

The Celina City Council adjourned into Executive Session at 5:21 p.m. with City Manager Jason Laumer and City Attorney Lance Vanzant.

The Celina City Council will convene into Executive Session pursuant to Texas Government Code 551.072, Deliberations Regarding Real Property, to deliberate the purchase, exchange, lease or value of real property.

- A. Discussion regarding a resolution authorizing the purchase of certain real property in the downtown area (403 W. Walnut) utilizing CIP funds dedicated for such purposes.

Reconvene Into Open Session

The City Council reconvened into Open Session at 5:40 p.m.

- B. Consider and act upon any items discussed in executive session.

2019-06R Councilman Hopkins moved to adopt a resolution authorizing the City Manager to purchase certain real property in the downtown area (403 W. Walnut) utilizing CIP funds dedicated for such purposes.

RESULT:	ADOPTED [UNANIMOUS]
MOVER:	Andy Hopkins, Place 3
SECONDER:	Bill Webber, Place 1
AYES:	Webber, Nabors, Hopkins, Koehne
ABSENT:	Roberts, Anderson

VII. CONSENT AGENDA:

RESULT:	ADOPTED [UNANIMOUS]
MOVER:	Andy Hopkins, Place 3
SECONDER:	Mindy Koehne, Place 5
AYES:	Webber, Nabors, Hopkins, Koehne
ABSENT:	Roberts, Anderson

- A. Minutes Approval:

1. City Council - Regular Meeting - Dec 11, 2018 5:00 PM
2. City Council - Special Meeting - Dec 20, 2018 5:00 PM

- B. **2019-1R** - Consider and act upon a resolution of the City Council of the City of Celina, Texas, approving rules for the electronic receipt of bids or proposals. (Berry)
- C. **2019-2R** - Consider and act upon a resolution of the City Council of the City of Celina, Texas, delegating authority to the City's Purchasing Manager to determine the best method of procurement for the purchase of goods and services. (Berry)
- D. **2019-3R** - Consider and act upon a resolution of the City Council of the City of Celina, Texas, adopting the U.S. Department of Labor's wage rates for Collin County, Texas, for all City Public Works contracts. (Berry)

Minutes Acceptance: Minutes of Jan 8, 2019 5:00 PM (Minutes Approval)

- E. Consider and act to authorize the City Manager to execute a contract between the City of Celina and McKee Utility Contractors in the amount of \$3,950,633.00 for the construction of a 36-inch water line and appurtenances (Brawner)
- F. Consider and act upon a Master Services Agreement (MSA) contract by and between the City of Celina and Kimley-Horn and Associates, Inc. for Engineering and Surveying Services. (Brawner)
- G. **2019-4R** - Consider and act upon a resolution accepting a petition from the City of Celina for the voluntary annexation of an approximately 4.00 acre tract of land situated in Lot 1, Block A of the Water Tower Addition at Light Farms, Collin County, Texas and setting two public hearing dates for February 12, 2019 at 5:00 p.m. and March 12, 2019 at 5:00 p.m. at the CISD Administration Building Board Room located at 205 S. Colorado Street, Celina, Texas. The property is generally located on the north side of Light Farms Way and approximately 350 feet east of the Dallas North Tollway. (Fire Station No. 2 and Water Tower Annexation Resolution) (McAfee)

VIII. PUBLIC HEARING/ACTION:

- A. **2019 - 1** - The Celina City Council will conduct a public hearing to consider testimony, and act upon an ordinance adopting the Celina Downtown Master Plan. (Celina Downtown Master Plan) (Jackson)

Mayor Terry opened the hearing at 5:42 p.m. Economic Development Director Alexis Jackson gave a brief overview of the plan. No public comment was received. The hearing was closed at 5:47 p.m.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Andy Hopkins, Place 3
SECONDER:	Wayne Nabors, Place 2
AYES:	Webber, Nabors, Hopkins, Koehne
ABSENT:	Roberts, Anderson

- B. The Celina City Council will conduct a public hearing to consider testimony and act upon the approval of development standards for a single-family residential development on an approximately 35.049 acre tract of land situated in the W. J. Stapp Survey, Abstract No. 834 and the Robert Scaggs Survey, Abstract No. 801, Collin County, Texas. The property is generally located on the west side of CR 133, south of CR 128, and north of FM 455. (Celina Estates Development Standards) (McAfee)

Mayor Terry opened the hearing at 5:48 p.m. No public comment was received. The hearing and action will be continued to another date.

RESULT:	NO ACTION
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- C. The Celina City Council will conduct the first of two public hearings on the proposed voluntary annexation of approximately 7.426 acre tract of land situated in the Collin County School Land Survey #14, Abstract No. 167, Collin County, Texas, and generally located on the north side of Frontier Parkway and approximately 900 feet east of Prairie Crossing. (All Storage Annexation Resolution) (McAfee)

Mayor Terry opened the hearing at 5:49 p.m. No public comment was received. The hearing was closed at 5:50 p.m.

Minutes Acceptance: Minutes of Jan 8, 2019 5:00 PM (Minutes Approval)

- D. The Celina City Council will conduct a public hearing to consider testimony and act upon a Pre-annexation Development Agreement by and between the City of Celina, Texas and G&N Estates, LLC. The property is an approximately 40.279 acre tract of land situated in the Coleman Watson Survey, Abstract No. 495, Collin County, Texas, and generally located on the north side of Choate Parkway, approximately 1,600 feet west of Custer Road, and is located within the City of Celina's ETJ. (Celina 40) (McAfee)

Mayor Terry opened the hearing at 5:50 p.m. No public comment was received. The hearing was closed at 5:52 p.m.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Bill Webber, Place 1
SECONDER:	Wayne Nabors, Place 2
AYES:	Webber, Nabors, Hopkins, Koehne
ABSENT:	Roberts, Anderson

IX. ACTION ITEM:

- A. Consider and act to authorize the City Manager to execute a contract by and between the City of Celina and Hayden and Associates in the amount of \$530,060.00 for the design of North Colorado Drive from West Walnut Street to North of Maple Street, West Beech Street from North Colorado Drive to Railroad tracks, North Ohio Drive from West Pecan Street to West Beech Street, and West Pecan Street from North Colorado Drive to North Arizona Drive. (Brawner)

Jennifer Smith and Adam Cross with Hayeden and Associates presented a potential design to the City Council.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Wayne Nabors, Place 2
SECONDER:	Andy Hopkins, Place 3
AYES:	Webber, Nabors, Hopkins, Koehne
ABSENT:	Roberts, Anderson

- B. **2019-5R** - Consider and act upon a resolution of the City Council of the City of Celina, Texas, ordering and calling a General Election for the purpose of electing a council member for Place 1, and a council member for Place 6 for three (3) year terms each; authorizing a joint election with the Collin County Elections Administrator, Denton County Elections Administrator and the political subdivisions located entirely or partially inside the boundaries of Denton County and Celina Independent School District Board of Trustees to be held on May 4, 2019. (Faulkner)

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Bill Webber, Place 1
SECONDER:	Wayne Nabors, Place 2
AYES:	Webber, Nabors, Hopkins, Koehne
ABSENT:	Roberts, Anderson

X. ADJOURNMENT:

There being no further comment Mayor Terry adjourned the meeting at 6:11 p.m.

Minutes Acceptance: Minutes of Jan 8, 2019 5:00 PM (Minutes Approval)

Sean Terry, Mayor

Vicki Faulkner, TRMC
City Secretary, City of Celina, Texas

Date Minutes Approved

Minutes Acceptance: Minutes of Jan 8, 2019 5:00 PM (Minutes Approval)



**NOTICE OF
CITY COUNCIL SPECIAL MEETING
CELINA COUNCIL CHAMBERS 112 N. COLORADO ST., CELINA, TX 75009
Tuesday, January 22, 2019 AT 5:00 PM**

MINUTES

I. CALL TO ORDER:

Attendee Name	Organization	Title	Status	Arrived
Bill Webber	City of Celina	Place 1	Present	
Wayne Nabors	City of Celina	Place 2	Present	
Andy Hopkins	City of Celina	Place 3	Absent	
Carmen Roberts	City of Celina	Place 4	Present	
Mindy Koehne	City of Celina	Place 5	Present	
Chad Anderson	City of Celina	Place 6	Absent	
Sean Terry	City of Celina	Mayor	Present	

Mayor Sean Terry called the meeting to order at 5:10 p.m.

II. EXECUTIVE SESSION:

The Celina City Council adjourned into Executive Session at 5:10 p.m. with City Attorney Lance Vanzant and Director of Engineering Kim Brawner. Councilwoman Koehne was not present for the discussion on item A.

The City Council will convene into Executive Session pursuant to Texas Government Code 551.071, Consultation with Attorney, on a matter in which the duty of the attorney to the governmental body under the Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with this Chapter and Section 551.072, Deliberations Regarding Real Property, to deliberate the purchase, exchange, lease or value of real property.

- A. Discussion regarding a resolution supporting proposed legislation related to the creation of a Municipal Management District encompassing 386 acres of land located approximately 1 mile northeast of the intersection of FM 428 and FM 1385.
- B. Discussion regarding a resolution authorizing the purchase of certain real property in the downtown area (303 W Beech, 305 W Beech, 307 W Beech, 308 W Maple) utilizing CIP funds dedicated for such purposes.

2019-07R

Minutes Acceptance: Minutes of Jan 22, 2019 5:00 PM (Minutes Approval)

RESULT: ADOPTED [UNANIMOUS]
MOVER: Bill Webber, Place 1
SECONDER: Wayne Nabors, Place 2
AYES: Webber, Nabors, Roberts, Koehne
ABSENT: Hopkins, Anderson

Reconvene Into Open Session:

The City Council reconvened into open session at 5:27 p.m.

C. Consider and act upon any items discussed in Executive Session

No action was taken on Item A.

Councilman Webber moved to approve Item B. Councilman Nabors seconded. Motion carried. 4-yes;0-no.

III. CONSENT AGENDA:

RESULT: ADOPTED [UNANIMOUS]
MOVER: Carmen Roberts, Place 4
SECONDER: Wayne Nabors, Place 2
AYES: Webber, Nabors, Roberts, Koehne
ABSENT: Hopkins, Anderson

- A. Consider and act upon a resolution approving and authorizing the City Manager to execute conveyance documents and other documents necessary to effectuate the transfer of Right of Way property to Collin County to serve a municipal purpose. (Brawner)

2019-08R

- B. Consider and act upon a Master Services Agreement (MSA) contract by and between the City of Celina and Peloton Land Solutions, Inc. for engineering and surveying services. (Brawner)

IV. PUBLIC HEARING/ACTION:

- A. The Celina City Council will conduct a public hearing to consider testimony and act upon a development agreement with Celina 557 Partners setting standards for a single-family residential development on an approximately 557 acre tract of land generally located west of FM 2478 (Custer Road), north of Ownsby Parkway, south of Choate Parkway, and east of Coit Road. (Mustang Lakes Expansion Development Agreement)

Mayor Terry opened the hearing at 5:29 p.m. Director of Development Services Dusty McAfee and Cambridge Companies Representative Matt Alexander presented the project to the City Council. No public comment was received. Mayor Terry closed the hearing at 5:47 p.m.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Bill Webber, Place 1
SECONDER:	Carmen Roberts, Place 4
AYES:	Webber, Nabors, Roberts, Koehne
ABSENT:	Hopkins, Anderson

- B. The Celina City Council will conduct a public hearing to consider testimony and act upon an ordinance amending the City's Comprehensive Plan, Ordinance 2013-06; to amend the City's Master Thoroughfare documents and exhibits. (Thoroughfare Plan Amendments) (Brawner)

2019-02

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Bill Webber, Place 1
SECONDER:	Wayne Nabors, Place 2
AYES:	Webber, Nabors, Roberts, Koehne
ABSENT:	Hopkins, Anderson

V. **ADJOURN:**

There being no further comment Mayor Terry adjourned the meeting at 5:52 p.m.

Sean Terry, Mayor

Vicki Faulkner, TRMC
City Secretary, City of Celina, Texas

Date Minutes Approved

Minutes Acceptance: Minutes of Jan 22, 2019 5:00 PM (Minutes Approval)



City Secretary
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Vicki Faulkner, City Secretary
CC: Jason Laumer, City Manager
Date: February 12, 2019
Re: May General Election Contracts

Action Requested:

Consider and act upon approval of a Joint General Election Contract for election services by and among the City of Celina, Celina Independent School District and Collin County, and a Joint General Election Agreement by and among the City of Celina, Denton County Elections Administrator and political subdivisions of Denton County. (Faulkner)

Background Information:

The May 4th General Election will require services and voting equipment to be provided by Collin and Denton County Elections Administrators. The Celina Independent School District will be sharing Collin County polling place costs with the City of Celina.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

The estimated cost of the Collin County contract with both entities participating is \$4,407.83.

The estimated cost of the Denton County contract will be calculated once all of the voting locations and number of entities participating have been finalized.

Legal Review:

The City Attorney has reviewed these contracts.

Supporting Documents:

Contracts attached.

Staff Recommendation:

Staff recommends approval.

May 4, 2019
Joint General & Special Election
Contract for Election Services
City of Celina/Celina ISD

Attachment: Collin County (Election Contracts)

May 4, 2019 Joint General & Special Election

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II.....	Duties and Services of City and School District
III.....	Cost of Election
IV.....	Joint General Agreement
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Exhibits

Exhibit A.....	Early Voting Schedule and Locations
Exhibit B.....	Election Day Vote Centers
Exhibit C.....	Cost of Services
Exhibit D.....	Joint General Agreement

THE STATE OF TEXAS
COUNTY OF COLLIN
CITY – SCHOOL CELINA

§

CONTRACT FOR
ELECTION SERVICES

BY THE TERMS OF THIS CONTRACT made and entered into by and between the CITY OF CELINA, hereinafter referred to as the "CITY," and the BOARD OF TRUSTEES OF THE CELINA INDEPENDENT SCHOOL DISTRICT, hereinafter referred to as the "SCHOOL DISTRICT," and BRUCE SHERBET, Elections Administrator of Collin County, Texas, hereinafter referred to as "Contracting Officer," pursuant to the authority in Subchapter D, Section 31.092, of Chapter 31, of the Texas Election Code, agree to the following particulars in regard to coordination, supervision and running of the City and School District's May 4, 2019 Joint General & Special Election and a City Runoff Election, if necessary, on June 8, 2019. An additional cost estimate, early voting calendar, and Election Day polling place schedule will be prepared should a Runoff Election be necessary.

THIS AGREEMENT is entered into in consideration of the mutual covenants and promises hereinafter set out. IT IS AGREED AS FOLLOWS:

I. DUTIES AND SERVICES OF CONTRACTING OFFICER. The Contracting Officer shall be responsible for performing the following duties and shall furnish the following services and equipment:

A. The Contracting Officer shall arrange for appointment, notification (including writ of election), training and compensation of all presiding judges, alternate judges, the judge of the Central Counting Station and judge of the Early Voting Ballot Board.

a. The Contracting Officer shall be responsible for notification of each Election Day and Early Voting presiding judge and alternate judge of his or her appointment. The recommendations of the City and the School District will be the accepted guidelines for the number of clerks secured to work in each Vote Center. The presiding election judge of each Vote Center, however, will use his/her discretion to determine when additional manpower is needed during peak voting hours. The Contracting Officer

Attachment: Collin County (Election Contracts)

will determine the number of clerks to work in the Central Counting Station and the number of clerks to work on the Ballot Board. Election judges shall be secured by the Contracting Officer with the approval of the City and the School District.

- b. Election judges shall attend the Contracting Officer's school of instruction (Elections Seminar); calendar will be provided.
- c. Election judges shall be responsible for picking up from and returning election supplies to the county election warehouse located at 2010 Redbud Blvd., Suite 102, McKinney. Compensation for this pickup and delivery of supplies will be \$25.00.
- d. The Contracting Officer shall compensate each election judge and worker. Each judge shall receive \$12.00 per hour for services rendered. Each alternate judge and clerk shall receive \$10.00 per hour for services rendered. Overtime will be paid to each person working over 40 hours per week.

B. The Contracting Officer shall procure, prepare, and distribute voting machines, election kits and election supplies.

- a. The Contracting Officer shall secure election kits which include the legal documentation required to hold an election and all supplies including locks, pens, magic markers, etc.
- b. The Contracting Officer shall secure all tables, chairs, and legal documentation required to run the Central Counting Station.
- c. The Contracting Officer shall provide all lists of registered voters required for use on Election Day and for the early voting period required by law.

d. The Contracting Officer shall procure and arrange for the distribution of all election equipment and supplies required to hold an election.

1. Equipment includes the rental of voting machines, ADA compliance headphones and keypads (1 per site), transfer cases, voting signs and election supply cabinets.

2. Supplies include smart cards, sample ballots, provisional forms, maps, labels, pens, tape, markers, etc.

C. The Contracting Officer, Bruce Sherbet, shall be appointed the Early Voting Clerk by the City and the School District.

a. The Contracting Officer shall supervise and conduct Early Voting by mail and in person and shall secure personnel to serve as Early Voting Deputies.

b. Early Voting by personal appearance for the City and School District's May 4, 2019, Joint General & Special Election shall be conducted during the time period and at the locations listed in Exhibit "A", attached and incorporated by reference into this contract.

c. All applications for an Early Voting mail ballot shall be received and processed by the Collin County Elections Administration Office, 2010 Redbud Blvd., Suite 102, McKinney, Texas 75069.

1. Application for mail ballots erroneously mailed to the City or School District shall immediately be faxed to the Contracting Officer for timely processing. The original application shall then be forwarded to the Contracting Officer for proper retention.

2. All Federal Post Card Applicants (FPCA) will be sent a mail ballot. No postage is required.

d. All Early Voting ballots (those cast by mail and those cast by personal appearance) shall be prepared for count by the Early Voting Ballot Board in accordance with Section 87.000 of the Texas Election Code. The presiding judge of this Board shall be appointed by the Contracting Officer.

D. The Contracting Officer shall arrange for the use of all Election Day Vote Centers. The City and School District shall assume the responsibility of remitting the cost of all employee services required to provide access, provide security or provide custodial services for the Vote Centers. The Election Day Vote Centers are listed in Exhibit "B", attached and incorporated by reference into this contract.

E. The Contracting Officer shall be responsible for establishing and operating the Central Counting Station to receive and tabulate the voted ballots in accordance with Section 127.001 of the Election Code and of this agreement. Counting Station Manager and Central Count Judge shall be Bruce Sherbet. The Tabulation Supervisor shall be Patty Seals.

a. The Tabulation Supervisor shall prepare, test and run the county's tabulation system in accordance with statutory requirements and county policies, under the auspices of the Contracting Officer.

b. The Public Logic and Accuracy Test of the electronic voting system shall be conducted.

c. Election night reports will be available to the City and School District at the Central Counting Station on election night. Provisional ballots will be tabulated after election night in accordance with law.

d. The Contracting Officer shall prepare the unofficial canvass report after all precincts have been counted, and will provide a copy of the unofficial canvass to the City and School District as soon as possible after all returns have been tallied.

e. The Contracting Officer shall be appointed the custodian of the voted ballots and shall retain all election material for a period of 22 months.

1. Pending no litigation and as prescribed by law, the voted ballots shall be shredded 22 months after the election.

2. The City and School District can obtain the list of registered voters from the Elections Administration Office after this retention period. Pending no litigation and if the City or School District does not request the lists, the Contracting Officer shall destroy them.

f. The Contracting Officer shall conduct a manual count as prescribed by Section 127.201 of the Texas Election Code and submit a written report to the City and School District in a timely manner. The Secretary of State may waive this requirement. If applicable, a written report shall be submitted to the Secretary of State as required by Section 127.201(E) of the aforementioned code.

II. DUTIES AND SERVICES OF THE CITY AND SCHOOL DISTRICT. The City and School District shall assume the following responsibilities:

A. The City and School District shall prepare the election orders, resolutions, notices, official canvass and other pertinent documents for adoption by the appropriate office or body. The City and School District assumes the responsibility of posting all notices and likewise promoting the schedules for Early Voting and Election Day.

B. The City and School District shall provide the Contracting Officer with an updated map and street index of their jurisdiction in an electronic (shape file preferred) or printed format as soon as possible but no later than Friday, March 8, 2019.

C. The City and School District shall procure and provide the Contracting Officer with the ballot layout and Spanish interpretation in an electronic format.

a. The City and School District shall deliver to the Contracting Officer as soon as possible, but no later than 5:00 PM Thursday, February 21, 2019, the official wording for the City and School District's May 4, 2019, Joint General & Special Election.

b. The City and School District shall approve the "blue line" ballot format prior to the final printing.

D. The City and School District shall post the publication of election notice by the proper methods with the proper media.

E. The City and School District shall compensate the Contracting Officer for any additional verified cost incurred in the process of running this election or for a manual count this election may require, consistent with charges and hourly rates shown on Exhibit "C" for required services.

F. The City and School District shall pay the Contracting Officer 90% of the estimated cost to run the said election prior to Friday, April 5, 2019. The Contracting Officer shall place the funds in a "contract fund" as prescribed by Section 31.100 of the Texas Election Code. The Deposit should be delivered within the mandatory time frame to:

**Collin County Treasury
2300 Bloomdale Rd. #3138
McKinney, Texas 75071**

Made payable to: "Collin County Treasury" with the note "for election services" included with check documentation.

G. The City and School District shall pay the cost of conducting said election, less partial payment, including the 10% administrative fee, pursuant to the Texas Election Code, Section 31.100, within 30 days from the date of final billing.

III. COST OF SERVICES. See Exhibit "C."

IV. JOINT GENERAL AGREEMENT. See Exhibit "D".

V. GENERAL PROVISIONS.

A. Nothing contained in this contract shall authorize or permit a change in the officer with whom or the place at which any document or record relating to the City and School District's May 4, 2019, Joint General & Special Election is to be filed or the place

Attachment: Collin County (Election Contracts)

at which any function is to be carried out, or any nontransferable functions specified under Section 31.096 of the Texas Election Code.

B. Upon request, the Contracting Officer will provide copies of all invoices and other charges received in the process of running said election for the City and School District.

C. If the City and/or School District cancel their election pursuant to Section 2.053 of the Texas Election Code, the Contracting Officer shall be paid a contract preparation fee of \$75. An entity canceling an election will not be liable for any further costs incurred by the Contracting Officer in conducting the May 4, 2019, Joint General & Special Election. All actual shared cost incurred in the conduct of the election will be divided by the actual number of entities contracting with the Contracting Officer **and** holding a May 4, 2019, Joint General & Special Election.

D. The Contracting Officer shall file copies of this contract with the County Judge and the County Auditor of Collin County, Texas.

WITNESS BY MY HAND THIS THE ____ DAY OF _____ 2019.

Bruce Sherbet
Collin County, Texas

WITNESS BY MY HAND THIS THE ____ DAY OF _____ 2019.

By: _____
Sean Terry, Mayor
City of Celina

Attest: _____
Vicki Faulkner, City Secretary
City of Celina

Attachment: Collin County (Election Contracts)

WITNESS BY MY HAND THIS THE ____ DAY OF _____ 2019.

By: _____
Rick DeMasters, Superintendent
Celina Independent School District

Attest: _____
Shawna Mathews, Secretary
Celina Independent School District

Attachment: Collin County (Election Contracts)

Exhibit "A"

MAY 4, 2019 JOINT GENERAL & SPECIAL ELECTION

Early Voting Locations and Hours City of Celina & CISD*

Polling Place			Address		City	
Collin County Election Office (Main Early Voting Location)			2010 Redbud Blvd., #102		McKinney	
Celina ISD Administration Building			205 S. Colorado		Celina	
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<i>April 21</i>	<i>April 22</i>	<i>April 23</i>	<i>April 24</i>	<i>April 25</i>	<i>April 26</i>	<i>April 27</i>
	8am – 5pm	8am – 5pm	8am – 5pm	8am - 7pm	8am - 5pm	8am - 5pm
<i>April 28</i>	<i>April 29</i>	<i>April 30</i>	<i>May 1</i>	<i>May 2</i>	<i>May 3</i>	<i>May 4</i>
	7am – 7pm	7am – 7pm				7am – 7pm Election Day

* City and School District voters may vote at any of the additional Early Voting locations open under full contract services with the Collin County Elections Administration.

Attachment: Collin County (Election Contracts)

Exhibit "B"

MAY 4, 2019
JOINT GENERAL & SPECIAL ELECTION

Election Day Vote Centers – City of Celina & CISD*

Precincts	Location	Address	City
"VOTE CENTER"	Celina ISD Administration Bldg.	205 S. Colorado	Celina

*City and School District voters may vote at any of the additional Election Day Vote Centers open under full contract services with the Collin County Elections Administration.

Attachment: Collin County (Election Contracts)

JOINT ELECTION AGREEMENT

between

The City Council of the City of Celina (the City), the Board of Trustees of the Celina Independent School District (CISD), known as (the School), and the Board of Trustees of Collin College District (the College).

BY THE TERMS OF THIS AGREEMENT, the City, the School and the College, do hereby agree, pursuant to the provisions of the Texas Election Code, to hold a joint election for the General Election and Special Election should it be called, of the City and the General Election and Special Election should it be called, of the School District and the College to be held on Saturday, May 4, 2019. The entities have contracted with the Collin County Elections Administrator (Election Administrator) to perform various duties and responsibilities on their behalf.

The City, CISD and the College shall share equally in shared expenses applicable for the Early Voting location and Election Day Vote Center at the Celina ISD Administration Building. Expenses include polling location costs, election officials, supplies, ballots and any other and all necessary expenses for the election upon receipt of satisfactory billing and invoices reflecting the total of such election.

Tabulation and programming costs shall be shared equally between the number of entities holding an election on May 4, 2019. Centralized costs will be determined based on voter registration per jurisdiction. An entity canceling an election pursuant to Section 2.053 of the Texas Election Code will not be liable for costs incurred by the Elections Administrator in conducting the May 4, 2019, Joint General & Special Election of the City, the School District and the College; they will be liable only for the contract preparation fee of \$75.00.

APPROVED BY THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS in its meeting held the _____ day of _____, 2019, and executed by its authorized representative.

By: _____
Sean Terry, Mayor
City of Celina

Attest: _____
Vicki Faulkner, City Secretary
City of Celina

Attachment: Collin County (Election Contracts)

ESTIMATED COSTS FOR CITY OF CELINA

May 4, 2019

Exhibit "C"

SUPPLY COST

Number of Early Voting Locations	1				
Number of Election Day Locations	1				
Sample Ballots	\$0.1866 each	Units	Cost CCTY/CC	Units	Cost CCTY/CISD/CC
Early Voting Mail Ballots	\$1.20 each	100	\$18.66	200	\$37.32
Early voting and election day kits	\$25.00 each	0	\$0.00	25	\$30.00
Central Counting kit and supplies	\$50.00 each	0	\$0.00	2	\$50.00
County Precinct Maps	\$12.00 each	0	\$0.00	1	\$50.00
Printer Labels	\$5.27 each	0	\$0.00	2	\$24.00
		0	\$0.00	6	\$31.62
Total			\$18.66		\$222.94
Number of Entities Sharing Costs			2		3
SubTotal			\$9.33		\$74.31
Grand Total					

\$83.64**EQUIPMENT RENTAL COST**

Number of Early Voting Locations	1				
Number of Election Day Locations	1				
Voting Machines (7's)	\$150.00 each	Units	Cost CCTY/CC	Units	Cost CCTY/CISD/CC
Transfer Cases	\$5.00 each	0	\$0.00	10	\$1,500.00
Metal Signs	\$1.00 each	0	\$0.00	2	\$10.00
Wood Signs	\$2.00 each	0	\$0.00	4	\$4.00
EV Security Cabinets	\$200.00 each	0	\$0.00	2	\$4.00
EV Computer Cabinet	\$50.00 each	0	\$0.00	1	\$200.00
ED Security Cabinets	\$200.00 each	0	\$0.00	1	\$50.00
EV/ED Cabinet Drayage	\$260.00 each	0	\$0.00	1	\$200.00
		0	\$0.00	2	\$520.00
Total			\$0.00		\$2,488.00
Number of Entities Sharing Costs			2		3
SubTotal			\$0.00		\$829.33
Grand Total					

\$829.33

TABULATION

Tabulation Network	\$4,000.00
Election Night Vendor Support	\$1,800.00
Notice of Inspection/Tabulation Test	\$2,250.00
Total	\$8,050.00
Number of Entities	35
Total	\$230.00

PROGRAMMING

Dominion Project Management	\$5,000.00
Full Service Programming w/Audio	\$25,000.00
Total	\$30,000.00
Number of Entities	35
Total	\$857.14

CENTRALIZED COSTS

Early Voting Ballot Board	\$2,000.00
Cost for Central Count Workers	\$1,400.00
FICA on Election Workers	\$2,500.00
Assemble EV Location	\$50.00
Early Voting Machines in McKinney (10)	\$1,500.00
Early Voting Personnel in McKinney	\$4,500.00
Warehouse Gas Mileage	\$2,500.00
County Overtime and IT Support	\$35,000.00
Warehouse Temporaries	\$25,000.00
FICA for County Employees	\$2,500.00
Total	\$76,950.00

Full Service Jurisdictions - 1,523,359 voters

City of Celina - 6,446
Celina ISD - 7,267

.42% of Total = \$323.19
.47% of Total = \$361.67

**THE
STATE OF
TEXAS
COUNTY
OF
DENTON**

**JOINT ELECTION AGREEMENT AND CONTRACT FOR
ELECTION SERVICES**

This CONTRACT for election services is made by and between the Denton County Elections Administrator and the following political subdivisions, herein referred to as "participating authority or participating authorities" located entirely or partially inside the boundaries of Denton County:

Participating Authorities:

[entities]

This contract is made pursuant to Texas Election Code Sections 31.092 and 271.002 and Texas Education Code Section 11.0581 for a Joint May 4, 2019 Election to be administered by Frank Phillips, Denton County Elections Administrator, hereinafter referred to as "Elections Administrator."

RECITALS

Each participating authority listed above plans to hold a General or Special Election on [election-date]. Denton County plans to hold county-wide voting for this General Election.

The County owns the Hart InterCivic Verity Voting System, which has been duly approved by the Secretary of State pursuant to Texas Election Code Chapter 122 as amended, and is compliant with the accessibility requirements for persons with disabilities set forth by Texas Election Code Section 61.012. The contracting political subdivisions (participating authorities) desire to use the County's voting system and to compensate the County for such use and to share in certain other expenses connected with joint elections, in accordance with the applicable provisions of Chapters 31 and 271 of the Texas Election Code, as amended.

NOW THEREFORE, in consideration of the mutual covenants, agreements, and benefits to all parties, IT IS AGREED as follows:

I. ADMINISTRATION

The participating authorities agree to hold a "Joint Election" with Denton County and each other in accordance with Chapter 271 of the Texas Election Code and this

Attachment: Denton County (Election Contracts)

agreement. The Elections Administrator shall coordinate, supervise, and handle all aspects of administering the Joint Election as provided in this agreement. Each participating authority agrees to pay the Elections Administrator for equipment, supplies, services, and administrative costs as provided in this agreement. The Elections Administrator shall serve as the administrator for the Joint Election; however, each participating authority shall remain responsible for the decisions and actions of its officers necessary for the lawful conduct of its election. The Elections Administrator shall provide advisory services in connection with decisions to be made and actions to be taken by the officers of each participating authority as necessary.

It is understood that other political subdivisions may wish to participate in the use of the County's Verity voting system and polling places, and it is agreed that the Elections Administrator may enter into other contracts for election services for those purposes, on terms and conditions generally similar to those set forth in this contract. In such cases, costs shall be pro-rated among the participants according to Section XI of this contract.

II. LEGAL DOCUMENTS

Each participating authority shall be responsible for the preparation, adoption, and publication of all required election orders, resolutions, notices, and any other pertinent documents required by the Texas Election Code and/or the participating authority's governing body, charter, or ordinances, except that the Elections Administrator shall be responsible for the preparation and publication of all voting equipment testing notices that are required by the Texas Election Code. Election orders should include language that would not necessitate amending the order if any of the Early Voting and/or Election Day polling places change.

Preparation of the necessary materials for notices and the official ballot shall be the responsibility of each participating authority, including translation to languages other than English. Each participating authority shall provide a copy of their respective election orders and notices to the Elections Administrator.

III. VOTING LOCATIONS

The Elections Administrator shall select and arrange for the use of and payment for all Early Voting and Election Day voting locations. Voting locations will be, whenever possible, the usual voting location for each election precinct in elections conducted by each participating authority, and shall be compliant with the accessibility requirements established by Election Code Section 43.034 and the Americans with Disabilities Act (ADA). All Early Voting and Election Day voting locations shall be within the boundaries of Denton County. The proposed voting locations are listed in Attachment A of this agreement. In the event a voting location is not available or appropriate, the Elections Administrator will arrange for use of an alternate location. The Elections Administrator shall notify the participating authorities of any changes from the locations listed in Attachment A.

If polling places for the May 4, 2019 Joint Election are different from the polling place(s) used by a participating authority in its most recent election, the authority agrees to post a notice no later than May 3, 2019 at the entrance to any previous polling places in the jurisdiction stating that the polling location has changed and stating the political subdivision's polling place names and addresses in effect for the May 4, 2019 election. This notice shall be written in both the English and Spanish languages.

IV. ELECTION JUDGES, CLERKS, AND OTHER ELECTION PERSONNEL

Denton County shall be responsible for the appointment of the presiding judge and alternate judge for each polling location. The Elections Administrator shall make emergency appointments of election officials if necessary.

Upon request by the Elections Administrator, each participating authority agrees to assist in recruiting polling place officials who are bilingual (fluent in both English and Spanish). In compliance with the Federal Voting Rights Act of 1965, as amended, each polling place containing more than 5% Hispanic population as determined by the 2010 Census shall have one or more election officials who are fluent in both the English and Spanish languages. If a presiding judge is not bilingual, and is unable to appoint a bilingual clerk, the Elections Administrator may recommend a bilingual worker for the polling place. If the Elections Administrator is unable to recommend or recruit a bilingual worker, the participating authority or authorities served by that polling place shall be responsible for recruiting a bilingual worker for translation services at that polling place.

The Elections Administrator shall notify all election judges of the eligibility requirements of Subchapter C of Chapter 32 of the Texas Election Code, and will take the necessary steps to insure that all election judges appointed for the Joint Election are eligible to serve.

The Elections Administrator shall arrange for the training and compensation of all election judges and clerks. The Election judges and clerks who attend voting equipment training and/or procedures training, shall be compensated at the rate of \$10 an hour. Election judges and clerks that elect to complete online training shall be compensated at a rate of a flat \$30. In the event that an Election judge or clerk completes both in person and online training, they shall be compensated for the training resulting in the highest pay and will not be compensated for both trainings.

The Elections Administrator shall arrange for the date, time, and place for presiding election judges to pick up their election supplies. Each presiding election judge will be sent a letter from the Elections Administrator notifying them of their appointment, the dates/times and locations of training and distribution of election supplies, and the number of election clerks that the presiding judge may appoint.

Each election judge and clerk will receive compensation at the hourly rate established by Denton County pursuant to Texas Election Code Section 32.091. The election judge, or their designee, will receive an additional sum of \$25.00 for picking up the election

supplies and equipment prior to Election Day and for returning the supplies and equipment to the central counting station after the polls close. Likewise, the Lead Clerk in Early Voting, or their designee, will receive an additional sum of \$25.00 for picking up the election supplies prior to the first day of Early Voting and for returning the supplies and equipment to the Elections Department after Early Voting has ended.

The compensation rates established by Denton County are:

Early Voting – Lead Clerk (\$12 an hour), Clerk (\$10 an hour)
 Election Day – Presiding Judge (\$12 an hour), Alternate Judge (\$11 an hour), Clerk (\$10 an hour)

The Elections Administrator may employ other personnel necessary for the proper administration of the election, as well as, pre and post-election administration. In such cases, costs shall be pro-rated among the participants of this contract. Part-time help is included as is necessary to prepare for the election, to ensure the timely delivery of supplies during Early Voting and on Election Day, and for the efficient tabulation of ballots at the central counting station. Part-time personnel working in support of the Early Voting Ballot Board and/or central counting station on election night will be compensated at the hourly rate set by Denton County in accordance with Election Code Sections 87.005, 127.004, and 127.006.

If elections staff is required outside of the hours of the office's normal scope of business, the entity(ies) responsible for the hours will be billed for those hours. The Elections Administrator will determine when those hours are necessary, the number of staff and whom are necessary, along with to whom the hours are to be billed. Cost for these hours will be billed at a rate of 1.5 times the staffs hourly rate (See Sections XV #10). The Election Administrator has the right to waive these costs as they see fit.

V. PREPARATION OF SUPPLIES AND VOTING EQUIPMENT

The Elections Administrator shall arrange for all election supplies and voting equipment including, but not limited to, the County's Verity voting system and equipment, official ballots, sample ballots, voter registration lists, and all forms, signs, maps and other materials used by the election judges at the voting locations. The Elections Administrator shall ensure availability of tables and chairs at each polling place and shall procure rented tables and chairs for those polling places that do not have tables and/or chairs. Any additional required materials (required by the Texas Election Code) must be provided by the Participating Authority, and delivered to the Elections Office thirty-three (33) calendar days (April 1, 2019) prior to Election Day. If this deadline is not met, the material must be delivered by the participating authority, to all Early Voting and Election Day locations affected, prior to voting commencing. The Elections Administrator shall be responsible for conducting all required testing of the voting equipment, as required by Chapters 127 and 129 of the Texas Election Code.

At each polling location, joint participants shall share voting equipment and supplies to the extent possible. The participating authorities shall share a mutual ballot in those

precincts where jurisdictions overlap. Multiple ballot styles shall be available in those shared polling places where jurisdictions do not overlap. The Elections Administrator shall provide the necessary voter registration information, maps, instructions, and other information needed to enable the election judges in the voting locations that have more than one ballot style to conduct a proper election.

Each Participating Authority shall furnish the Elections Administrator a list of candidates and/or propositions showing the order and the exact manner in which the candidate names and/or proposition(s) are to appear on the official ballot (including titles and text in each language in which the authority's ballot is to be printed). **Said list must be provided to the Elections Office within three (3) business days following the last day to file for a place on the ballot** or after the election is ordered, whichever is later. Said list must be in a Word document, the information must be in an upper and lower case format, be in Arial 12 point font, and contain candidate contact information for the purposes of verifying the pronunciation of each of the candidates' names. Each participating authority shall be responsible for proofreading and approving the ballot insofar as it pertains to that authority's candidates and/or propositions. Each participating authority shall be responsible for proofing and approving the audio recording of the ballot insofar as it pertains to that authority's candidates and/or propositions. **The approvals must be finalized with the Elections Office within five (5) calendar days of receipt of the proofs, or the provided proofs shall be considered approved.**

The Joint Election ballots shall list the County's election first. The Joint Election ballots that contain ballot content for more than one joint participant because of overlapping territory shall be arranged with the appropriate school district ballot content appearing on the ballot following the County's election, followed by the appropriate city ballot content, and followed by the appropriate water district or special district ballot content.

Early Voting by Personal Appearance and on Election Day shall be conducted exclusively on Denton County's Verity voting system including provisional ballots.

The Elections Administrator shall be responsible for the preparation, testing, and delivery of the voting equipment for the election as required by the Election Code.

The Elections Administrator shall conduct criminal background checks on the relevant employees upon hiring as required by Election Code 129.051(g).

VI. EARLY VOTING

The participating authorities agree to conduct joint early voting and to appoint the Election Administrator as the Early Voting Clerk in accordance with Sections 31.097 and 271.006 of the Texas Election Code. Each participating authority agrees to appoint the Elections Administrator's permanent county employees as deputy early voting clerks. The participating authorities further agree that the Elections Administrator may appoint other deputy early voting clerks to assist in the conduct of early voting as necessary, and that these additional deputy early voting clerks shall be compensated at an hourly

rate set by Denton County pursuant to Section 83.052 of the Texas Election Code. Deputy early voting clerks who are permanent employees of the Denton County Elections Administrator or any participating authorities shall serve in that capacity without additional compensation.

Early Voting by personal appearance will be held at the locations, dates, and times listed in Attachment B of this document. Any qualified voter of the Joint Election may vote early by personal appearance at any one of the joint early voting locations. All requests for Temporary Early Voting Locations will be considered, and determined based on the availability of sites and if it is within the Election Code parameters. All costs for temporary sites including coverage by Election Administration staff will be borne by the requesting authority. The Elections Administrator will determine when those hours are necessary, the number of staff and whom are necessary along with to whom the hours are to be billed. Cost for these hours will be billed at a rate of 1.5 times the staffs hourly rate (See Sections XV #10). The Election Administrator has the right to waive these costs as they see fit.

As Early Voting Clerk, the Elections Administrator shall receive applications for early voting ballots to be voted by mail in accordance with Chapters 31 and 86 of the Texas Election Code. Any requests for early voting ballots to be voted by mail received by the participating authorities shall be forwarded immediately by fax or courier to the Elections Administrator for processing. The address of the Early Voting Clerk is as follows:

Frank Phillips, Early Voting Clerk
Denton County Elections
PO Box 1720
Denton, TX 76202
Email: elections@dentoncoun-ty.com

Any requests for early voting ballots to be voted by mail, and the subsequent actual voted ballots that are sent by a contract carrier (ie. UPS, FedEx, etc.) shall be delivered to the Early Voting Clerk at the Denton County Elections Department physical address as follows:

Frank Phillips, Early Voting Clerk
Denton County Elections
701 Kimberly Drive, Suite
A101
Denton, TX 76208

The Elections Administrator shall post on the county website each participating authority's early voting roster on a daily basis and a cumulative final early voting roster following the close of early voting. In accordance with Section 87.121(g) of the Election Code, the daily rosters showing the previous day's early voting activity will be posted to the county website no later than 8:00 a.m. each business day.

VII. EARLY VOTING BALLOT BOARD

Denton County shall appoint an Early Voting Ballot Board (EVBB) to process early voting results from the Joint Election. The Presiding Judge, with the assistance of the Elections Administrator, shall appoint two or more additional members to constitute the EVBB. The Elections Administrator shall determine the number of EVBB members required to efficiently process the early voting ballots.

VIII. CENTRAL COUNTING STATION AND ELECTION RETURNS

The Elections Administrator shall be responsible for establishing and operating the central counting station to receive and tabulate the voted ballots in accordance with the provisions of the Texas Election Code and of this agreement.

The participating authorities hereby, in accordance with Section 127.002, 127.003, and 127.005 of the Texas Election Code, appoint the following central counting station officials:

Counting Station Manager:	Frank Phillips, Denton County Elections Administrator
Tabulation Supervisor:	Jason Slonaker, Technology Resources Coordinator
Presiding Judge:	Early Voting Ballot Board Judge
Alternate Judge:	Early Voting Ballot Board Alternate Judge

The counting station manager or their representative shall deliver timely cumulative reports of the election results as precincts report to the central counting station and are tabulated by posting on the Election Administrator's Election Night Results website. The manager shall be responsible for releasing unofficial cumulative totals and precinct returns from the election to the joint participants, candidates, press, and general public by distribution of hard copies at the central counting station (if requested) and by posting to the Elections Administrator's Election Night Results website. To ensure the accuracy of reported election returns, results printed on the tapes produced by Denton County's voting equipment will not be released to the participating authorities at the remote collection sites or by phone from individual polling locations.

The Elections Administrator will prepare the unofficial canvass reports after all precincts have been counted, and will deliver a copy of the unofficial canvass to each participating authority as soon as possible after all returns have been tabulated. The Elections Administrator will include the tabulation and precinct-by-precinct results that are required by Texas Election Code Section 67.004 for the participating authorities to conduct their respective canvasses. Each participating authority shall be responsible for the official canvass of its respective election(s), and shall notify the Elections Administrator, or their designee, of the date of the canvass, no later than three days after Election Day.

The Elections Administrator will prepare and deliver by email to each participating authority, the electronic precinct-by-precinct results reports for uploading, by the authority, to the Secretary of State as required by Section 67.017 of the Election Code.

The Elections Administrator shall be responsible for conducting the post-election manual recount required by Section 127.201 of the Texas Election Code unless a waiver is granted by the Secretary of State. Notification and copies of the recount, if waiver is denied, will be provided to each Participating Authority and the Secretary of State's Office.

IX. PARTICIPATING AUTHORITIES WITH TERRITORY OUTSIDE DENTON COUNTY

Each participating authority with territory containing population outside of Denton County agrees that they Elections Administrator shall administer only the Denton County portion of those elections.

X. RUNOFF ELECTIONS

Each participating authority shall have the option of extending the terms of this agreement through its runoff election, if applicable. In the event of such runoff election, the terms of this agreement shall automatically extend unless the participating authority notifies the Elections Administrator in writing within three (3) business days of the original election.

Each participating authorities shall reserve the right to reduce the number of early voting locations and/or Election Day voting locations in a runoff election.

Each participating authority agrees to order any runoff election(s) at its meeting for canvassing the votes from the May 4, 2019 election and to conduct its drawing for ballot positions at or immediately following such meeting in order to expedite preparations for its runoff election.

Each participating authority eligible to hold runoff elections agrees that the date of the runoff election, if necessary, shall be Saturday, June 8, 2019, with early voting being held in accordance with the Election Code.

XI. ELECTION EXPENSES AND ALLOCATION OF COSTS

The participating authorities agree to share the costs of administering the Joint Election. Allocation of the costs, unless specifically stated otherwise, is mutually agreed to be shared according to a formula which is based on the number of registered voters within the district per Elections Day polling place. Costs for polling places shared by more than one participating authority shall be pro-rated equally among the participants utilizing that polling place.

It is agreed that the charges for Election Day judges and clerks and Election Day polling place rental fees shall be directly charged to the appropriate participating authority rather than averaging those costs among all participants.

If a participating authority's election is conducted at more than one Election Day polling place, there shall be no charges or fees allocated to the participating authority for the cost of the Election Day polling place in which the authority has fewer than 50% of the total registered voters served by that polling place, except that if the number of registered voters in all of the authority's polling places is less than the 50% threshold, the participating authority shall pay a pro-rata share of the cost associated with the polling place where it has the greatest number of registered voters.

Costs for Early Voting by Personal Appearance shall be allocated based upon the actual costs associated with each early voting site. Each participating authority shall be responsible for an equal portion of the actual costs associated with the early voting sites located within their jurisdiction. Participating authorities that do not have a regular (non-temporary) early voting site within their jurisdiction shall pay an equal portion of the nearest regular early voting site.

Costs for Early Voting by mail shall be allocated according to the actual number of ballots mailed to each participating authority's voters.

Each participating authority agrees to pay the Elections Administrator an administrative fee equal to ten percent (10%) of its total billable costs in accordance with Section 31.100(d) of the Texas Election Code.

The Denton County Elections Administrator shall deposit all funds payable under this contract into the appropriate fund(s) within the county treasury in accordance with Election Code Section 31.100.

The Denton County Elections Administrator reserves the right to adjust the above formulas in agreement with an individual jurisdiction if the above formula results in a cost allocation that is inequitable.

If any participating authority makes a special request for extra Temporary Branch Early Voting by Personal Appearance locations as provided by the Texas Election Code, that entity agrees to pay the entire cost for that request.

Participating authorities having the majority of their voters in another county, and fewer than 500 registered voters in Denton County, and that do not have an Election Day polling place or early voting site within their Denton County territory shall pay a flat fee of \$400 for election expenses.

Election expenses, including but not limited to, overtime charges for Election Office staff, and any unforeseen expenses needed to conduct the election, will be borne by the participating authority or authorities, affected.

XII. WITHDRAWAL FROM CONTRACT DUE TO CANCELLATION OF ELECTION

Any participating authority may withdraw from this agreement and the Joint Election should it cancel its election in accordance with Sections 2.051 - 2.053 of the Texas Election Code. The withdrawing authority is fully liable for any expenses incurred by the Denton County Elections Administrator on behalf of the authority plus an administrative fee of ten percent (10%) of such expenses. Any monies deposited with the Elections Administrator by the withdrawing authority shall be refunded, minus the aforementioned expenses and administrative fees, if applicable.

It is agreed that any of the Joint Election early voting sites that are not within the boundaries of one or more of the remaining participating authorities, with the exception of the early voting site located at the Denton County Elections Building, may be dropped from the joint election unless one or more of the remaining participating authorities agreed to fully fund such site(s). In the event that any early voting site is eliminated under this section, an addendum to the contract shall be provided to the remaining participants within five days after notification of all intents to withdraw have been received by the Elections Administrator.

XIII. RECORDS OF THE ELECTION

The Elections Administrator is hereby appointed general custodian of the voted ballots and all records of the Joint Election as authorized by Section 271.010 of the Texas Election Code.

Access to the election records shall be available to each participating authority as well as to the public in accordance with applicable provisions of the Texas Election Code and the Texas Public Information Act. The election records shall be stored at the offices of the Elections Administrator or at an alternate facility used for storage of county records. The Elections Administrator shall ensure that the records are maintained in an orderly manner so that the records are clearly identifiable and retrievable.

Records of the election shall be retained and disposed of in accordance with the provisions of Section 66.058 of the Texas Election Code. If records of the election are involved in any pending election contest, investigation, litigation, or open records request, the Elections Administrator shall maintain the records until final resolution or until final judgment, whichever is applicable. It is the responsibility of each participating authority to bring to the attention of the Elections Administrator any notice of pending election contest, investigation, litigation or open records request which may be filed with the appropriate participating authority.

XIV. RECOUNTS

A recount may be obtained as provided by Title 13 of the Texas Election Code. By signing this document, the presiding officer of the contracting participating authorities agree that any recount shall take place at the offices of the Elections Administrator, and that the Elections Administrator shall serve as Recount Supervisor, and the participating

authority's official or employee who performs the duties of a secretary under the Texas Election Code shall serve as Recount Coordinator.

The Elections Administrator agrees to provide advisory services to each participating authority as necessary to conduct a proper recount.

XV. MISCELLANEOUS PROVISIONS

1. It is understood that to the extent space is available, other districts and political subdivisions may wish to participate in the use of the County's election equipment and voting places, and it is agreed that the Elections Administrator may contract with such other districts or political subdivisions for such purposes and that in such event there may be an adjustment of the pro-rata share to be paid to the County by the participating authorities.
2. The Elections Administrator shall file copies of this document with the Denton County Treasurer and the Denton County Auditor in accordance with Section 31.099 of the Texas Election Code.
3. Nothing in this contract prevents any party from taking appropriate legal action against any other party and/or other election personnel for a breach of this contract or a violation of the Texas Election Code.
4. This agreement shall be construed under and in accord with the laws of the State of Texas, and all obligations of the parties created hereunder are performable in Denton County, Texas.
5. In the event that one of more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision hereof and this agreement shall be construed as if such invalid, illegal, or unenforceable provision had never been contained herein.
6. All parties shall comply with all applicable laws, ordinances, and codes of the State of Texas, all local governments, and any other entities with local jurisdiction.
7. The waiver by any party of a breach of any provision of this agreement shall not operate as or be construed as a waiver of any subsequent breach.
8. Any amendments of this agreement shall be of no effect unless in writing and signed by all parties hereto.
9. Failure for a participating authority to meet the deadlines as outline in this contract or on the calendar (Attachment C) may result in additional charges, including but not limited to, overtime charges, etc.

10. Elections Staffing Hourly Rate (includes all benefit pay):

Absentee Voting Coordinator	\$29.464
Voter Registration Clerk	\$22.926 - \$24.718
Technology Resources Coordinator	\$32.400
Elections Technician	\$21.309 - \$24.718
Voter Registration Coordinator	\$30.442
Training Coordinator	\$31.158
Election Coordinator	\$31.962

XVI. COST ESTIMATES AND DEPOSIT OF FUNDS

The total estimated obligation for each participating authority under the terms of this agreement is listed below. The exact amount of each participating authority's obligation under the terms of this agreement shall be calculated after the [election-date] election (or runoff election, if applicable). The participating authority's obligation shall be paid to Denton County within 30 days after the receipt of the final invoice from the Denton County Elections Administrator.

The total estimated obligation for each participating authority under the terms of this agreement shall be provided within 45 days after the last deadline for ordering an election:

[costs]

[pagebreak]

I. SIGNATURE PAGE (separate page)



Development Services
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Dusty McAfee AICP, Director of Development Services
CC: Jason Laumer, City Manager
Date: February 12, 2019
Re: Comprehensive Plan

Action Requested:

Consider and act upon a Professional Service Agreement with Ideation Planning, LLC for a Comprehensive Plan and authorize and empower the City Manager to execute the same. (Comprehensive Plan) (McAfee)

Background Information:

The comprehensive plan was included in the FY19 budget approved by the City Council in September, 2018.

Supporting Documents:

Professional Service Agreement

Staff Recommendation:

N/A



Office Address: Southlake Town Square, 180 State Street, Suite 225, 76092
 Mailing Address: PO Box 93211, Southlake, Texas 76092
 Phone: 682.738.IDEA⁽⁴³³²⁾
 Email: info@ideationplanning.com
www.IdeationPlanning.com

February 5, 2019

City of Celina
 ATTN: Jason Laumer
 City Manager
 142 North Ohio Street
 Celina, Texas 75009
 Via Email Delivery to Dusty McAfee: dmcafee@celina-tx.gov

Subject: Scope of Services – Comprehensive Plan Update

Mr. Laumer:

I am pleased to submit this proposal to the City of Celina for professional planning services. Ideation Planning, LLC, provides professional and strategic planning and development consulting, and we are interested in providing an update to the City's Comprehensive Plan.

I have provided the following for your review:

- Ex. A: Scope of Services
- Ex. B: Standard Terms and Conditions

The Scope of Services to be performed by Ideation Planning, LLC, under this letter agreement is described in Exhibit "A" below. **Project costs for this Scope will be based on a lump sum fee of \$250,000 as reflected in Exhibit "A" below.**

All work will be performed in accordance with Ideation Planning, LLC's attached Standard Terms and Conditions (Exhibit "B" below). To accept this proposal, please sign, date, scan, and email back to me once the contract has been authorized. The work defined herein shall begin after Ideation Planning, LLC receives the signed copy of this letter agreement. This Agreement may be extended upon prior written/emailed approval from the City of Celina.

Please review the enclosed exhibits, and do not hesitate to contact me with any questions or comments at 972-339-8186 or abra@ideationplanning.com. I look forward to the opportunity to work with you and your team on this important project.

The undersigned agrees to the Terms and Conditions of this Letter Agreement attached hereto.

Regards,

Abra R. Nusser, AICP
 President & CEO
 Ideation Planning, LLC

City of Celina
 c/o Jason Laumer, City Manager

Signature: _____

Title: _____

Date: _____

Attachment: Professional Service Agreement (Comprehensive Plan)



Exhibit A

Ideation Planning, LLC ARTICLE 1: SCOPE OF SERVICES

The purpose of this Scope of Services is to prepare an update to the City of Celina's Comprehensive Plan, which focuses on addressing planned growth, a renewed Vision for the future, and a set of actions to achieve the Vision. The update will be based on community feedback, first and foremost, technical information, and Planning Team analysis. The parties of this contract are specified with the following terms: Consultant/Ideation Planning/Ideation Planning, LLC and Client/City/City Staff. Objectives/Tasks to be achieved with this proposal:

Task 1: Project Initiation and Project Management (Throughout) (20%)

- **1.1 Scoping Workshop.** Prior to contract execution, a scoping workshop will be held to discuss expectations of both City team members and consultant team members, key deliverables, timeline, content considerations, and political considerations. The Consultant will meet with City Staff to confirm all goals, expectations, and timelines for the project, as well as identify data and information needs. (Trip One)

>>Consultant Deliverable: Scoping Workshop Memo/Notes

- **1.2 Contract Execution.** The Consultant will prepare for and attend a City Council meeting to introduce the Project, the Consultant Team, the proposed timeline (to include a City Council Kickoff Work Session) and to be available for any questions regarding the Project. (Trip Two)
- **1.3 Conference Calls.** High quality communication is key to a project's success. Conference calls will be held every other week, regardless of City attendance, and may involve screenshare. Members of the City team members are invited to be on the call for coordination and are encouraged to do so.
- **1.4 Basecamp.** With so many files and messages relating to a project, in addition to multiple project members for both the City and the consultant team, it is essential that there be a central hub for communication and file transfer. Ideation Planning will utilize Basecamp for key updates, messages, and file transfers.
- **1.5 Scope Memos.** At key points in the planning process, City team members will be provided with scope memos for recap and communication. Scope memos are noted as memos below.
- **1.6 Plan Branding Strategy.** The marketing and branding of the comprehensive planning effort is indispensable to develop and establish early in the planning effort. All communications regarding the Project will revolve around the Project Branding Strategy.

Ideation Planning, assisted by City Staff, will create a unified brand for the Project that will be carried through all Project communications, including the website, social media channels, print materials, plan documents, meetings, and public events. A unified and recognizable brand for the Project is critical to help engage the community and produce a relevant plan.

The design process of the brand will include submission of a logo/project marker concept and then, if needed, the Consultant will provide two rounds of revisions to the logo to establish the final logo. The logo will dictate the look of the plan document, color palette, and other visual components to the brand.



>>Consultant Deliverable: Project Logo

>>Consultant Deliverable: Plan Branding Strategy Memo

- **1.7 Engagement HQ.** The Consultant will create a project website on Celina's new engagement platform, Bang the Table's Engagement HQ (to be paid for by the City outside of this contract and coordinated by the Consultant as previously discussed) for the Project which will include a timeline, FAQ, introductory materials, and "who's listening" contacts which all coordinate with the Project brand. Ideation Planning will work with applicable City team members to launch the program and will maintain control of access (in addition to applicable City team member(s)) throughout the project to post applicable information and engagement opportunities.

>>Consultant Deliverable: Customized Engagement HQ Website with Comprehensive Plan Info

- **1.8 Social Media.** A content calendar will be created to include topic and timeframe for the entire planning process. In the absence of logins to make posts directly on Facebook, Instagram, and Twitter, meeting requests will be sent to the applicable City team member(s) to ensure that content is posted on social media outlets on the anticipated schedule. A Plan hashtag will be included in each post, to coincide with the finalized Plan Branding Strategy.
- **1.9 Outreach Campaigns.** The Consultant shall coordinate and monitor five Outreach Campaigns throughout the project at key stages to solicit public collaboration and notification. Outreach Campaigning is a method specific to Ideation Planning, which deploys strategically marketed engagement opportunities and information applicable to the Project. Each Outreach Campaign will include:
 - Information in the email newsletter
 - Information in a utility bill insert (except for Plan Adoption)
 - Press release
 - Signage at four key locations (to be coordinated with Staff if available) (except for Plan Adoption)
 - Social media posts on each of the three main outlets
 - One to four questions/topics on Engagement HQ (except for Plan Adoption)

Outreach Campaigns are indicated with **gray highlighting** below.

>>Consultant Deliverables: Five sets of Outreach Campaigns with Associated Materials as Applicable

- **1.10 Technical Advisory Committee (TAC).** The TAC will be composed of key City Staff from across the organization to provide technical guidance and insight throughout the planning process at key decision points. TAC members should represent most, if not all, City departments.
- **1.11 Community Advisory Committee (CAC).** The CAC will be composed of key leaders and members of the community, intended to represent valued trustees that will provide direction at key points throughout the planning process. Interested members from boards and commissions, neighborhood leaders, school district representative(s), business owners, chamber member(s), etc. should be considered. The Consultant shall assist the City in the selection of nine to 21 members to serve on the Committee. If desired by the City, the Consultant can provide a form to solicit applications from people interested in serving on the CAC (recommended but not required).



- **1.12 Trips.** The community engagement and approval process will involve 15 trips. Meetings have been combined as part of consolidating consultant trips. Ideation Planning will facilitate meetings and workshops throughout the process and provide general meeting materials such as easels, maps, and materials needed for collaboration exercises. These meetings will pursue and utilize various techniques, as well as rely on traditional meeting formats, in gathering and presenting information. The City will be responsible for providing meeting locations, public notices, agenda postings, and invitations. Any additional meetings not detailed in this Scope of Services shall be scheduled during one of the 15 trips, unless agreed to through Additional Services as detailed in Article 2 of this agreement.

Task 2: Kickoff and Initial Direction (15%)

Once the project is initiated, the Consultant will launch the kickoff meetings and outreach. The goals of this phase of the planning process are to set a strong foundation for strategy development, to receive initial direction and ideas, and familiarize the planning groups with their roles in the planning process.

- **2.1 City Data.** The City will provide the Consultant the most recent City GIS database export with all GIS layers. Any existing plan or efforts completed, or existing plans or efforts underway, shall be detailed to the Consultant for consideration in future tasks.
- **2.2 Existing Conditions and Community Profile.** The Consultant will collect population characteristics, market data, plans, studies, GIS files, existing development agreements, and other relevant data to analyze existing conditions in Celina. Growth trends, physical features, existing land use, existing zoning, and history of Celina will be among the topics that are reviewed, discussed, and analyzed. Information and insight gathered in the existing conditions and community profile task will be the foundation upon which a realistic and informed Plan will be built.
- **2.3 Outreach Campaign: Kickoff, Big Bold Ideas.**
- **2.4 Kickoff & Initial Direction Meetings.**

(Trip Three)

Technical Advisory Committee Meeting 1: Kickoff & Initial Direction.

Community Advisory Committee Meeting 1: Kickoff & Initial Direction.

(Trip Four)

Stakeholder Interviews. The Consultant will work with the City to identify the appropriate stakeholders for the Project, which can include developers, property owners, neighborhood representatives, business organizations, elected and appointed officials, nonprofit leaders, local design professionals, City Staff, and others. The Consultant will interview appropriate stakeholders involved with the Project (maximum 15) individually and in groups in one day, in person or via telephone/Skype.

Planning and Zoning Commission Meeting 1: Kickoff & Initial Direction.

(Trip Five)

City Council Meeting 1: Kickoff & Initial Direction.



(Trip Six)

Community Forum 1: Kickoff & Initial Direction. The Consultant will coordinate and lead, in partnership with City Staff, a public kickoff event to include a brief introduction by the City Manager, Project Manager, or Mayor, a brief introduction by Ideation Planning, and collaboration opportunities to solicit initial direction. Collaboration opportunity format will be finalized with City Staff but may include: Big Bold Ideas, SWOT, and Share Your Celina Story (video).

>>Consultant Deliverable: Initial Feedback Memo

Task 3: Vision and Strategy Development (25%)

The City's Vision for the next 15 to 20 years will be key to how Celina grows and the decisions City leaders will make. The Vision should be reflective of community values, aspirations, and unique characteristics, and should be relevant and realistic. Recognizing that housing, mobility, land use, and design are key issues that were raised in the 2018 Community Survey, the Strategic Plan, the Downtown Master Plan, and the Trails Master Plan, these topics will be explored in depth during this phase of the process. Ideas and feedback will be solicited and discussed to build consensus on key strategies that will be in the updated Comprehensive Plan.

Visioning and Strategy development will take place throughout the planning process.

- **3.1 Outreach Campaign: Housing, Mobility, Land Use, and Design.**
- **3.2 Vision and Strategy Development Meetings.**

(Trip Seven)

Technical Advisory Committee Meeting 2: Vision and Strategy Development. The purpose of this TAC meeting will be to determine what key feedback is necessary to get from Community Forum 2. The Consultant will design and propose methods to get the feedback needed. TAC ideas and insight will also be gathered on housing, mobility, land use, and design to inform the development of the Vision and Strategies.

Community Forum 2 (Charrette): Vision and Strategy Development. The Consultant will coordinate and lead, in partnership with City Staff, a public charrette to include collaboration opportunities to solicit feedback on housing, mobility, land use, and design. Collaboration opportunity format will be finalized with City Staff but may include a come-and-go format with multiple technical professionals participating and small group exercises.

(Trip Eight)

Community Advisory Committee Meeting 2: Vision and Strategy Development. The Consultant will share feedback themes from Community Forum 2 with the CAC to guide discussion on a proposed Vision and Strategies. CAC ideas and insight will be gathered on housing, mobility, land use, and design to inform the development of the Vision and Strategies.

>>Consultant Deliverable: Draft Vision and Feedback Recap Memo



(Trip Nine)

- **3.3 City Council Meeting 2: Draft Vision and Feedback Recap.** Initial themes from feedback received to date, in addition to engagement to date, will be highlighted in a brief presentation. The draft Vision Statement will be presented for comment and confirmation.

Task 4: Draft Plan Development and Review (30%)

Development of the draft plan will take place throughout the planning process. Goals, policies, and actions will be developed for each topic-specific chapter, and benchmarks will be identified where applicable.

- **4.1 Draft Plan Development.** Content and graphics will be prepared for the draft Plan in the general topics as listed below. Several of the topics are multi-faceted and will include multiple sub-topics. Some topics listed below will permeate multiple chapters. The list below does not represent chapter titles in all instances. Chapter titles will be determined after initial community feedback.

- Introduction & Plan Context
 - Comprehensive Plan and Uses
 - Celina and the Region
 - Community Feedback
 - Vision and Goals

- Fiscal & Economic Vitality

An overview of investment and development trends, nationally and locally, will be prepared to provide the Planning Team with insight into factors which could impact Celina's competitive positioning and fiscal and economic vitality. Assets and challenges of potential future projects and land use decisions will be determined to inform both programming and positioning recommendations. Insight into existing strengths and a phased intervention of barriers to investment will be determined to estimate a reasonable City market share.

- Existing Conditions/Profile
 - State of the Market and Product Forecast Analysis
 - Fiscal Impact Analysis (City Revenue vs. Expenditures)
 - Strategies
- Land Use

Five to 10 sectors will be identified, within the ultimate CCN boundary (approximately 73 square miles total), to divide the city into manageable assessment areas. Sectors will be determined based on major roads and geographical features. Existing data will be gathered from the applicable appraisal districts to map existing land use, and the City will provide existing zoning and ETJ information. High-level assessment for each sector will be completed to help inform future land use. The Future Land Use Plan will be developed utilizing a "place type" model which will establish Celina-specific desired place types based on community feedback.

- Existing Land Use and Zoning



Scope of Services
Celina Comprehensive Plan Update

- Sector Characteristics
 - Planned Growth
 - Future Land Use Plan and Place Types
 - Proposed Character
 - Strategies
- Mobility & Connectivity

Various mobility and connectivity planning concepts that may be appropriate in Celina will be discussed, providing both traditional and innovative considerations for roadway design. Examples of mobility and connectivity principles that may be discussed include functional street classifications, roadway sizing options, and Context Sensitive Solutions (CSS). Based on community feedback, existing conditions analysis, and best practices, Ideation Planning, with the assistance of City Staff, will update the Master Thoroughfare Plan to address long-term needs for planned growth.

- Existing Conditions (Utilizing Existing Available Data)
- Mobility Network Analysis
- Master Thoroughfare Plan Update
- Strategies

- Natural Systems

Priority corridors and areas for connected environmental systems will be identified. Natural systems analysis will be the basis upon which the Future Land Use Plan, place types, and Master Thoroughfare Plan are updated and created. Opportunities for residential, commercial, and mixed-use developments that integrate valuable environmental areas will be core to the approach to planning for the future.

- Existing Conditions
- Priority Corridors and Areas
- Parks and Open Space
- Strategies

- Infrastructure, Resources, & Energy

Existing utility and infrastructure plans, schedules, and programs will be reviewed and discussed with City Staff, including water, wastewater, stormwater/drainage, and roadways. These efforts will be examined to determine if they are meeting the needs of the current and future population, and conceptual strategies will be identified to accommodate future growth and development consistent with the Future Land Use Plan and Master Thoroughfare Plan.

- Existing Conditions – Utilities
- Existing Conditions – Roads
- Existing Conditions – Water and Energy
- Existing Conditions – Technology
- Gap Identification
- Strategies



Scope of Services
Celina Comprehensive Plan Update

- Character & Placemaking

Strategies for placemaking, arts and culture, and applicable visuals in renderings or photos will be provided as applicable.

- Existing Sector Character
- Existing Overall Community Character
- Arts and Culture
- Solution Visualization
- Strategies

- Housing & Neighborhoods

Ideation Planning will define and create recommendations on what the City should consider to preserve and improve residential areas. Community feedback will be gathered to determine housing types and location preferences, as well as desired neighborhood design.

- Existing Housing Choices
- Future Housing Choices
- Neighborhood Design
- Neighborhood Maintenance and Beautification
- Strategies

- City Services & Facilities

Existing City facilities will be identified, and any planned City facilities will be discussed via conference call. Review of information provided, including a questionnaire to be completed by the City, will assist in identification of anticipated future needs and policy-level strategies to accommodate future growth. Risk management strategies, based on current operations and best practices, will be identified to mitigate or lessen the effects of some potential risks due to extreme weather, natural disasters, and man-made threats. The existing parks, open space, and recreation facilities and plans will be reviewed to determine, conceptually, if they meet the needs of current and future population. Overall strategies for parks and recreation, with a quality of life focus, will be provided.

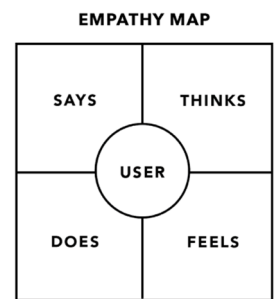
- Quality of Life Focus
- Library
- Parks and Recreation
- Safety and Emergency Response
- Risk Management/Resiliency

- Implementation & Monitoring

A coordinated and prioritized action program will be developed so that steps can be taken to achieve the Vision for the City. The action program will include conceptual priorities and cost magnitudes. The implementation and monitoring set of topics will also discuss how amendments to the Comprehensive Plan should be made, how to utilize the Plan, and how often the Comprehensive Plan should be updated. Recommendations for monitoring the status of Plan implementation will also be discussed.



- Partnerships
 - Financing
 - Strategy Prioritization
 - Benchmarks
 - Usage, Updates, and Amendments
- **4.2 End-user Focus Group Discussions.** The Consultant, with the assistance of City Staff, will lead four End-User Focus Group Discussions with individuals and groups who will utilize the new Plan and potentially be affected by it: Staff & Partners, Developers & Builders, Large/Key Land Holders, and Neighborhood Leaders. The Discussions will be designed to engage the community and Staff, gather ideas and goals, formulate implementation strategies, and test them to see how they may work in practical situations. (Trip 10)
 - The Consultant, with the assistance of City Staff, will tailor the Focus Groups to obtain maximum input to produce the best possible Plan. The Focus Groups will take into consideration the feedback gathered in the 2018 Community Survey, the Strategic Plan, the Downtown Master Plan, and the Trails Master Plan (in progress). While the end result will be an updated Comprehensive Plan, the design process will include discussions of connectivity, aesthetics, design, and city planning strategies that create and encourage lively place types, corridors, and livable neighborhoods.
 - An empathy map will be created for each of the four End-User Focus Groups. Visualizing user attitudes and behaviors in an empathy map will allow the Project Team to have a deep understanding of end users and align Plan Strategies with a relevant and pleasant user experience. Empathy maps are collaborative visualizations used to articulate what we know about a particular type of user. They illustrate knowledge about users in order to 1) create a shared understanding of user needs, and 2) inform potential Strategies and Implementation.



- **4.3 Outreach Campaign: Draft Concepts & Highlights.**
- **4.4 Draft Concepts and Highlights Meetings.**

(Trip 11)

Technical Advisory Committee Meeting 3: Draft Concepts & Highlights. The Consultant will share draft concepts and highlights in the draft Plan to get confirmation or receive feedback on things that may need to be refined. Feedback from this meeting will be used to finalize the draft concepts and highlights that will be presented to the CAC and at Community Forum 3. The presentation will be provided to the group in advance to facilitate an effective and efficient discussion of the content.

Community Advisory Committee Meeting 3: Draft Concepts & Highlights. The Consultant will share draft concepts and highlights in the draft Plan to get confirmation or receive feedback on things that may need to be refined. Feedback from this meeting will be used to finalize the draft concepts and highlights that will be presented to City Council and at Community Forum 3. The presentation will be provided to the group in advance to facilitate an effective and efficient discussion of the content.

(Trip 12)



City Council Meeting 3: Draft Concepts & Highlights. The Consultant will give a brief presentation on feedback received and process to date. The Consultant will share draft concepts and highlights in the draft Plan to get confirmation or receive feedback on things that may need to be refined. Feedback from this meeting will be used to finalize the draft concepts and highlights that will be presented at Community Forum 3. The presentation will be provided to the group in advance to facilitate an effective and efficient discussion of the content.

(Trip 13)

Community Forum 3: Draft Concepts & Highlights. Community Forum 3 will be a celebration of the work that the community and stakeholders put into updating the Comprehensive Plan and to showcase the Vision and Strategies for review and comment in a collaborative open house format. Feedback gathered from the event will validate some Strategies, refine others, and could bring forth new Strategies and changes before the draft Plan is finalized for posting online for full review before public hearing.

>>Consultant Deliverable: First Draft Plan without Implementation Chapter

>>Consultant Deliverable: Second Draft Plan with Implementation Chapter (to be prepared after receiving and incorporating one set of consolidated comments received from the City)

Task 5: Plan Adoption (5%)

- **5.1 Public Hearing Draft.** Based on one set of consolidated comments received from the City, a public hearing draft Plan will be prepared. Once in public hearing, no additional changes should be made unless they are non-substantive in nature or directed by City Council. Should P&Z require changes to the Plan in order to recommend approval to City Council, those changes will be made at the direction of the City or provided to City Council as recommendations from P&Z for City Council consideration. The public hearing draft will be put online for public review and comment no later than two weeks prior to the P&Z public hearing.

>>Consultant Deliverable: Public Hearing Draft

- **5.2 Outreach Campaign: Draft Plan Online.**

(Trip 14)

- **5.3 P&Z Public Hearing.**

(Trip 15)

- **5.4 City Council Public Hearing.**

- **5.5 Outreach Campaign: Plan Adopted.**

Task 6: Project Closeout (5%)

- **6.1 Final Deliverables.** The final deliverables for the update to the Comprehensive Plan will be:



- Five (5) color copies of the approved and final Comprehensive Plan.
- One electronic file transfer (Basecamp) of the digital files of the final update to the Comprehensive Plan and any advertising images or maps.

Article 2: Compensation & Payments

The CLIENT agrees to pay the CONSULTANT for the SCOPE OF SERVICES listed in Article 1 as they are performed and invoiced based on a proportionate amount as it relates to the overall lump sum fee of \$250,000.

ADDITIONAL SERVICES shall be provided, upon written consent by the CLIENT, on an hourly basis or lump sum fee based on a negotiated amount, if agreed to via customized email (i.e. not read receipt) by both CLIENT and CONSULTANT, or a supplemental agreement.

Any costs outside of the services outlined in Article 1, such as materials cost or printing, shall be the responsibility of the CLIENT. Additional services to be performed by Ideation Planning, if authorized by the City in writing, which are not included in the above described Scope of Services, are described as follows:

- A. Providing renderings, models, and mock-ups requested by the City.
- B. Making revisions to drawings or other report documents when such revisions are 1) not consistent with approvals or instructions previously given by the City or 2) due to other causes not solely within the control of Ideation Planning.
- C. Providing services to investigate existing conditions or facilities, or to make measured drawings thereof, or to verify the accuracy of drawings or other information furnished by the City.
- D. Meetings or trips in excess of the number of meetings included in Article 1 for site visits, visits, coordination meetings, or other activities.
- E. Preparing applications and supporting documents for government grants, loans, or planning advances and providing data for detailed applications.
- F. Preparing data and reports for assistance to the City in preparation for hearings before regulatory agencies, courts, arbitration panels, or any mediator, giving testimony, personally or by deposition, and preparations therefore before any regulatory agency, court, arbitration panel, or mediator.
- G. Design, contract modifications, studies, or analysis required to comply with local, State, Federal, or other regulatory agencies that become effective after the date of this agreement.
- H. Providing basic or additional services on an accelerated time schedule. These services will include cost for overtime wages of employees and consultants, inefficiencies in work sequence and plotting or reproductions costs directly attributable to an accelerated time schedule directed by the City.
- I. Preparing statements for invoicing or other documentation for billing other than for the standard invoice for services.
- J. Providing document revisions in excess of those outlined in Article 1.

The CONSULTANT shall bill the CLIENT once per month based on services completed during the month prior. **All payments are due to CONSULTANT within 30 days of invoice. Work will stop if payment is not received within 30 days, and the Standard Terms and Conditions of this contract will be applied.**

Article 3: Timing of Completion

Timing. Ideation Planning is authorized to commence work on the Project upon execution of this Agreement and agrees to complete the services within 16 months. If Ideation Planning's services are delayed through no fault of Ideation Planning, Ideation Planning shall be entitled to adjust contract schedule consistent with the



*Scope of Services
Celina Comprehensive Plan Update*

impact of the delay. These delays may include, but are not limited to, delays in City or regulatory reviews, delays on the flow of information to be provided to Ideation Planning, and delays by the City in scheduling meetings. These delays may also result in an adjustment to compensation as outlined on the face of this Agreement. A timeline will be established with Staff during the Project Initiation task.

Responsibilities of CLIENT. The City shall perform the following in a timely manner so as not to delay the services of Ideation Planning:

- A. Provide meeting space and coordinate equipment needs, room set up, and logistics for meeting outlined in Article 1.
- B. Contact meeting invitees for stakeholders and public meetings. This includes email, mail, newsletter, and other forms of communication.
- C. Designate in writing a person to act as the City's representative with respect to the services to be rendered under this Agreement. Such person shall have contract authority to transmit instructions, receive information, disseminate information, interpret and define City policies and decisions with respect to Ideation Planning's services for the Project.
- D. Arrange for access to and make all provisions for Ideation Planning to enter upon public or private property as required for Ideation Planning to perform services under this Agreement.
- E. Examine and provide prompt feedback on all submittals, draft reports, sketches, drawings, and other documents presented by Ideation Planning, within a reasonable time (not to exceed two weeks) so as not to delay the services of Ideation Planning or hinder Project efficiency.
- F. Furnish, or direct Ideation Planning to provide, Additional Services as stipulated in Article 2 or other services as directed or required.
- G. Bear all costs incident to compliance with the requirements of this Article.



Exhibit B

Ideation Planning, LLC STANDARD TERMS AND CONDITIONS

1. SCOPE

Ideation Planning, LLC (hereinafter “Consultant” or Ideation Planning, LLC) agrees to perform the services described in the Scope of Services attached hereto which incorporates these terms and conditions. Unless modified in writing by the parties hereto, the duties of Ideation Planning, LLC shall not be construed to exceed those services specifically set forth in the proposal. These terms and conditions and the proposal, when executed by Client, shall constitute a binding agreement on both parties (hereinafter the “Agreement”).

2. COMPENSATION

Client agrees to pay for the services completed in Article 1 in accordance with the compensation provisions in the proposal. Payment to Ideation Planning, LLC will be made within 30 days after the date of billing. Interest on the unpaid balance will accrue beginning on the 31st day at the maximum interest rate permitted by law.

Time-related charges will be made in accordance with the billing rate referenced in the proposal or Agreement. Otherwise, Ideation Planning, LLC’s standard billing rate of \$175 per hour shall apply. In the event any uncontested portions of any invoice are not paid within 30 days of the date of Consultant’s invoice, Consultant shall have the right to suspend Services per Article 12, Suspension of Services.

3. RESPONSIBILITY

Standard of care. Ideation Planning, LLC is employed to render a professional service only, and any payments made by Client are compensation solely for such services rendered and recommendations made in carrying out the Services. Ideation Planning, LLC does not expressly or impliedly warrant or guarantee its services.

Reliance upon information provided by others. If Ideation Planning, LLC’s performance of services hereunder requires Ideation Planning, LLC to rely on information provided by other parties (excepting Ideation Planning’s Contractors), Ideation Planning, LLC shall not independently verify the validity, completeness or accuracy of such information unless otherwise expressly engaged to do so in writing by the Client.

4. INDEMNIFICATION

Ideation Planning, LLC agrees to indemnify and hold Client harmless from and against any liability to the extent arising out of the negligent acts, errors, or omissions of Ideation Planning, LLC, its agents, employees, or representatives, in the performance of duties under the Agreement. Regardless of any other term of this Agreement, in no event shall Ideation Planning, LLC be responsible or liable to Client for any incidental, consequential, or other indirect damages.

5. INSURANCE

Ideation Planning, LLC shall maintain during the life of the Agreement the following minimum insurance:

- Workers compensation insurance
- Automobile bodily injury and property damage liability insurance covering owned or rented cars. The combined single limit for bodily injury and property damage shall be not less than \$1,000,000.
- Professional liability insurance with limits of not less than \$1,000,000.
- General liability insurance with limits of not less than \$1,000,000.

Certificates of insurance will be provided to Client at the beginning of the contract, and with a 30-day written notice in the event the above policies are cancelled.

6. ASSIGNMENT

If the authorized Scope of Services includes construction activities or the oversight of construction, Ideation Planning, LLC may, at its discretion and upon notice to Client, assign all of its contractual rights and obligations with respect to such activities or services to a registered engineering affiliate.

If the authorized Scope of Services requires professional services to be performed in a jurisdiction in which Ideation Planning, LLC renders professional services solely through a locally registered engineering affiliate for purposes of compliance with professional licensing requirements in that jurisdiction, Ideation Planning, LLC may, in its discretion, upon notice to Client, assign its contractual rights and obligations with respect to such services to such locally registered engineering affiliate.



*Scope of Services
Celina Comprehensive Plan Update*

7. INTEGRATION

These terms and conditions and the proposal to which they are attached represent the entire understanding of Client and Ideation Planning, LLC as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered herein. The Agreement may not be modified or altered except in writing signed by both parties, provided further that any terms and conditions in any client authorization or purchase order issued in connection or under the Agreement which are inconsistent with the Agreement are hereby superseded and shall be of no force and effect.

8. CHOICE OF LAW/JURISDICTION

This Agreement shall be administered and interpreted under the laws of the state in which the Ideation Planning, LLC office responsible for the project is located. Jurisdiction of litigation arising from the Agreement shall be in that state.

9. SEVERABILITY

If any part of the Agreement is found unenforceable under applicable laws, such part shall be inoperative, null and void insofar as it is in conflict with said laws, but the remainder of the Agreement shall be in full force and effect.

10. FORCE MAJEURE

Ideation Planning, LLC shall not be responsible for delays in performing the Scope of Services that may result from causes beyond the reasonable control or contemplation of Ideation Planning, LLC. Ideation Planning, LLC will take reasonable steps to mitigate the impact of any force majeure.

11. NO BENEFIT FOR THIRD PARTIES

The services to be performed by Ideation Planning, LLC hereunder are intended solely for the benefit of Client, and no right nor benefit is conferred on, nor any contractual relationship intended or established with any person or entity not a party to this Agreement. No such person or entity shall be entitled to rely on Ideation Planning, LLC's performance of its services hereunder.

12. WORK PRODUCT

Ideation Planning, LLC and Client recognize that Ideation Planning, LLC's work product submitted in performance

of this Agreement is intended only for the Client's benefit and use. Change, alteration, or reuse on another project by Client shall be at Client's sole risk, and Ideation Planning, LLC shall have no liability for changes, alterations, or reuse on another project. To the extent allowed by law, Client shall hold harmless, release, and indemnify Ideation Planning, LLC against all losses, damages, costs, and expense, including attorneys' fees, arising out of or related to any such unauthorized change, alteration, or reuse.

13. SUSPENSION OF SERVICES

Services under this Agreement may be suspended as follows:

1. By Client. By written notice to Ideation Planning, LLC, Client may suspend all or a portion of the Services under this Agreement if unforeseen circumstances beyond Client's control make normal progress of the Services impracticable. Ideation Planning, LLC shall be compensated for its reasonable expenses resulting from such suspension including mobilization and demobilization. If suspension is greater than 30 days, then Ideation Planning, LLC shall have the right to terminate this Agreement in accordance with Article 14, Termination of Services.
2. By Ideation Planning, LLC. By written notice to Client, Ideation Planning, LLC may suspend the Services if Ideation Planning, LLC reasonably determines that working conditions at the Site or on the Project (outside Ideation Planning, LLC's control) are unsafe, or in violation of applicable laws, or in the event Client has not made timely payment in accordance with Article 2, Compensation, or for other circumstances not caused by Ideation Planning, LLC that are interfering with the normal progress or the Services. Ideation Planning, LLC's suspension of Services hereunder shall be without prejudice to any other remedy of Ideation Planning, LLC at law or equity.

14. TERMINATION OF SERVICES

This Agreement may be terminated as follows:

1. By Client. (a) for its convenience on 30 days' written notice to Ideation Planning, LLC, or (b) for cause, if Ideation Planning, LLC



*Scope of Services
Celina Comprehensive Plan Update*

materially breaches this Agreement through no fault of Client and Ideation Planning, LLC neither cures such material breach nor makes reasonable progress toward cure within 15 days after Client has given written notice of the alleged breach to Ideation Planning, LLC, or (c) by mutual agreement and consent of both Consultant and Client.

2. By Ideation Planning, LLC. (a) for cause, if Client materially breaches this Agreement through no fault of Ideation Planning, LLC and Client neither cures such material breach nor makes reasonable progress toward cure within 15 days after Ideation Planning, LLC has given written notice of the alleged breach to Client, or (b) upon five days' notice if Services under this Agreement have been suspended by either Client or Ideation Planning, LLC in the aggregate for more than 30 days, or (c) by mutual agreement and consent of both Consultant and Client.
3. Payment upon Termination. In the event of termination, Ideation Planning, LLC shall

perform such additional Services as is reasonably necessary for the orderly closings of the Services. Ideation Planning, LLC shall be compensated for all Services performed prior to the effective date of termination, plus Services required for the orderly closing of the Services.

15. NOTICES

All notices required under this Agreement shall be by personal delivery, email, or mail to the Ideation Planning, LLC Project Manager and to the person signing the proposal on behalf of the Client, and shall be effective upon delivery to the email address stated in the proposal, when confirmed via custom email (not read receipt) or via Certified Mail. Any notices under this agreement shall be copied to contracts@celina-tx.gov if via email or sent to the following if mailed:

City of Celina City Hall
ATTN: Contracts
142 North Ohio Street
Celina, TX 75009.



Administration
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Paul DeBuff, Assistant to the City Manager
CC: Jason Laumer, City Manager
Date: February 12, 2019
Re: Appoint C. Howard to Celina MMD #2 Board of Directors

Action Requested:

Consider and act to appoint Corbett Howard as the City-appointed director for Celina Municipal Management District No. 2 Board of Directors for a term ending May 1, 2022. (Laumer)

Background Information:

This item considers the appointment of Corbett Howard for the purpose of representing the City to the Celina Municipal Management District #2 on the District's Board of Directors. Mr. Howard's term would end May 1, 2022.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

This item has been reviewed by the City Attorney.

Supporting Documents:

N/A

Staff Recommendation:

Staff recommends approval.



Engineering
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Catherine Oduro, Engineer
CC: Kim Brawner, Director of Engineering
Date: February 12, 2019
Re: Pump Stations Improvement Phase 2 Project

Action Requested:

Consider and act to authorize the City Manager to execute a contract by and between the City of Celina and Archer Western Construction LLC in the amount of \$3,656,576.99 for the construction of improvements to the Celina Road and Downtown Pump Stations. (Brawner)

Background Information:

The recently completed water modeling project documented an immediate need for expansion of the pumping capacity at both the Celina Road Pump Station and the Downtown Pump Station. These expansions are needed to provide the projected capacity due to planned development. The project will include the installation of new pumps, piping and associated appurtenances, demolition of existing structures, and site improvements.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

Part of the 2018 bond issuance

Legal Review:

Standard contract documents are being utilized which the City Attorney has previously reviewed and approved.

Supporting Documents:

Letter of recommendation
Bid tabulation
Contract

Staff Recommendation:

Approve

SPECIFICATIONS AND CONTRACT DOCUMENTS



CELINA, TX

FOR THE CONSTRUCTION OF
CELINA PUMP STATIONS
PHASE II
IMPROVEMENTS

Volume 1: Bidding Requirements, Contract
Documents, and Technical Specifications
Divisions 00 – 09

Garver Project ID: 18088190
City of Celina Project No.: 18-5829

Prepared For:

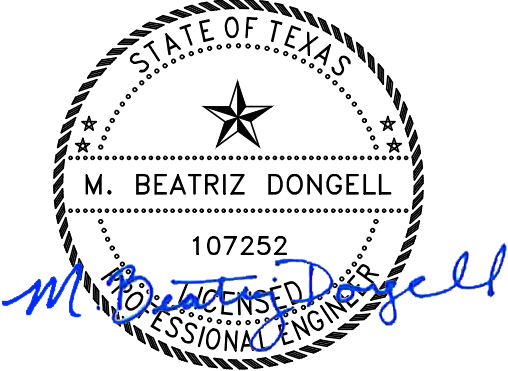
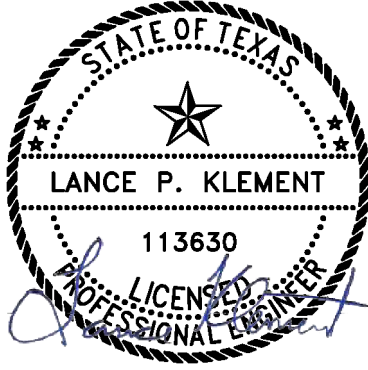
City of Celina

January 2019

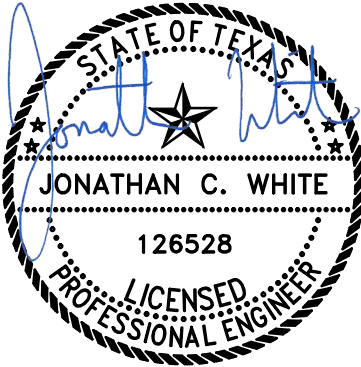


CELINA PUMP STATIONS PHASE 2 IMPROVEMENTS
GARVER PROJECT NO. 18088190
CITY OF CELINA PROJECT NO. 18-5829

I hereby certify that the applicable portions of this project plans and specifications were prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the laws of the State of Texas.

SEAL AND SIGNATURE	APPLICABLE DIVISION OR PROJECT RESPONSIBILITY
M. Beatriz Dongell, P.E.  Digitally Signed: 01/18/2019	Division 00 Contract Documents Division 01 General Requirements Division 02 Existing Conditions Division 22 Plumbing Division 31 Earthwork Division 32 Exterior Improvements Division 33 Utilities Division 40 Process Integration Division 44 Pollution Control Equipment
Lance Klement, P.E.  Digitally Signed: 01/18/2019	Division 23 HVAC

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

Kipp Martin, P.E.  Digitally Signed: 01/18/2019	Division 03 Concrete Division 07 Thermal and Moisture Protection Division 09 Finishes
Jonathan White, P.E.  Digitally Signed: 01/18/2019	Division 26 Electrical

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

GARVER, LLC CERTIFICATE OF AUTHORIZATION:**TX ENGINEERING REGISTRATION NO. F-5713**

Expiration Date: 01/31/2020

3010 Gaylord Parkway
Suite 190
Frisco, TX 75034
972-377-7480

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

CITY OF CELINA
CELINA PUMP STATIONS PHASE II IMPROVEMENTS

TABLE OF CONTENTS

VOLUME 1 BIDDING REQUIREMENTS, CONTRACT DOCUMENTS, AND SPECIFICATIONS

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PART 1 BIDDING REQUIREMENTS



**CITY OF CELINA
CELINA, TX
CELINA PUMP STATIONS PHASE 2 IMPROVEMENTS
Client Project No. 18-5829**

ADVERTISEMENT FOR BIDS

Sealed bids from bidders for **CELINA PUMP STATIONS PHASE 2 IMPROVEMENTS**, to be constructed for the **CITY OF CELINA** will be received at the Celina City Hall and addressed to **City of Celina Engineering Department, Celina City Hall, 142 N. Ohio St., Celina, TX 75009**, until **3 pm on Monday, February 4th, 2019**, at which time the bids shall be publicly opened and read aloud. No bids will be accepted after 3:00 pm on February 4th, 2019. Bids received after this time will be returned unopened. Address Bids to Dawn Berry. Contract Documents may be examined free of charge at the following address:

Owner
City of Celina
142 N. Ohio Street
Celina, TX 75009
Dawn Berry

A **mandatory** Pre-Bid Meeting will be held at **10:00 am on Monday, January 28th, 2019** at the Celina City Hall located at 142 N. Ohio St., Celina, Texas. Pre-Bid Meeting attendance is mandatory for bidders on this project. Each bidder shall be limited to three personnel per organization. Bids shall not be accepted from bidders that do not attend the Pre-Bid Meeting.

In general, the completed work will provide the Owner with the following:

At Celina Road Pump Station:

- Addition of two vertical split-case pumps with its associated valves and appurtenances, exterior recoating of an existing ground storage tank, 24-inch and 36-inch diameter yard piping with isolation valves, and backup power at Celina Road Pump Station (additive alternate).

At Downtown Pump Station:

- Addition of one vertical split-case pump (plus an additional vertical split case pump as an additive alternate) with associated valves and appurtenances, addition of a new flow meter with vault, site plan modifications including a new fence and gate with an additive alternate for landscape screening, demolition of an existing GST and pumps and appurtenances inside the old pump station building, and 30-inch and 36-inch diameter yard piping with isolation valves.

Other work includes modifications to electrical and instrumentations and controls at both pump stations and two external sites.

Bids shall be on a lump sum and unit price basis, with alternate bid items as indicated in the Bid Form.

Digital copies of the bid documents are available at <http://civcastusa.com> for free. These documents may be downloaded by entering CivCast Project Number **18088190** on the "Browse Projects" page. For assistance, contact CivCast at 281.376.4577 or support@civcast.com. **Addendums to the bid package will be issued through the online CivCast Plan Holders List; therefore, all prime bidders shall be responsible for downloading the bid documents from the CivCast online plan room in order to be included in the Plan Holders List. Prime bidders should be registered on the CivCast Plan Holders List in order to submit a bid on the project. Bidders must enter the addenda numbers in Article 3.01 of the Bid Form to verify receipt.**

All bidders have been required to complete Document 00 45 13, Qualification Statement. Qualification of Bidders is required. Due to the critical nature of the construction, the experience and qualifications of Bidders will be evaluated by the Owner upon the opening of Bids. Bids will be graded based on criteria indicated in Section 00 45 13 – Contractor's Qualification Package, which will be used to demonstrate Bidder's qualifications to perform the Work. The qualifications of Bidder's will be at the discretion of the Owner.

Bids shall be accompanied by a cashier's or certified check upon a national or state bank in an amount of five percent (5%) of the total maximum bid price payable without recourse to the Owner, or a bid bond in the same amount from a reliable surety company, as a guarantee that the Bidder will enter into a contract and execute performance and payment bonds within fifteen (15) days after notice of award of Contract to him. Such bid guarantee shall be made payable to **CITY OF CELINA**.

The successful Bidder must furnish performance and payment bonds each in the amount of 100 percent (100%) of the contract price from an approved Surety Company holding a permit from the State of Texas, to act as Surety and be acceptable according to the latest list of companies holding certificates of authority from the Secretary of Treasury of the United States, or other Surety or Sureties acceptable to the Owner.

Bids must remain in effect for **90** days after the bid opening date. Within **90** days from the bid date, the Owner may award the contract to the lowest responsive, responsible bidder or reject any or all bids for the project.

Bidders are expected to inspect the site of the work and to inform themselves regarding local conditions and conditions under which the work is to be done. Attention is called to the provisions of the Acts of the 43rd Legislature of the State of Texas and subsequent amendments concerning the wage scale and payment of prevailing wages specified. Prevailing wage rates will be as established by the City of Celina for this project.

The **CITY OF CELINA** reserves the right to reject any or all bids, to waive irregularities in the bids and bidding deemed to be in the best interests of the **CITY OF CELINA**, and to reject nonconforming, nonresponsive, or conditional bids. In case of ambiguity or lack of clearness in stating the price in the bids, the Owner reserves the right to consider the most advantageous construction thereof, or to reject the bid. Unreasonable or unbalanced unit prices will be considered sufficient cause of rejection of any bid or bids.

All project related questions shall be directed to the Project Manager at the following contact information:

Project Manager
Beatriz Dongell, P.E.
3010 Gaylord Pkwy #190, Frisco, TX 75034
MBDongell@GarverUSA.com
(972) 377-7480

Published Dates: **January 18th, 2019 and January 25th, 2019**

END OF ADVERTISEMENT FOR BIDS

INSTRUCTIONS TO BIDDERS

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ARTICLE 1 – DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof:
- A. *Bidder* – Any individual, partnership, corporation, joint venture, or other combination thereof who submits a Bid to Owner for the Work contemplated, acting directly or through an authorized representative. As used in the Contract Documents, masculine pronouns refer to both masculine and feminine genders.
 - B. *Successful Bidder* – The lowest responsible Bidder submitting a responsive Bid to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.
 - C. *Issuing Office* – The office from which the Bidding Documents are to be issued.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, Bidder shall submit written evidence establishing its qualifications such as financial data, previous experience, and present commitments, as detailed in Section 00 45 13 Qualifications Statement.
- 3.02 The criteria which will be used to determine the lowest responsive and responsible Bidder are as follows:
- A. Responsive Bidder: Means a Bidder who has submitted a Bid which conforms in all material respects to the Bidding Documents.
 - B. Responsible Bidder: Means a Bidder who has the capacity and capability in all respects to perform fully the contract requirements and who has the integrity and reliability to assure good faith performance. Among factors to be considered in determining whether the Bidder meets these standards, are:
 - 1. Financial, material, equipment, facility, and personnel resources and expertise necessary to meet contractual requirements;
 - 2. A record of integrity;
 - 3. A record of Successful Completion defined as: completion of a project within a reasonable time and budget;
 - 4. Qualified legally to contract with the Owner, and;
 - 5. Has not failed to supply any necessary information in connection with the inquiry concerning responsibility.
- 3.03 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.04 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

- 3.05 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

- a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
- b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
- d. Technical Data contained in such reports and drawings.

2. Owner will make pdf digital copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

- C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

- A. Bidder shall conduct Site visit(s) by appointment, during normal working hours, and shall not disturb any ongoing operations at the Site.
- B. Bidder is not required to conduct any subsurface testing of Site conditions.

- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.
- D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

- A. Site visits and work at the Site will be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work for which a Bid is to be submitted. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

- A. Examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. Visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. Become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. Carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;
- E. Consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;
- F. Agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

- G. Become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. Promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- I. Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- J. Agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 6 – PRE-BID CONFERENCE

- 6.01 A mandatory pre-Bid conference will be held at the date and time identified in the Advertisement for Bids and Addenda as appropriate. Representatives of Owner and Engineer will be present to discuss the Project. Prospective bidders are required to attend and participate in the conference. Engineer will transmit to all prospective Bidders, of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than forty-eight (48) hours prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents. The final addenda shall be issued at a minimum of twenty-four (24) hours prior to the opening of bids' date and time.
- 7.03 In the event of a conflict between the plans and specifications, the specifications shall govern.

ARTICLE 8 – BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of **5 percent** of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a cashier's or certified check, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 of the General Conditions.
- 8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.
- 8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the

Contract or 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, milestones are to be achieved and the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS

- 11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or “or-equal” items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or “or-equal” item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract. All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 12.01 The apparent Successful Bidder, and any other Bidder so requested, shall within 30 minutes after Bid opening, submit Section 00 41 19, List of Proposed Subcontractors, for prior approval of the Owner.

If requested by Owner, before executing any subcontract, and within three (3) days after bid opening, the apparent Successful Bidder, and any other Bidder so requested, shall submit an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award. Declining to make requested substitutions will **not** constitute grounds for forfeiture of the Bid security of any Bidder.

- 12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.
- 12.03 The quantities of work or material stated in unit price items of the Bid are supplied only to give an indication of the general scope of the Work; the Owner does not expressly or by implication agree that the actual amount of work or material will correspond therewith.
- 12.04 With this bid, the CONTRACTOR acknowledges and agrees the requirements of Paragraph 11.02 to the Instructions to Bidders.

ARTICLE 13 – PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form shall be completed either in ink or type and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
 - B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”
 - C. A conditional bid will not be considered.
- 13.02 A Bid by a corporation or partnership shall be executed in the corporate or partnership name by an officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate or partnership address and state of incorporation shall be shown. The corporate seal shall be affixed and attested by the corporate secretary or an assistant corporate secretary.
- 13.03 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
- 13.04 A Bid by an individual shall show the Bidder’s name and official address.
- 13.05 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.06 All names shall be printed in ink below the signatures.
- 13.07 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.08 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.09 The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder’s state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

- 14.01 Base Bid with Alternates
- A. Bidders shall submit a Bid on a lump sum basis for the Base Bid and include a separate price for each alternate described in the Bidding Documents and as provided for in the Bid Form. The price for each alternate will be the amount replacing the base Bid if Owner selects the alternate. The lowest responsive Bid shall be a responsible Bid based upon the total of the Base Bid and any combination of alternatives as selected by the Owner.
 - B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form.
 - C. The Bid price shall include such amounts as the Bidder deems proper for overhead and profit on account of cash allowances, if any, named in the Contract Documents as provided in paragraph 13.02 of the General Conditions.
 - D. Discrepancies between words and figures will be resolved in favor of the figures.
- 14.02 Unit Price
- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

- B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity" (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the figures.

14.03 Allowances

- A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 15 – SUBMITTAL OF BID

- 15.01 The Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.
- 15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title and number(s) (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." The Bidders name and return address shall be plainly marked on the package. Mailed Bid shall be addressed to Dawn Berry, Purchasing Agent c/o **City of Celina, Texas, Celina City Hall, 142 N. Ohio St., Celina, TX 75009.**
- 15.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

- 16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

- 17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.
- 19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.
- 19.03 Evaluation of Bids
- A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
 - B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
- 19.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.
- 19.06 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 19.07 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in the best interests of the Owner.
- 19.08 Unless otherwise indicated, a single award will not be made for less than all the Bid Items of an individual Bid Schedule. In the event the Work is contained in more than one Bid Schedule, the Owner may award schedules individually or in combination. In the case of two or more Bid Schedules which are alternative to each other, only one of such alternative schedules will be awarded.

ARTICLE 20 – BONDS AND INSURANCE

- 20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance, payment, and maintenance bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

- 21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation

required to be delivered by the Contract Documents) to Owner. Within 10 days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 22 – SALES AND USE TAXES

- 22.01 The project Owner is exempt from Texas state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes **shall not** be included in the Bid. Refer to Paragraph SC-7.09 of the Supplementary Conditions for additional information.

ARTICLE 23 – RETAINAGE

- 23.01 Provisions concerning CONTRACTOR's rights to deposit securities in lieu of retainage are set forth in the Agreement.

ARTICLE 24 – CONTRACTS TO BE ASSIGNED

- 24.01 Not Used

ARTICLE 25 – BUY AMERICAN

- 25.01 In accordance with the Buy American provision in Public Law 95-117 (section 215 of Public Law 92-500 as amended) the Contractor agrees that preference will be given to domestic material, by the contractor, subcontractors, materialmen, and suppliers and Owner in the performance of this contract.

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END OF INSTRUCTIONS TO BIDDERS

BIDDER'S CHECKLIST OF REQUIRED ITEMS

This Bidder's Checklist is provided to ensure all required forms are completed and returned as part of the bid submission. All forms must be included as indicated for a bid to be considered a complete, responsive bid. Appropriate signatures and date are required on each document. If an item is missing, the bid may be declared unresponsive and therefore rejected. **This sheet will serve as the cover sheet for the bid submission.**

Completed* Spec. Section

Attended Pre-Bid	☐	00 11 00
Acknowledgement of All Addenda	☐	
Bid contains the following forms:	☐	
1. Bid Form/Proposal	☐	00 41 13
2. List of Manufacturers	☐	00 41 16
3. List of Proposed Subcontractors	☐	00 41 19
4. Bid Bond	☐	00 43 13
5. Davis Bacon Wage Rates	☐	00 43 43
6. Qualifications Statement	☐	00 45 13
7. Coating Manufacturer Written Statement and Reference List	☐	09 97 00
*Check when filled out, signed, and included with submission of bid packet.		

Within thirty (30) minutes after Bid Opening:

1. Section 00 41 16, List of Manufacturers
2. Section 00 41 19, List of Subcontractors

Within three (3) days after Bid Opening:

Bidder acknowledges to provide within three (3) days after Bid Opening (Low Bidder Only):

1. Bidder's Qualifications of Subcontractor (if requested)
2. Bid breakdown shall be provided to form the basis for the making of Progress Partial Payments (if applicable)

Within fifteen (15) days after Notice of Award:

Bidder acknowledges that within fifteen (15) days after Notice of Award, Successful Contractor is required to complete the following before execution and award of the contract:

1. Section 00 52 00, Agreement (all pages and supporting documents)
2. Section 00 61 13, Performance Bond
3. Section 00 61 16, Payment Bond
4. Section 00 61 19, Maintenance Bond
5. Completed Certificates of Insurance

Prior to Construction:

Awarded Contractor required to submit Construction Schedule **before** construction begins.

Seal (if incorporated)

Bidder Name: _____

Address: _____

City, State, Zip Code: _____

Contractor Number: _____

Contact Name: _____

Title: _____

Contact Number: _____

Contact Email: _____

Signature of Authorized Agent for Bidder: _____

Date: _____

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

BID FORM

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Attachment: Contract Doc (Pump Stations Improvement Phase 2)

ARTICLE 1 – BID RECIPIENT

- 1.01 This Bid is submitted to:

**Dawn Berry
City of Celina
142 N. Ohio St.
Celina, TX 75009**

- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

- 2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for **90** days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.
- 2.02 In submitting this Bid, Bidder acknowledges and accepts Contractor's representations as more fully set forth in the Agreement Form.
- 2.03 In submitting this Bid, Bidder certifies Bidder is qualified to do business in the State of TX as required by laws, rules and regulations or, if allowed by statute, covenants to obtain such qualification prior to contract award.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

- 3.01 In submitting this Bid, Bidder represents that:

- A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum, Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings

identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.
- K. By submitting a bid/proposal under this solicitation, the Bidder understands that the bid/proposal is subjected to the Davis/Bacon Act including prevailing wage rates and the Contract Work hours and Safety Standards Act.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
 - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
 - 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

- 5.01 Contingency Allowances: Bidder agrees that the following contingency efforts, products (materials and equipment) as further described in Sections 01 29 00, PAYMENT PROCEDURES, and 01 50 00, TEMPORARY FACILITIES AND CONTROLS, will be furnished and paid for on a cash allowance basis and that the amount shown is an estimated amount to be included in the Total Base Bid. Bidder further acknowledges that final payment will be based on actual costs as determined in conformance with the Bidding Documents. Bidder agrees that the following contingency allowances are for the sole use of the Owner to cover unanticipated costs and have been computed in accordance with Paragraph 13.02 of the General Conditions.

ITEM	DESCRIPTION	CONTINGENCY
1.	Work Change Directives	\$ 130,000
2.	Independent Testing Cash Allowance	\$ 20,000
Lump Sum for Contingency Allowances		\$ 150,000

- 5.02 Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.
- 5.03 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Base Bid Item No.	Bid Qty	Description (Bidder to write Bid Price in words)	Unit Price	Bid Price
1	1 LS	Celina Road Pump Station Improvements, in accordance with the specifications and drawings, complete in place, the lump sum of: _____ _____	N/A	\$
2	1 LS	Downtown Pump Station Improvements, in accordance with the specifications and drawings, complete in place, the lump sum of: _____ _____	N/A	\$
3	1 LS	Vertical Split-Case Pumps and associated motors and electrical gear, for the lump sum of: Two Hundred and Seventy-Five Thousand Five Hundred Forty-Three Dollars and Twenty-Two Cents	N/A	\$ 275,543.22
4	1 LS	External Recoating of the Celina Road Ground Storage Tank, in accordance with the specifications and drawings, complete in place, the lump sum of: _____ _____	N/A	\$
5	1 LS	Decorative Metal Fencing and Motorized Gate System, in accordance with the specifications and drawings, complete in place, the lump sum of: _____ _____	N/A	\$
6	1 LS	Decommission and Disposal of the Downtown Ground Storage Tank, in accordance with the specifications and drawings, complete in place, the lump sum of: _____ _____	N/A	\$

Base Bid Item No.	Bid Qty	Description (Bidder to write Bid Price in words)	Unit Price	Bid Price
7	1 LS	Additional Disposal Costs Required from a Positive Lead Paint Test associated with Bid Item No. 5 of the Downtown Ground Storage Tank in accordance with the specifications and drawings for the occurrence of lead based paint, the lump sum of: _____ _____	N/A	\$
8	1 LS	PLC, HMI, and SCADA Programming, in accordance with the specifications and drawings, complete in place, the lump sum of: _____ _____	N/A	\$
9	1 LS	Remove Existing Cap and Connect to Existing 30-inch Water Line, for the lump sum of: _____ _____	N/A	\$
10	1 LS	Remove Existing Cap and Connect to Existing 36-inch Water Line, for the lump sum of: _____ _____	N/A	\$
11	1 LS	Design and Implement Storm Water Pollution Prevention Plan (SWPPP), for the lump sum of: _____ _____	N/A	\$
12	1 LS	Trench Safety System development, design, and implementation as required by the Occupational Safety and Health Administration and the assumption of responsibility for system, complete and in place, for the lump sum of: _____ _____	N/A	\$
13	1 LS	Contingency Allowance 1 for Work Change Directives (miscellaneous work on a change authorization basis) required during completion of the Project to be used solely at the discretion of the OWNER and ENGINEER, for the lump sum of: One Hundred and Thirty Thousand Dollars	N/A	\$ 130,000

Base Bid Item No.	Bid Qty	Description (Bidder to write Bid Price in words)	Unit Price	Bid Price
14	1 LS	Contingency Allowance 2 for Additional Independent Testing in addition to testing as defined within the Contract Documents (miscellaneous work on a change authorization basis) required during completion of the Project to be used solely at the discretion of the OWNER and ENGINEER, for the lump sum of: Twenty Thousand Dollars	N/A	\$ 20,000
Total Base Bid Price				\$

Total of Lump Sum and Unit Price Bids = Total Base Bid Price (Bidder to write price in figures and words)

\$

5.04 BID ALTERNATES

- A. The undersigned bidder offers to make, at the bid alternate prices (Additive Bid Alternates) following, the changes in the work covered in the Total Base Bid Price that are specified in the bid alternates priced below:
- B. It is understood that:
1. All bid alternate prices shall be filled in. The work detailed by the bid alternate(s) is an extension of the nature of the work for the Total Base Bid Price's project. This proposal requires that the undersigned Bidder propose on all work detailed by the Total Base Bid Price's project and the addition in work as detailed by each and all of the bid alternates. Failure to comply with this requirement of submitting a price for each and all of the bid alternates may render the Bid non-responsive and may cause its rejection.
 2. The acceptance or rejection of any or all of these bid alternates is at the option of the Owner.
 3. Acceptance or rejection of bid alternates will not necessarily be made on the basis of price alone.
 4. The acceptance or rejection of one or more bid alternates will not affect the Total Base Bid Project bid, nor other conditions of this bid, nor the price of other accepted bid alternates.
 5. Reference Document 00 21 00, Article 19 for Method of Award.
 6. The undersigned has carefully examined the plans and other contractual documents and has coordinated the scopes between the Total Base Bid Documents and the Bid Alternate Documents. Through submittal of a bid, the undersigned agrees and understands that the documents have been prepared with the highest level of care in the effort to coordinate the scopes of the Total Base Bid Project documents and the Bid Alternate documents. The undersigned agrees and accepts the responsibilities to coordinate and construct all required interconnections and coordination facilities between the Total Base Bid Project and any of, any combination of, and/or a total combination of the Bid Alternates to develop complete and operational facilities that meet the regulatory requirements for the facilities and the requirements set forth by these contract documents.

Additive Bid Alternates (Bidder to write price in words)	Price
Alternate A.1: Celina Road Back-Up Power, complete in place, the lump sum of: _____	\$
Alternate A.2: Downtown Pump Station Pump #2 (DT-BP04) and associated valves, piping, appurtenances and other equipment, complete in place, the lump sum of: _____	\$
Alternate A.3: Downtown Pump Station Landscape Screening, complete in place, the lump sum of: _____	\$

Deductive Bid Alternates (Bidder to write price in words)	Price
Alternate D.1: Morgan Lake EST SCADA improvements, complete in place, the lump sum of: _____	\$

ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete within 210 calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 240 calendar days after the date when the Contract Times commence to run.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.01 The following documents are submitted with and made a condition of this Bid:
- A. Required Bid security in the form of a certified or bank check, or a Bid Bond, issued by a surety meeting the requirements of the General Conditions.
 - B. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;
 - C. Required Bidder Qualifications Statement (Section 00 45 13) with supporting data; and
 - D. Davis/Bacon wage rates and State of Texas Dept of Labor wage rates

ARTICLE 8 – DEFINED TERMS

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

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ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

By:

[Signature] _____

[Printed name] _____

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____

(where applicable)

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Attachment: Contract Doc (Pump Stations Improvement Phase 2)

LIST OF MANUFACTURERS

Specification Section	Equipment	Base Bid Equipment Manufacturer (Circle One)
23 74 13	Packaged Air Conditioning Units	1. Trane 2. Or Approved Equal. Identify: _____
26 24 13	Switchboards	1. Eaton Electrical Inc.; Cutler-Hammer Products. 2. Or Approved Equal. Identify: _____
26 29 23	Variable Frequency Motor Controllers	1. Eaton; SPX series 2. Or Approved Equal. Identify: _____
26 32 13	Engine Generators	1. Onan/Cummins Power Generation; Industrial Business Group 2. Or Approved Equal. Identify: _____
26 90 20	Programmable Logic Controllers	1. Allen-Bradley CompactLogix 2. Or Approved Equal. Identify: _____
40 23 43	Control Valves	1. Cla-Val 2. Or Approved Equal. Identify: _____
44 42 56.43	Horizontal Centrifugal Pump	1. Grundfos 2. Or Approved Equal. Identify: _____
44 42 57	Vertical Split-Case Pumps	1. Fairbanks Morse
44 44 16	FRP Hot Box	1. Hubbel 2. Or Approved Equal. Identify: _____
44 44 16	Injectors	1. Wallance and Tiernan

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

LIST OF PROPOSED SUBCONTRACTORS

I, the undersigned General Contractor, hereby certify that proposals from the following Subcontractors were used in the preparation of my bid. I agree that if I am the successful Bidder and if the following subcontracts are approved, I will not enter into contracts with others for these divisions of the work without prior written approval from the Engineer and the Owner.

Type of Work:
Subcontractor's Name:.....
License No.:
Address:

Type of Work:
Subcontractor's Name:.....
License No.:
Address:

Type of Work:
Subcontractor's Name:.....
License No.:
Address:

Type of Work:
Subcontractor's Name:.....
License No.:
Address:

Type of Work:
Subcontractor's Name:.....
License No.:
Address:

Bidder (General Contractor):
License No.:
By:*
Title:.....

*Signature must be the same as on the Bid Form.

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

BID

Bid Due Date:

Description: Celina Pump Stations Phase 2 Improvements

BOND

Bond Number:

Date:

Penal sum _____ \$ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

Bidder's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Addresses are to be used for giving any required notice.

Provide execution by any additional parties, such as joint venturers, if necessary.

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2 All Bids are rejected by Owner, or
 - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

EJCDC® C-430, Bid Bond (Penal Sum Form). Copyright © 2013 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

General Decision Number: TX190018 01/04/2019 TX18

Superseded General Decision Number: TX20180028

State: Texas

Construction Type: Heavy

Counties: Collin, Dallas, Denton, Ellis, Kaufman and Rockwall
Counties in Texas.

Water and Sewer Lines/Utilities (Including Related Tunneling
Where the Tunnel is 48" or Less in Diameter)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/04/2019

* PLUM0100-002 11/01/2017

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 30.84	11.51

SUTX1991-004 09/23/1991		

	Rates	Fringes
Laborers:		
Common.....	\$ 7.25	
Utility.....	\$ 7.467	
Pipelayer.....	\$ 7.828	

Power equipment operators:

Backhoe.....	\$ 10.804
Crane.....	\$ 10.942
Front End Loader.....	\$ 9.163
Tunneling Machine (48" or less).....	\$ 9.163
TRUCK DRIVER.....	\$ 8.528

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of

the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

General Decision Number: TX190020 01/04/2019 TX20

Superseded General Decision Number: TX20180030

State: Texas

Construction Type: Heavy

Counties: Collin, Ellis, Kaufman and Rockwall Counties in Texas.

Heavy Construction, Including Treatment Plants (Does not include water/sewer lines)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/04/2019

ASBE0021-003 06/01/2016

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR (Includes application of all insulating materials, protective coverings, coatings, and finishings to all types of mechanical systems).....	\$ 24.32	7.52

ELEC0020-003 12/01/2016

	Rates	Fringes
Electricians:		
Cable Splicer.....	\$ 30.20	8.91
Electrician.....	\$ 28.40	9.15

 * ELEC0220-001 08/01/2018

	Rates	Fringes
Line Construction:		
CABLE SPLICERS.....	\$ 17.12	14.5%+3.75
EQUIPMENT OPERATORS.....	\$ 25.83	20%+5.75
GROUNDMAN.....	\$ 16.15	20%+5.75
LINEMAN.....	\$ 32.29	20%+5.75

 ENGI0178-001 06/01/2009

	Rates	Fringes
Cranes:		
Hydraulic Crane (35 ton & under).....	\$ 23.70	9.35
Hydraulic over 35 tons, Derricks, Overhead Gentry, Stiffleg, Tower, etc., and Cranes with Piledriving or Caisson attachements.....	\$ 24.70	9.35

 IRON0263-011 06/01/2017

	Rates	Fringes
Ironworkers:		
Reinforcing & Structural....	\$ 23.25	7.32

 PLUM0100-002 11/01/2017

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 30.84	11.51

 SHEE0068-002 11/01/2012

	Rates	Fringes
Sheet metal worker.....	\$ 27.64	8.84

 SUTX1990-038 08/01/1990

	Rates	Fringes
CARPENTER.....	\$ 10.536	
Concrete Finisher.....	\$ 9.603	
Form Builder.....	\$ 8.036	
Form Setter.....	\$ 9.578	
Laborers:		
Common.....	\$ 7.25	
Utility.....	\$ 7.25	
Pipelayer.....	\$ 7.961	

Power equipment operators:

Backhoe.....	\$ 10.971
Bulldozer.....	\$ 9.942
Front End Loader.....	\$ 10.771
Mechanic.....	\$ 9.88
Motor Grader.....	\$ 11.633
Oiler.....	\$ 9.183
Scraper.....	\$ 8.00
TRUCK DRIVER.....	\$ 7.465

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=====

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

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A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

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With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

**SECTION 00 45 13 QUALIFICATION STATEMENT
(CONTRACTOR QUALIFICATION PACKAGE)**

In general, the complete Work will provide the Owner with the following:

At Celina Road PS:

- Addition of two vertical split-case pumps with its associated valves and appurtenances, exterior recoating of an existing ground storage tank, 24-inch and 36-inch diameter yard piping with isolation valves, and backup power at Celina Road Pump Station (additive alternate).

At Downtown Pump Station

- Addition of one vertical split-case pump (plus an additional vertical split case pump as an additive alternate) with associated valves and appurtenances, addition of a new flow meter with vault, site plan modifications including a new fence and gate with an additive alternate for landscape screening, demolition of an existing GST and pumps and appurtenances inside the old pump station building, and 30-inch and 36-inch diameter yard piping with isolation valves.

Other work includes modifications to electrical and instrumentations and controls at both pump stations and two external sites.

For further information, contact Beatriz Dongell, Garver Project Manager,
e-mail MBDongell@GarverUSA.com

INSTRUCTIONS TO CONTRACTORS

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SUBMITTAL INFORMATION

Complete and submit Qualification Statement along with complete sealed bid no later than **3 pm on Monday, February 4th, 2019.**

PURPOSE

The purpose of the Qualification Statement is to provide OWNER and ENGINEER with the ability to quickly and efficiently evaluate and determine the Bidder offering the best value while conforming to the Specifications. Owner will consider the Base Bid and Alternates and base a decision on the best interest of the Owner.

TENTATIVE PROJECT TIMETABLE

The following is a tentative timetable of advertisement and opening of Bids:

Invitation for Bids	January 18, 2019
Pre-Bid Conference	January 28, 2019
Bid Opening	February 4 th , 2019
Notice of Award	February 13, 2019
Preconstruction Meeting	February 20, 2019
Notice to Proceed	February 20, 2019
Mobilization/Begin Construction	February 20, 2019
Substantial Completion	September 11, 2019

PROJECT BIDDING INFORMATION

The criteria which will be used to determine Bidder Qualifications are as follows:

- A. Responsive Bidder – A Bidder who has submitted a Bid, which conforms in all material respects to the Bidding Documents.
- B. Apparent Low Bidder—that Bidder whose Bids as offered in the Bid Form represents the lowest total as determined by the Base Bid.
- C. Responsible Bidder – A Bidder who has the capacity and capability in all respects to perform fully the contract requirements and who has the integrity and reliability to assure good faith performance. Among factors to be considered in determining whether the Bidder meets these standards, are:
 1. Financial, material, equipment, facility, personnel resources, and expertise necessary to meet contractual requirements;
 2. A record of integrity;
 3. A record of Successful Completion defined as: completion of a project within a **reasonable** time frame and budget including history of change orders;
 4. Qualified legally to contract with the OWNER; and
 5. Has not failed to supply any necessary information in connection with the inquiry concerning responsibility.

QUALIFICATIONS STATEMENT

THE INFORMATION SUPPLIED IN THIS DOCUMENT IS CONFIDENTIAL TO THE EXTENT PERMITTED BY LAWS AND REGULATIONS

1. SUBMITTED BY:

Official Name of Firm:

Address:

2. SUBMITTED TO:

3. SUBMITTED FOR:

Owner:

Project Name:

TYPE OF WORK:

4. CONTRACTOR'S CONTACT INFORMATION

Contact Person:

Title:

Phone:

Email:

5. AFFILIATED COMPANIES:

Name:

Address:

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

6. TYPE OF ORGANIZATION:☐ SOLE PROPRIETORSHIP

Name of Owner: _____

Doing Business As: _____

Date of Organization: _____

☐ PARTNERSHIP

Date of Organization: _____

Type of Partnership: _____

Name of General Partner(s): _____

_____☐ CORPORATION

State of Organization: _____

Date of Organization: _____

Executive Officers:

- President: _____

- Vice President(s): _____

- Treasurer: _____

- Secretary: _____

☐ LIMITED LIABILITY COMPANY

State of Organization: _____

Date of Organization: _____

Members: _____

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

☐ JOINT VENTURE

State of Organization: _____

Date of Organization: _____

Form of Organization: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____
_____**7. LICENSING**

Jurisdiction: _____

Type of License: _____

License Number: _____

Jurisdiction: _____

Type of License: _____

License Number: _____

Has firm listed in Section 1 ever been fined or suspended by a Contractor's licensing board?

☐ YES ☐ NO

If YES, attach as an Attachment details including where and why.

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

8. CERTIFICATIONS

CERTIFIED BY:

Disadvantage Business Enterprise:

Minority Business Enterprise:

Woman Owned Enterprise:

Small Business Enterprise:

Other ():

9. BONDING INFORMATION

Bonding Company:

Address:

Bonding Agent:

Address:

Contact Name:

Phone:

Aggregate Bonding Capacity:

Available Bonding Capacity as of date of this submittal:

10. FINANCIAL INFORMATION

Financial Institution:

Address:

Account Manager:

Phone:

Credit available:

\$

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

11. CONSTRUCTION EXPERIENCE:

Current Experience:

List on **Schedule A** all uncompleted projects currently under contract (If Joint Venture list each participant's projects separately).

Previous Experience:

List on **Schedule B** all projects completed within the last 5 Years (If Joint Venture list each participant's projects separately).

Has firm listed in Section 1 ever failed to complete a construction contract awarded to it?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Has any Corporate Officer, Partner, Joint Venture participant or Proprietor ever failed to complete a construction contract awarded to them in their name or when acting as a principal of another entity?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Are there any judgments, claims, disputes or litigation pending or outstanding involving the firm listed in Section 1 or any of its officers (or any of its partners if a partnership or any of the individual entities if a joint venture)?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

12. SAFETY PROGRAM:

Name of Contractor's Safety Officer: _____

Include the following as attachments:

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) OSHA No. 500- Log & Summary of Occupational Injuries & Illnesses for the past 5 years.

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) list of all OSHA Citations & Notifications of Penalty (monetary or other) received within the last 5 years (indicate disposition as applicable) - IF NONE SO STATE.

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) list of all safety citations or violations under any state all received within the last 5 years (indicate disposition as applicable) - IF NONE SO STATE.

Provide the following for the firm listed in Section V (and for each proposed Subcontractor furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) the following (attach additional sheets as necessary):

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

Workers' compensation Experience Modification Rate (EMR) for the last 5 years:

YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____

Total Recordable Frequency Rate (TRFR) for the last 5 years:

YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____

Total number of man-hours worked for the last 5 Years:

YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____

Provide Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) Days Away From Work, Days of Restricted Work Activity or Job Transfer (DART) incidence rate for the particular industry or type of Work to be performed by Contractor and each of Contractor's proposed Subcontractors and Suppliers) for the last 5 years:

YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____

13. EQUIPMENT:

MAJOR EQUIPMENT:

List on **Schedule C** all pieces of major equipment available for use on Owner's Project.

I HEREBY CERTIFY THAT THE INFORMATION SUBMITTED HERewith, INCLUDING ANY ATTACHMENTS, IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME OF ORGANIZATION: _____

BY: _____

TITLE: _____

DATED: _____

NOTARY ATTEST:

SUBSCRIBED AND SWORN TO BEFORE ME

THIS _____ DAY OF _____, 20____

NOTARY PUBLIC - STATE OF _____

MY COMMISSION EXPIRES: _____

REQUIRED ATTACHMENTS

1. Schedule A (Current Experience).
2. Schedule B (Previous Experience).
3. Schedule C (Major Equipment).
4. Evidence of authority for individuals listed in Section 7 to bind organization to an agreement.
5. Resumes of officers and key individuals (including Safety Officer) of firm named in Section 1.
6. Required safety program submittals listed in Section 13.
7. Conflict of Interest Questionnaire

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Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SCHEDULE A

CURRENT EXPERIENCE

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person Name: Address: Telephone:	Design Engineer Name: Company: Telephone:	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person Name: Address: Telephone:	Design Engineer Name: Company: Telephone:	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE C - LIST OF MAJOR EQUIPMENT AVAILABLE

[illegible]

CONFLICT OF INTEREST

Effective January 1, 2006, Chapter 176 of the Texas Local Government Code requires that persons, or their agents, who seek to contract for the sale or purchase of property, goods, or services with the City, shall file a completed conflict of interest questionnaire with the Engineering Department not later than the seventh (7th) business day after the date that the person: (1) begins contract discussions or negotiations with the City; or (2) submits to the City an application, response to a request for bid or proposal, correspondence, or another writing related to a potential agreement with the City. The Conflict of Interest questionnaire **form is available on the reverse side of this notice** or from the Texas Ethics Commission at www.ethics.state.tx.us.

The full text of the Local Government Code related to Conflict of Interest is available at <http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.171.htm>. Detailed information related to vendors is found in Section § 176.006 "DISCLOSURE REQUIREMENTS FOR VENDORS AND OTHER PERSONS; QUESTIONNAIRE".

SEE NEXT PAGE

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

CONFLICT OF INTEREST QUESTIONNAIRE**FORM CIQ****For vendor or other person doing business with local governmental entity**

This questionnaire reflects changes made to the law by H.B. 1491, 80th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

OFFICE USE ONLY

Date Received

1 Name of person who has a business relationship with local governmental entity.

2 ☐ Check this box if you are filing an update to a previously filed questionnaire.

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 Name of local government officer with whom filer has employment or business relationship.

Name of Officer

This section (item 3 including subparts A, B, C & D) must be completed for each officer with whom the filer has an employment or other business relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the filer of the questionnaire?

☐ Yes ☐ No

B. Is the filer of the questionnaire receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?

☐ Yes ☐ No

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an OWNERSHIP of 10 percent or more?

☐ Yes ☐ No

D. Describe each employment or business relationship with the local government officer named in this section.

4

Signature of person doing business with the governmental entity

Date

Adopted 06/29/2007

Company Represented _____

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

CERTIFICATE OF INTERESTED PARTIES**FORM 1295****OFFICE USE ONLY**

Complete Nos. 1 - 4 and 6 if there are interested parties.
 Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the goods or services to be provided under the contract.

4 Name of Interested Party	City, State, Country (place of business)	Nature of Interest (check applicable)	
		Controlling	Intermediary

5 Check only if there is NO Interested Party. ☐

6 AFFIDAVIT

I swear, or affirm, under penalty of perjury, that the above disclosure is true and correct.

 Signature of authorized agent of contracting business entity

AFFIX NOTARY STAMP / SEAL ABOVE

Sworn to and subscribed before me, by the said _____, this the _____ day
 of _____, 20_____, to certify which, witness my hand and seal of office.

 Signature of officer administering oath

 Printed name of officer administering oath

 Title of officer administering oath

ADD ADDITIONAL PAGES AS NECESSARY

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

PART 2 CONTRACT FORMS

NOTICE OF AWARD

Date of Issuance:

Owner: **CITY OF CELINA**

Owner's Contract No.: 18-5829

Engineer: **GARVER**

Engineer's Project No.: 18088190

Project: Celina Pump Stations Phase 2
Improvements

Bidder:

Bidder's Address:

TO BIDDER:

You are notified that Owner has accepted your Bid dated [] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

Improvements to the Celina Road pump station including the addition of two vertical split-case pumps with associated valves and appurtenances, exterior recoating of an existing ground storage tank, 24-inch and 36-inch diameter yard piping with isolation valves and backup power at Celina Road Pump Station (additive alternate) and improvements to the Downtown pump station including the addition of one vertical split-case pump (plus an additional vertical split case pump as an additive alternate) with associated valves and appurtenances, addition of a new flow meter with vault, site plan modifications including a new fence and gate with an additive alternate for landscape screening, demolition of existing GST and pumps and appurtenances inside the old pumps station building, and 30-inch and 36-inch diameter yard piping with isolation valves.

The Contract Price of the awarded Contract is: \$ []

4 unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

☐ a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner 4 counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security [e.g., performance and payment bonds] and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

After you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner:

Authorized Signature

By:

Title:

Copy: Engineer

EJCDC® C-510, Notice of Award. Prepared and published 2013 by the Engineers Joint Contract Documents Committee.

**AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)**

THIS AGREEMENT is by and between CITY OF CELINA ("Owner") and
____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

- 1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

ARTICLE 2 – THE PROJECT

- 2.01 *The Project, of which the Work under the Contract Documents is a part, is generally described as follows:*
- 2.02 The Project consists of Work at the Celina Road pump station and Downtown pump station as well as modifications to electrical and instrumentations and controls at both pump stations and two external sites.
- 2.03 At Celina Road PS:
- A. Addition of two vertical split-case pumps with associated valves and appurtenances, exterior recoating of an existing ground storage tank, 24-inch and 36-inch diameter yard piping with isolation valves and backup power at Celina Road Pump Station (additive alternate)
- 2.04 At Downtown Pump Station:
- A. Addition of one vertical split-case pump (plus an additional vertical split case pump as an additive alternate) with associated valves and appurtenances, addition of a new flow meter with vault, site plan modifications including a new fence and gate with an additive alternate for landscape screening, demolition of the existing GST and pumps and appurtenances inside the old pump station building, 30-inch and 36-inch diameter yard piping with isolation valves

ARTICLE 3 – ENGINEER

- A. The Project has been designed by **Garver, LLC**.
- 3.02 The Owner has retained **Garver, LLC** ("Engineer") to act as Owner's representative, and to have the rights, responsibilities, duties, and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

- 4.01 *Time of the Essence*
- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- 4.02 *Contract Times: Days*
- A. The Work will be substantially completed within the following number of days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within the following number of days after the date when the Contract Times commence to run.

Description	Substantial Completion	Final Completion
Celina Pump Stations Phase 2 Improvements	210 calendar days	240 calendar days

4.03 Liquidated Damages

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):
1. Substantial Completion: Contractor shall pay Owner **\$1,500** for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.
 2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner **\$2,000** for each day that expires after such time until the Work is completed and ready for final payment.
 3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently. However, if the achieved substantial completion date falls after the specified final completion date, liquidated damages as specified in Completion of Remaining Work will immediately begin accruing from the date of substantial completion until final completion is achieved.

4.04 Special Damages

- A. In addition to the amount provided for liquidated damages, Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.
- B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment. If the achieved substantial completion date falls after the specified final completion date, these costs will begin accruing immediately from the date of achieved substantial completion.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraph 5.01.A:

- A. For all Work a Lump Sum of:

_____ \$ _____
(in words) (in figures)

All specific cash allowances, unit price work totals, and deductive bid alternatives are included in the above price in accordance with Article 13 of the General Conditions.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner may elect to make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 15th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments are monies advanced for the purpose of assisting the Contractor to expedite the work of construction. The Owner holds the right to withhold any payment in accordance with Paragraph 15.01 of the General Conditions. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.
 - 1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract
 - a. 95 percent of Work completed (with the balance being retainage); and
 - b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 125 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06, minus any damages as described in Paragraphs 4.03 and 4.04.

ARTICLE 7 – INTEREST

- 7.01 Not applicable.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:
 - A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
 - B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

- C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.
- K. The Contractor hereby represents and warrants to and for the benefit of the Owner that:
 - 1. The Contractor has reviewed and understands the prevailing wage rate requirements and will provide any further verified information, certification or assurance of compliance as may be required by the Owner.
 - 2. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner to recover as damages against the Contractor any loss, expense or cost (including without limitation attorney's fees) incurred by the Owner resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Owner). While the Contractor has no direct contractual privity with the State, as a lender to the Owner for the funding of its project, the Owner and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

- A. The Contract Documents consist of the following:
 - 1. Executed Agreement
 - 2. Addenda (if any)

3. Advertisement for Bids
4. Instructions to Bidders
5. Bid Form/Proposal
6. Statement of Bidders Qualifications
7. List of Manufacturers
8. List of Proposed Subcontractors
9. General Conditions
10. Supplementary Conditions
11. Division 01 General Requirements
12. Any other funding agency documentation required
13. Technical Specifications as listed in the Table of Contents
14. Drawings
15. Standard Details
16. Performance Bond
17. Payment Bond
18. Maintenance Bond
19. Certificates of Insurance
20. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid
21. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no

assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *Other Provisions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

OWNER:

CONTRACTOR:

By: _____

By: _____

Title: _____

Title: _____

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____

Attest: _____

Title: _____

Title: _____

Address for giving notices:

Address for giving notices:

License No.: _____
(where applicable)

This document is a MODIFIED version of EJCDC® C-520, Agreement Between Owner and Contractor for Construction Contract (Stipulated Price). Copyright © 2013 National Society of Professional Engineers, American Council of Engineering Companies and is based in part on excerpts from EJCDC documents. Those portions of the text that originated in published EJCDC documents remain subject to copyright.

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

NOTICE TO PROCEEDOwner: **CITY OF CELINA**Owner's Contract No.: **18-5829**

Contractor:

Contractor's Project No.:

Engineer: **GARVER**Engineer's Project No.: **18088190****Project: CELINA BOOSTER PUMP
STATIONS IMPROVEMENTS PHASE 2**

Effective Date of Contract:

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [_____, 20__]. [see Paragraph 4.01 of the General Conditions]

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____.

Before starting any Work at the Site, Contractor must comply with the following:

[Note any access limitations, security procedures, or other restrictions]

Owner:

Authorized Signature

By:

Title:

Date Issued:

Copy: Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____
_____ this _____ day of _____, 20 ____.

BY

TITLE

EJCDC® C-550, Notice to Proceed. Prepared and published 2013 by the Engineers Joint Contract Documents Committee.

PERFORMANCE BONDCONTRACTOR (*name and address*):SURETY (*name and address of principal place of business*):OWNER (*name and address*):

CITY OF CELINA
142 N. OHIO STREET
CELINA, TX 75009

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description (*name and location*): **Celina Pump Stations Phase 2 Improvements****BOND**

Bond Number:

Date (*not earlier than the Effective Date of the Agreement of the Construction Contract*):

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL**SURETY**

 Contractor's Name and Corporate Seal

 Surety's Name and Corporate Seal

By: _____
 Signature

By: _____
 Signature (*attach power of attorney*)

 Print Name

 Print Name

 Title

 Title

Attest: _____
 Signature

Attest: _____
 Signature

 Title

 Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

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PAYMENT BONDCONTRACTOR *(name and address)*:SURETY *(name and address of principal place of business)*:OWNER *(name and address)*:

CITY OF CELINA
142 N. OHIO STREET
CELINA, TX 75009

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*: **Celina Pump Stations Phase 2 Improvements****BOND**

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL**SURETY**

 Contractor's Name and Corporate Seal

 Surety's Name and Corporate Seal

By: _____
 Signature

By: _____
 Signature *(attach power of attorney)*

 Print Name

 Print Name

 Title

 Title

Attest: _____
 Signature

Attest: _____
 Signature

 Title

 Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
 - 5.1 Claimants who do not have a direct contract with the Contractor,
 - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety

shall promptly and at the Surety's expense take the following actions:

- 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
- 7.2 Pay or arrange for payment of any undisputed amounts.
- 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to

sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction

Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

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MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That _____, as Principal, and _____, a Corporation organized under the laws of the State of Texas and authorized to transact business in the State of Texas, as Surety, are held and firmly bound unto the **CITY OF CELINA**, (hereinafter called "OWNER"), in the penal sum of _____ Dollars (\$ _____), lawful money of the United States of America, said sum being equal to one hundred percent (100%) of the contract price, for the payment of which, well and truly to be made, we bind ourselves and each of us, our heirs, executors, administrators, trustees, successors and assigns, jointly and severally, firmly by these presents.

Dated _____, day of _____, 20 ____.

The condition of this obligation is such that:

WHEREAS, said Principal entered into a Contract for the construction of

CELINA PUMP STATIONS PHASE 2 IMPROVEMENTS

all in compliance with the plans and specifications therefore, made a part of said Contract and on file in the office of the Owner.

NOW, THEREFORE, if the said Principal shall pay or cause to be paid to Owner all damage, loss, and expense which may result by reason of defective materials and/or workmanship in connection with said work, occurring within a period of two (2) years from and after final acceptance of said project by Owner and if Principal shall pay or cause to be paid all labor and materials, including the prime contractor and all subcontractors; and if Principal shall save and hold the Owner harmless from all damages, loss, and expense occasioned by or resulting from any failure whatsoever of said Principal, then this obligation shall be null and void; otherwise to be and remain in full force and effect.

It is further expressly agreed and understood by the parties hereto that no changes or alterations in said Contract and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, the said Principal has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its duly authorized officers, and the said Surety has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its attorney-in-fact, duly authorized so to do, the day and year first above written.

PRINCIPAL:

(SEAL)

BY: _____
TITLE:

ATTEST:

BY: _____
TITLE:

SURETY:

(SEAL)

BY: _____

Address for giving notices:

Phone No. _____

License No. _____

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	CITY OF CELINA	Owner's Contract No.:	18-5829
Contractor:		Contractor's Project No.:	
Engineer:	Garver	Engineer's Project No.:	18088190
Project:	Celina Pump Stations Phase 2 Improvements		

This **[preliminary]** **[final]** Certificate of Substantial Completion applies to:

- ☐ All Work ☐ The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: **[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]**

Amendments to Owner's responsibilities:

- ☐ None
☐ As follows

Amendments to Contractor's responsibilities:

- ☐ None
☐ As follows:

The following documents are attached to and made a part of this Certificate: **[punch list; others]**

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:

RECEIVED:

RECEIVED:

By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

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Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SAMPLE CERTIFICATE OF INSURANCE

Owner: **CITY OF CELINA**
 Contractor:
 Engineer: **Garver**
 Project: **Celina Pump Stations Phase 2 Improvements**

Owner's Contract No.: **18-5829**
 Contractor's Project No.:
 Engineer's Project No.: **18088190**



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
 (must be dated)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Agency Name Agency Address www.stephens.com	CONTACT NAME: Agency contact PHONE (A/C, No, Ext): Agency ph# FAX (A/C, No): E-MAIL ADDRESS: Agency contact email address INSURER(S) AFFORDING COVERAGE INSURER A: Carrier Name (AM Best Rating) INSURER B: INSURER C: INSURER D: INSURER E: INSURER F:	NAIC #
INSURED Named Insured on the policies		

COVERAGES		CERTIFICATE NUMBER:		REVISION NUMBER:		
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.						
INSR LTR	TYPE OF INSURANCE	ADD'L SUBR INSR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY ☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PROJECT ☐ LOC	X X	XXXXXXXXXX			EACH OCCURRENCE \$ 5,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 5,000,000 PRODUCTS - COMPIOP AGG \$ 5,000,000
	AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☒ HIRED AUTOS ☒ NON-OWNED AUTOS	X X	XXXXXXXXXX			COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$ \$
	UMBRELLA LIAB EXCESS LIAB ☒ OCCUR CLAIMS-MADE DED ☐ RETENTION \$ XXXXX	X X	XXXXXXXXXX			EACH OCCURRENCE \$ AGGREGATE \$ \$ \$ \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N ☐ N/A	X	XXXXXXXXXX		☒ WC STATUTORY LIMITS ☐ OTHER E.L. EACH ACCIDENT \$ 500,000 E.L. DISEASE - EA EMPLOYEE \$ 500,000 E.L. DISEASE - POLICY LIMIT \$ 500,000
	DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)		XXXXXXXXXX			

Owner & Garver, LLC shall be included as an Additional Insured by endorsement #CG2010(11/85) on the General Liability and #CA2048 on the Automobile and Umbrella or substitute endorsement providing equivalent coverage. Coverage shall be Primary and non-contributory with respect to any other insurance or self-insurance programs afforded to the Owner and Garver LLC. Waiver of Subrogation applies in favor of the Owner and Garver LLC on all policies. 60 day notice will be provided to the Owner and Garver LLC in the event of cancellation, non-renewal and/or impairment of the Contractor's policies.

CERTIFICATE HOLDER Owner and Garver LLC	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE (must be signed by the Contractor's Insurance Agent)
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ACORD 25 (2010/05)

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CERT NO.: 15475674 Kathy Jones 2/11/2013 10:58:41 AM Page 1 of 1

INSURANCE POLICIES IN FORCE

INSURANCE AFFORDED ONLY FOR HAZARDS INDICATED BY (X)

Type of Policy	X	Limits of Liability	Policy Number	Policy Term
(a) Standard Workmen's Compensation & Employer's and Occupational Disease Liability		Statutory W. C. Each Occurrence \$ _____ Aggregate Disease \$ _____		From: To: From: To:
(b) Longshoremen's & Harbor Workers Compensation		Statutory		From: To:
(c) General Liability <u>Bodily Injury</u> Premises – Operation Contractor's Protective Products & Completed Operations Contractual <u>Property Damage</u> Contractual Explosion, Collapse & Underground Damage (X.C.U.)		Each Person \$ _____ Each Occurrence \$ _____ Aggregate Products \$ _____ & Completed Operations Each Occurrence \$ _____ Aggregate Prem. Oper. \$ _____ Aggregate Protective \$ _____ Aggregate Products & \$ _____ Completed Operations Aggregate Contractual \$ _____ Aggregate X.C.U. \$ _____		From: To:
(d) Automobile Liability <u>Bodily Injury</u> Owned Automobiles Hired Automobiles Non-Owned Automobiles <u>Property Damage</u> Owned Automobiles Hired Automobiles Non-Owned Automobiles		Each Person \$ _____ Each Occurrence \$ _____ Each Occurrence \$ _____		From: To:
(e) <u>Other Insurance</u>				

CONTRACTUAL LIABILITY

Subject to policy terms, conditions and exclusions, specific Contractual Liability coverage is provided as follows:

- ☐ For liability assumed by the Insured under its Contract with _____ (Owner) for the operations described herein.
- ☐ All Contracts between the Insured and _____ (Owner).

Insurance Company

By: _____
Authorized Representative

Address

Date: _____

EQUAL EMPLOYMENT OPPORTUNITY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The Contractor shall implement affirmative action steps at least as extensive as described herein.

1.2 WORKING ENVIRONMENT

- A. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two (2) or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

1.3 ON-THE-JOB TRAINING

- A. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs.

1.4 REVIEW

- A. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

1.5 DISSEMINATION

- A. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

1.6 RECRUITMENT

- A. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one (1) month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written

notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

1.7 INVENTORY

- A. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

1.8 MONITORING

- A. Ensure that seniority practices, job classifications, work assignments, and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

1.9 FACILITIES

- A. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

1.10 RECORDS

- A. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

1.11 ADHERENCE

- A. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

END OF SECTION

PART 3

CONDITIONS OF THE CONTRACT

General Conditions

The General Conditions, Section 00 72 00, have not been modified or amended in any way from the original publication of the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). Any modifications to these General Conditions have been made in the Supplementary Conditions, Section 00 73 00.

Supplementary Conditions

The Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition), Section 00 72 00. All provisions that are not so amended or supplemented remain in full force and effect.

The address system used in the Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.
 11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and

Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.
35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives*:
 1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day*:
 1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective*:
 1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or

- b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
- c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. *Furnish, Install, Perform, Provide:*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. *Bonds:* When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor's Insurance:* When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner's Insurance:* After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:
1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 2. a preliminary Schedule of Submittals; and
 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

- A. Standards Specifications, Codes, Laws and Regulations
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

- A. *Reporting Discrepancies:*
 - 1. **Contractor's Verification of Figures and Field Measurements:** Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. abnormal weather conditions;
 - 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 - 4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.
- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

- A. *Limitation on Use of Site and Other Areas:*
 - 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility

for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
 - D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and

procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
2. is of such a nature as to require a change in the Drawings or Specifications; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments:*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
 - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

- A. **Contractor's Responsibilities:** The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
 - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. **Notice by Contractor:** If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.
- C. **Engineer's Review:** Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground

Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Possible Price and Times Adjustments:*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
 - d. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
2. Technical Data contained in such reports and drawings.

- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
 - D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
 - E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
 - F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
 - G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
 - H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
 - I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2)

was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 Insurance—General Provisions

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 Contractor's Insurance

- A. **Workers' Compensation:** Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
 4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
 2. claims for damages insured by reasonably available personal injury liability coverage.
 3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
 - a. Such insurance shall be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Broad form property damage coverage.
 4. Severability of interest.
 5. Underground, explosion, and collapse coverage.
 6. Personal injury coverage.
 7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
 8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability:* Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
- E. *Umbrella or excess liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
1. include at least the specific coverages provided in this Article.
 2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
 3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
 4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
 5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible

amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
6. extend to cover damage or loss to insured property while in transit.
7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
8. allow for the waiver of the insurer's subrogation rights, as set forth below.
9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
10. not include a co-insurance clause.
11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
12. include performance/hot testing and start-up.
13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

- B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. **Contractor's Expense:** Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. **Engineer's Evaluation and Determination:** Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be

evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 Substitutes

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
 - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 - 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and
 - 3) be suited to the same use as that specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from that specified, and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in

Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 Concerning Subcontractors, Suppliers, and Others

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.
- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- O. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
 - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and

other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 Record Documents

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 Safety and Protection

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
- G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples:*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.
3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
 1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
 5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
 6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
 7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.
 8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.
- E. *Resubmittal Procedures:*
 1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal;
 6. the issuance of a notice of acceptability by Engineer;
 7. any inspection, test, or approval by others; or
 8. any correction of defective Work by Owner.
- D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any

individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also

arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 Coordination

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. an itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. the extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 Legal Relationships

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned

on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.
- C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.
- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 - 1. *Change Orders:*
 - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
 - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
 - 2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.
 - 3. *Field Orders:* Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).
- C. **Contractor's Fee:** When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the

amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

- d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.
 - 1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
 - 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 - 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a

Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and
 4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for

resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation:*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.
3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval:* If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim:* If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results:* If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work:* The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work.

Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval

of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

- 1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
- 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
 2. there is no corresponding adjustment with respect to any other item of Work; and
 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 - 3. by manufacturers of equipment furnished under the Contract Documents;
 - 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 - 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.
- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 Defective Work

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 - 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 - 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications:*
 - 1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
 - 2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's

observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

- a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
 4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
 5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
 6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due:*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner:*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. the Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. the Contract Price has been reduced by Change Orders;
 - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
 - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - l. there are other items entitling Owner to a set off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all disputes that Contractor believes are unsettled; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner

at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 1. correct the defective repairs to the Site or such other adjacent areas;
 2. correct such defective Work;
 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a

Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this Article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
 - 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this Article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to

Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition), Section 00 72 00. All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01.A Delete paragraph 1.01.A.5 and insert the following in lieu thereof:

5. Bidder - Any individual, partnership, corporation, joint venture, or other combination thereof who submits a Bid to Owner for the Work contemplated, acting directly or through an authorized representative. As used in the Contract Documents, masculine pronouns refer to both masculine and feminine genders.

Delete paragraph 1.01.A.16 and insert the following in lieu thereof:

1. Contractor – Person or entity identified as such in the Agreement and the Contractor's authorized representative who is referred to throughout the Contract Documents as if singular in number.

Delete paragraph 1.01.A.20 and insert the following in lieu thereof:

20. Engineer – Person or entity identified as such in the Agreement and the Engineer's authorized representative who is referred to throughout the Contract Documents as if singular in number.

Delete paragraph 1.01.A.28 and insert the following in lieu thereof:

28. Owner – The individual, entity, public body or authority identified as such in the Agreement and the Owner's authorized representatives who are referred to throughout the Contract Documents as if singular in number.

Add the following statements to paragraph 1.01.A.40:

Substantial completion shall still require the Contractor to complete the punch list items unless waived by Owner.

Add the following subparagraphs immediately after subparagraph 1.01.A.48:

49. *Award* – The formal acceptance of the Bid by Owner.
50. *Bid Guarantee (Bid Bond)* – The security furnished with a Bid to guarantee that the Bidder will enter into the contract if Bidder's Bid is accepted by Owner.
51. *Design Engineer* – Garver, LLC.
52. *Equipment (Construction)* – All machinery and equipment, together with the necessary supplies for upkeep and maintenance, including tools and apparatus necessary for the proper construction and acceptable completion of the Work contemplated. (Installation) – All material or articles used in equipping a facility or apparatus required to fulfill a functional design.

53. *Execution* – Field or site performance, workmanship, installation, erection, application, field fabrication, quality control, and protection of installed products on the site.
54. *Materials* – All materials incorporated into the Project, including equipment and all other materials consumed or to be consumed in the performance of the Work contemplated.
55. *Product Data* – Type of Shop Drawing comprised of standard illustrations, schedules, performance charts, instructions, brochures, diagrams, catalog cuts, and other information assembled by or for the Contractor and submitted by the Contractor to illustrate materials or equipment for some portion of the Work.
56. *Products* – Materials, equipment, systems, shop fabrications, mixtures, and source controls.
57. *Utility* – Any public or private fixed works for the transportation of fluids, gases, electricity, signals, or communications.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.03.A *Before starting construction: Add the following to paragraph 2.03.A:*

4. A preliminary schedule of payments showing projected cash flow.

SC-2.04.A *Delete paragraph 2.04.A and insert the following in lieu thereof:*

- A. Before the Contract Times start to run, but after Notice to Proceed is given, a conference attended by Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.03.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

SC-2.05.A *Add the following subparagraph to paragraph 2.05.A.*

4. Contractor's schedule of payments will be acceptable if it provides a reasonable projection of payments in relationship to the progress schedule and schedule of values.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.01.A *Add the following sentence and subparagraphs to paragraph 3.01.A:*

The Contract Document higher in precedence shall control and supersede the Contract Documents lower in precedence in accordance with the following listing arranged from the highest to the lowest in precedence:

1. Addenda, if any; Supplemental Agreements; and Change Order(s); the one dated later having precedence over another dated earlier.
2. Agreement.
3. General Requirements (DIVISION 01).
4. Other Specifications (DIVISION 02 and other DIVISIONS following it).
5. Drawings.
6. Standard Details.
7. Supplementary Conditions.
8. General Conditions.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.02 Add the following paragraph 4.02.B:

- B. All Site visits and all work at the Site shall be governed by the Owner's safety program if applicable. The Contractor shall be required to obtain a copy of the Owner's safety program. The Contractor's efforts shall be consistent with and achieve the requirements of the Owner's safety program throughout the project. This does not alleviate the Contractor from the responsibility to develop and implement their own safety program.

SC-4.04.A Add the following subparagraph to paragraph 4.04.A:

- 1. If, in the opinion of Engineer, Contractor falls behind the accepted Construction Schedule due to actions or neglect of Contractor or Contractor's agents, servants, employees, officers, subcontractors, directors, or any party contracting to perform part or all of the Work or to supply any equipment or materials, Contractor shall take steps, including, but not limited to, increasing the number of personnel, shifts, and/or overtime operations, days of work, and/or amount of construction equipment until such time as the Work is back on schedule. Contractor shall also submit for review not later than the time of submittal of the next request for partial payment, such supplementary schedule or schedules as may be necessary to demonstrate the manner in which the acceptable rate of progress will be regained, all without additional cost to Owner.

SC-SC-4.05 Add the following paragraph as paragraph 4.05.H:

- H. The time allowed for the completion of the work will be as specified in the contract as Fixed Completion Date or Calendar Day. It is understood and agreed by and between the Owner and the Contractor that the time of completion herein set out is a reasonable time. The Contractor shall perform fully, entirely, and in an acceptable manner, the work contracted for within the contract time stated in the Contract.
 - 1. FIXED COMPLETION DATE: When the contract time is specified as a fixed date, it will be the date on which all work on the project shall be substantially complete without exception.
 - 2. CALENDAR DAY: Calendar day contract time includes delays for all holidays, weekends including Saturday and Sunday, and normal weather-related events, such as rain, snow, and freezing temperatures that may affect the progress of the construction on a per-month basis as hereinafter set out.
 - 3. WEATHER DAY: Any day where the temperature is at are below 35 degrees Fahrenheit or precipitation is at or above 0.1 inches the weather may result in one-day delay. Any day where precipitations is at or above 0.5 inches may result in two days delay. Only weather-related delays in excess of the normal weather-related event amounts will be considered for time extensions if requested by the Contractor. Time extensions due to weather delays will only be considered if the work was impeded by those conditions. Days Included in Contract Times for Normal Weather-Related Events and holidays are:

Month	Normal Weather-Related Events	Holidays
January	11	2
February	10	1
March	6	0
April	7	0
May	7	1
June	4	0
July	4	1
August	2	0
September	3	1
October	4	1
November	4	3
December	7	2

Weekends and holidays which may be declared in writing by the Owner for certain special or unusual circumstances will be optional to the Contractor as working days. Work on Saturday and Sunday that requires City Inspection shall not be permitted.

Holidays that shall be observed are the following: New Year's Day (January 1); Dr. Martin Luther King Jr.'s Birthday (3rd Monday in January); President's Day (3rd Monday in February); Memorial Day (last Monday in May); Independence Day (July 4); Labor Day (1st Monday in September); Columbus Day (2nd Monday in October); Veterans Day (November 11); Thanksgiving Day (4th Thursday in November); Day after Thanksgiving (Friday following Thanksgiving); Christmas Eve (December 24); and Christmas Day (December 25). If a holiday falls on a Saturday or Sunday, the observed day shall be the Friday preceding the Saturday or the Monday following the Sunday.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.01 Add the following paragraph 5.01.D immediately following paragraph 5.01.C:

- D. Any Work performed in public rights-of-way, in addition to conforming to the Contract Documents, shall be done in accordance with the requirements of the permit issued by the public agency in whose right-of-way the Work is located.

SC-5.03.A.1 Delete paragraph SC-5.03.A.1 and insert the following in lieu thereof:

- 1. The following report(s) of exploration and tests of subsurface conditions at or contiguous to the site used by Design Engineer in preparing the Contract Documents. are available upon 48 hours' notice to Owner. Samples taken from bore holes are available for inspection at Kleinfelder, Inc., 7805 Mesquite Bend Drive, Suite 100, Irving, TX 75063, phone no. 972-868-5900.

- a. Report dated February 21, 2017, prepared by Kleinfelder, Inc. entitled "Geotechnical Study, Celina WWTP Improvements, Celina, Texas, Kleinfelder Project No.: 20173435.001A".

SC-5.03.A.2 *Delete paragraph 5.03.A.2 and insert the following in lieu thereof:*

2. The following drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) have been used by Design Engineer in preparing the Contract Documents.
 - a. Drawings, Design Documents, dated 2015, prepared by Pacheco Koch entitled "Waterlines W1 & W2 Southeast Sector (W-201411-01)" consisting of 58 sheets.

SC-5.03.B *In paragraph 5.03.B, delete the words "Technical Data expressly identified in the Supplementary Conditions" and insert "Technical data is limited to data provided in the reports and drawings listed in paragraph SC-5.03.A" in lieu thereof. Add the following subparagraph to 5.03.B:*

4. Contractor's interpretation of the character and condition of the materials between test hole locations.

SC-5.05.A *Add the following subparagraphs to paragraph 5.05.A:*

1. Generally, service connections are not indicated on the Drawings. Contractor shall be responsible for discovery of existing underground installations, in advance of excavating or trenching, by contacting all local utilities and by prospecting through hydro-excavation or potholing.
2. All information relative to Underground Facilities shall be recorded and incorporated into the record documents required by paragraph 7.11.
3. Contractor will be held responsible for any unauthorized interruption in the operation of Underground Facilities as a result of Contractor's operations. Unless the owner of the damaged facility elects to perform the repair and restoration work, Contractor shall repair and fully restore any damaged Underground Facility to a condition at least equal to that which existed just prior to the time of damage. All repair and restoration work shall be done to the satisfaction of the facility owner and Engineer.
4. Contractor shall arrange for any inspection of repaired or reconditioned Utility facilities required by authorities having jurisdiction. All inspection fees shall be paid by Contractor. If the facility owner elects to perform the repair and restoration work, Contractor shall render all assistance required. Contractor shall be responsible for all just and reasonable expenses incurred by the facility owners for such work.

SC-5.06.A *Delete paragraph 5.06.A and insert the following in lieu thereof:*

A. Reports and Drawings:

1. No reports of exploration and tests of hazardous environmental conditions at or contiguous to the site have been used by Design Engineer in preparing the Contract Documents.
2. No drawings of hazardous environmental conditions at or contiguous to the site have been used by Design Engineer in preparing the Contract Documents.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.02.B Delete the last sentence of paragraph 6.02.B and insert the following sentence in lieu thereof:

Contractor shall maintain at all times during the life of this contract policies of insurance from an insurance company that has a rating of or equivalent to A-VIII by A.M. Best & Company.

SC-6.02 Add the following paragraph immediately after paragraph 6.02.J:

- K. Deliver all certificates of insurance required by the Contract Documents to Owner with executed Agreement.

SC-6.03 Add the following paragraphs immediately after paragraph 6.03.J:

- K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

State:	<u>Statutory (or \$500,000 minimum)</u>
Federal, if applicable (e.g., Longshoreman's):	<u>Statutory (or \$500,000 minimum)</u>
Employer's Liability:	
Bodily injury, each accident	\$ <u>1,000,000</u>
Bodily injury by disease, each employee	\$ <u>1,000,000</u>
Bodily injury/disease aggregate	\$ <u>2,000,000</u>

If Contractor leases its employees, the alternate employer endorsement (WC 00 03 01 A) shall be attached showing Owner in the schedule as the alternate employer.

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate	\$ <u>5,000,000</u>
Products - Completed Operations Aggregate	\$ <u>5,000,000</u>
Personal and Advertising Injury	\$ <u>5,000,000</u>
Each Occurrence (Bodily Injury and Property Damage)	\$ <u>5,000,000</u>

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:

Each person	\$ <u>1,000,000</u>
Each accident	\$ <u>2,000,000</u>

Property Damage:

Each accident	\$	<u>1,000,000</u>
[or]		
Combined Single Limit of	\$	<u>5,000,000</u>

4. Excess or Umbrella Liability (if needed):

Per Occurrence	\$	<u>5,000,000</u>
General Aggregate	\$	<u>5,000,000</u>

5. Contractor's Pollution Liability:

Each Occurrence	\$	<u>N/A</u>
General Aggregate	\$	<u>N/A</u>

☒ If box is checked, Contractor is not required to provide Contractor's Pollution Liability insurance under this Contract

6. Contractor's Professional Liability:

Each Claim	\$	<u>N/A</u>
Annual Aggregate	\$	<u>N/A</u>

7. Railroad Protective Liability:

Per Occurrence	\$	<u>N/A</u>
General Aggregate	\$	<u>N/A</u>

SC-6.03.G Add the following subparagraph immediately after subparagraph 6.03.G:

9. Owner and Garver, LLC shall be included as an additional insured under the CGL, (using ISO Additional Insured Endorsement CG 20 10 11 85 or a substitute providing equivalent coverage), and under the commercial automobile liability (using ISO Additional Insured Endorsement CA 2048 or a substitute providing equivalent coverage), and commercial umbrella, if any. This insurance, including insurance provided under the commercial umbrella, if any, shall apply as primary and non-contributory insurance with respect to any other insurance or self-insurance programs afforded to, or maintained by, Owner.

SC-6.03.I Add the following subparagraphs to paragraph 6.03.I:

6. Contain a cross liability or severability of interest clause or endorsement. Insurance covering the specified additional insureds shall be primary insurance, and all other insurance carried by the additional insureds shall be excess insurance; and
7. With respect to workers' compensation and employer's liability, comprehensive automobile liability, commercial general liability, and umbrella liability insurance, Contractor shall require Contractor's insurance carriers to waive all rights of subrogation against Owner, Engineer, Engineer's Consultants, and their respective officers, directors, partners, employees, and agents.

ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES

SC-7.02.B Add the following subparagraphs immediately after paragraph 7.02.B:

1. No Work shall be done between 6:00 p.m. and 7:00 a.m. without permission of Owner. However, emergency work may be done without prior permission.
2. Night Work may be undertaken as a regular procedure with the permission of Owner; such permission, however, may be revoked at any time by Owner if Contractor fails to maintain adequate equipment and supervision for the proper prosecution and control of the Work at night.

SC-7.03 Add the following paragraphs immediately after paragraph 7.03.C:

- D. Interfaces to Equipment, Instruments, and Other Components:
 1. The drawings, specifications, and overall design are based on preliminary information furnished by various equipment manufacturers which identify a minimum scope of supply from the manufacturers. This information pertains to, but is not limited to, instruments, control devices, electrical equipment, packaged mechanical systems, and control equipment provided with mechanical systems.
 2. Provide all material and labor needed to install the actual equipment furnished, and include all costs to add any additional conduit, wiring, terminals, or other electrical hardwired to the work, which may be necessary to make a complete, functional installation based on the actual equipment furnished:
 - a. Make all changes necessary to meet the manufacturer’s wiring requirements.
 3. Submit all such changes and additions to the Engineer for acceptance in accordance with the General Conditions.
 4. Review the complete set of drawings and specifications in order to ensure that all items related to the electrical power and control systems are completely accounted for. Include any such items that appear on drawings or in specifications from another discipline in the scope of Work.
- E. Until Substantial Completion of the Work is acknowledged by Owner, Contractor shall have the responsible charge and care of the Work and of materials to be used herein, including materials for which Contractor has received partial payment or materials which have been furnished by Owner, and shall bear the risk of injury, loss, or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the nonexecution of the Work.
- F. Contractor shall rebuild, repair, restore, and make good all injuries, losses, or damages to any portion of the Work or the materials occasioned by any cause before the Work’s completion and acceptance and shall bear the expense thereof. Where necessary to protect the Work or materials from damage, Contractor shall, at Contractor’s own expense, provide suitable drainage and erect such temporary structures or rent such structures as are necessary to protect the Work or materials from damage. The suspension of the Work or the granting of an extension of time from any cause whatever shall not relieve Contractor or Contractor’s responsibility for the Work and materials as specified herein.
- G. When the quality of a material, process, or article is not specifically set forth in the Contract Documents, the best available quality of the material, process, or article shall be provided.
- H. Delivery and Inspection:
 1. Deliver products in undamaged condition, in manufacturer’s original container or packaging with identifying labels intact and legible. Include date of manufacture on label.

SC-7.04.A Delete paragraph 7.04.A and insert the following in lieu thereof:

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. If the specification or description contains the words, "or equal" or "or equal allowed", or "or equal item is permitted", Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below. Unless these words are specifically written in the description of such item, no substitution is allowed per this Contract. If the item's description is followed by words reading that "no like", "no equivalent", or "no or equal" item is permitted, then no substitution of like items or like manufacturers is allowed as part of this Contract.
 - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

SC-7.05.A Delete paragraph 7.05.A and insert the following in lieu thereof:

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that, "or equal" or "or equal allowed", or "or equal item is permitted", then no substitution of like items is permitted. If the item's description includes the words "no substitution is permitted", "no like", "no equivalent", or "no or equal" item is permitted, then no substitution of like items or like manufacturers is allowed as part of this Contract. If the words, "or equal is permitted", "or equal", or "like items are permitted", Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and
 - 3) be suited to the same use as that specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from that specified, and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

SC-7.06.D Delete paragraph 7.06.D and insert the following in lieu thereof, and add subparagraph 7.06.D.1:

- B. Contractor shall submit to the Owner a list of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner as stipulated in the Bidding Documents. Owner's acceptance (either in writing or by failing to make written objection thereto within two weeks of submittal of the list) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation.
 1. Subcontracting: Contractor shall perform with Contractor's own organization work amounting to not less than 51 percent of the combined value of all items of the Work covered by the Contract.

SC-7.06.F Delete paragraph 7.06.F and insert the following in lieu thereof:

- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall not be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement.

SC-7.08.A Delete paragraph 7.08.A. and insert the following in lieu thereof:

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, I

obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work, with the exception of the following, which will be the Contractor's responsibility:

1. All permits shall be the Contractor's responsibility.

SC-7.08 *Add the following paragraph immediately after paragraph 7.08.A:*

- B. Owner will provide the following permits:

1. No permits have been agreed to being provided by Owner.

SC-7.09.A *Delete the word "use."*

SC-7.09 *Add the following paragraph immediately after paragraph 7.09.A:*

- B. Owner is exempt from payment of sales taxes of the State of Texas and of cities and counties thereof on all materials to be incorporated into the Work. The CONTRACTOR'S attention is directed to Texas House Bill 11 (72nd legislature, 1st C.S.) which amended the Texas Tax Code Section 151.311. This amendment provides that by the CONTRACTOR entering into a separate contract, the CONTRACTOR will become a seller of materials purchased for the project, which will obviate paying taxes on materials incorporated into the project.

As a seller, the CONTRACTOR purchases materials and issues a resale certificate in lieu of paying the sales tax at the time of purchase. The OWNER, as an exempt entity, will provide the CONTRACTOR with an exemption certificate at the time of the "sale" of the materials to the OWNER, thereby precluding the OWNER and the CONTRACTOR, from paying the sales tax on the materials. A copy of a sample of the OWNER'S Texas Sales Tax Exemption Certificate can be provided to the CONTRACTOR.

Services are not tax exempt. The CONTRACTOR will be required to pay all appropriate taxes for all services as set forth herein.

For purposes of these Contract Documents, the following definitions are provided for Materials and Services:

Materials: Materials are those items which are tax exempt and are physically incorporated into the facility constructed for the OWNER. Materials include, but are not limited to, purchased items such as embedment, concrete, grout, asphalt, roadbase and subbase, etc.

Services: Services are those items that are not tax exempt and are items used by the CONTRACTOR but which are not physically incorporated into the OWNER'S facility and/or are items which are consumed by construction. Services include, but are not limited to, items such as supplies, tools, concrete forms, sheeting and shoring, temporary storage buildings, the purchase or rental or lease of equipment, skill and labor, etc.

For further information concerning taxes as they relate to materials and services, the CONTRACTOR shall refer to House Bill 11 and/or contact the Texas Comptroller of Public Accounts, Austin, Texas.

SC-7.10 *Delete paragraph 7.10.A and insert the following paragraph 7.10.A in lieu thereof, and add the following paragraphs:*

- A. Contractor shall give all notices required by and comply with all Laws and Regulations applicable to furnishing and performance of the Work and shall cause all Contractor's agents, employees, Subcontractors, and Suppliers to observe and comply with all such laws, ordinances, and regulations.

- D. Employment Requirements: Contractor shall comply with employment requirements stipulated in the attached exhibits.

SC-7.11 Add the following paragraph 7.11.B immediately following paragraph 7.11.A:

- B. Prior to submitting each request for progress payment, request Engineer's review and approval of current status of record documents. Failure to properly maintain, update, and submit record documents may result in a deferral by Engineer to recommend whole or any part of Contractor's Application for Payment, either partial or final.

SC-7.12.C Insert the following after the second sentence of Paragraph 7.12.C:

The following Owner safety programs are applicable to the Work: Celina WWTP Safety Program, most recent version.

SC-7.12 Add the following paragraphs immediately after paragraph 7.12.G.

- H. Contractor shall prepare, implement, and maintain a safety and health program or plan in accordance with Section 01 32 90 of the General Requirements.
- I. Contractor shall make reasonable efforts to detect and abate any violations of safety standards of which Contractor is aware and to which Contractor's employees are exposed, despite the fact that Contractor did not commit the violation.
- J. Trench and Excavation Safety System:
 - 1. This section covers trench and excavation safety system required for constructing improvements that necessitate open excavations on the project. All work under this item shall be in accordance with the current edition of the "Occupational Safety and Health Administration Standard for Excavation and Trenches Safety System, 29 CFR 1926, Subpart P.
 - 2. The Contractor, prior to beginning any excavation, shall notify the State Department of Labor (Safety Division) that work is commencing on a project with excavations greater than five feet.
 - 3. The Contractor shall notify all Utility Companies and Owners in accordance with OSHA Administration 29 CFR 1926.651(b) (2) for the purpose of locating utilities and underground installations.
 - 4. Where the trench or excavation endangers the stability of a building, wall, street, highway, utilities, or other installation, the Contractor shall provide support systems such as shoring, bracing, or underpinning to ensure the stability of such structure or utility.
 - 5. The Contractor may elect to remove and replace or relocate such structures or utilities with the written approval of the Owner of the structure or utility and the Project Owner.
 - 6. The work required by this item will be paid for at the price bid for "Trench and Excavation Safety Systems". After award of the Contract, the Contractor shall submit to the Engineer a breakdown of cost for work involved in the price bid for "Trench and Excavation Safety Systems" and shall, with each periodic payment request, submit a certification by the Contractor's "competent person" as defined in Subpart "P" 1926.650(b) that the Contractor has complied with the provisions of "Occupational Safety and Health Administration Standard for Excavation and Trenches Safety System" 29 CFR 1926 Subpart P for work for which payment is requested.

SC-7.16.A Add the following subparagraphs immediately after paragraph 7.16.A.3:

- 4. The Contractor shall prepare and submit information in accordance with Specification section 01 33 00, Submittal Procedures, as required by the individual Specification sections sufficiently in advance of the related work to allow an appropriate review time

by the Engineer. The types of submittals are indicated in the individual Specification sections.

ARTICLE 8 – OTHER WORK AT THE SITE

SC-8.01.A Delete the first sentence of paragraph 8.01.A and insert the following in lieu thereof:

- A. Owner will have other work related to the Project at the Site performed by separate contractors and Utility owners as described in Section 01 14 00 of the Specifications.

SC-8.02 Delete paragraphs 8.02.A and 8.02.B and insert the following paragraphs in lieu thereof:

- A. Owner intends to contract with others for the performance of other work on the Project at the Site. Contractor shall coordinate the Contract and separate contracts with the following duties, responsibilities, and limitations of authority:
 - 1. Coordinating Contractor shall coordinate the scheduling of work between this Contract and other concurrent contracts so that interference with operations and conflicts with interfacing work will be minimized. Particular attention shall be paid to maintaining suitable traffic patterns and adequate access to the existing facilities. Whenever construction activities conflict with operations, Owner shall decide which activity shall be given priority.
 - 2. Coordinating Contractor shall be responsible for coordinating work by Coordinating Contractor's own forces, by other contractors, by all subcontractors, and work by Owner's staff. Coordinating Contractor shall exert full control over the actions of all employees and other persons with respect to the use and preservation of property and existing facilities, except such control as may be specifically reserved to Owner or others. Coordinating Contractor has the right to exclude from the site all persons who have no purpose related to the Work or the Work's inspection, and may require all persons on the site (except Owner's employees) to observe the same regulations as Coordinating Contractor requires of Coordinating Contractor's own employees.

SC-8.03.A Delete the first sentence in paragraph A. and replace with the following:

If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction then Contractor *may* be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

SC-9.02.A Delete the following text in the first sentence of paragraph 9.02.A: "provided Contractor makes no reasonable objection to the replacement Engineer."

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Add the following new paragraph immediately after paragraph 10.03.A:

- B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.

SC-10.08 Add the following paragraphs immediately after paragraph 10.08.E:

- F. Observers and Resident Project Representatives shall have no authority to permit any deviation from the plans and specifications except on written order from the Engineer.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

SC-11.05 Add the following paragraphs 11.05.C and 11.05.D:

C. Use of Float:

1. A claim for an adjustment of Contract Times (or Milestones), otherwise allowable under the Contract Documents, shall be granted only when the time lost or gained exceeds the float for the activity at the time of the event giving rise to the claim. Float, the amount of time between the early start date and the late start date, or the early finish date and the late finish date, is jointly owned by both Owner and Contractor whether expressly disclosed or implied in any manner.
2. Contractor shall not use float suppression techniques (including, but not limited to, preferential sequencing caused by late starts of follow-up trades, unreasonably small crews, extended durations, or imposed dates) in information provided to Engineer.

- D. The Contract Time includes weather day allowances as calculated by SC-4.05. Extension of Contract Time will be allowed for each month's days that are in excess of each month's anticipated weather days as identified in SC-4.05.

ARTICLE 12 – CLAIMS

No modifications.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-13.01.B.5.c Insert the following after paragraph 13.01.B.5.c:

- 1) Rental rates will be determined as follows:
 - a) The base rates shall be those established in the cost guide, entitled "Rental Rate Blue Book," and revisions thereto.
 - b) Attachments (e.g. tractor with ripper and dozer or tractor with loader and backhoe) will be included in the hourly rental rate only when deemed essential to the Work as determined by Engineer.
 - c) The total established rental rate per hour shall be rounded to the nearest \$0.10.
 - d) Rental rates shall not be adjusted for regional differences.
 - e) No compensation shall be allowed for shop tools having a daily rental rate less than \$10.00 as set forth in the cost guide.
- 2) If deemed necessary by Engineer to use equipment not listed in the aforementioned publications, a suitable rental rate for such equipment will be mutually established by Contractor and Engineer. Contractor may furnish any cost data that might establish a suitable rental rate for such equipment. Rental payment will be made for the actual time that such equipment is in operation on the Work and for 20 percent of the actual standby time on the Work.

SC-13.02.A Delete "allowances so named in the Contract Documents" in the first sentence of 13.02.A and insert "allowances so named in Section 01 29 00 of the General Requirements" in lieu thereof.

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

SC-14.02.B Insert “Contractor” in lieu of “Owner” in paragraph 14.02.B to designate the payor of independent testing laboratory services. Insert “including but not limited to the following” in lieu of “except that”.

SC-14.03 Add the following paragraph immediately following paragraph 14.03.F:

G. System Startup:

1. Replace or modify equipment, software, and materials that do not achieve design requirements after installation in order to attain compliance with the design requirements:
 - a. Following replacement or modification, retest the system and perform additional testing to place the complete system in satisfactory operation and obtain compliance acceptance from the Engineer.

SC-14.05.C In the first sentence of subparagraph 14.05.C.2, delete the word “shall” and replace with the word “may”.

ARTICLE 15 – PAYMENTS TO CONTRACTOR AND COMPLETION

SC-15.01.B Delete “At least twenty days before the date established for each progress payment (but not more than once a month)” in the first sentence of paragraph 15.01.B and insert “On the last day of each calendar month” in lieu thereof and add the following subparagraphs at the end of 15.01.B:

4. **Stored Materials and Equipment:** Payments for stored materials and equipment shall be based only upon the actual cost of the materials and equipment to Contractor and shall not include any overhead or profit to Contractor. Partial payments will not be made for undelivered materials or equipment, except for payments associated with procurement contracts initiated by Owner and assigned to Contractor.
5. **Schedules and Data:** During the progress of the Work, each Application for Payment shall be accompanied by Contractor’s updated schedule of operations, or progress report, with such shop drawings schedules, procurement schedules, value of material on hand included in application, and other data specified in Section 01 33 00 of the specifications or reasonably required by Engineer.
6. **Payment for material delivered to the work site or stored under Owner’s control** will be based on the vendors’ paid invoices or the bill of lading showing date of delivery and the work site where the delivery took place, a copy of which shall be furnished by Contractor to Engineer with each request for progress payment. Only those materials which have been incorporated into the Project or are stored under Owner’s control may be included in the progress payment as material stored.
7. In addition to the amounts which Owner may retain as provided elsewhere in the Contract Documents, Owner may withhold a sufficient amount or amounts from any payment otherwise due Contractor as in Owner’s judgment may be necessary to cover:
 - a. Payments which may be due and payable for properly filed claims against Contractor or any Subcontractor for labor or materials furnished in or about the performance of the Contract.
 - b. Estimated or actual costs for correcting defective work not remedied.
 - c. Amounts claimed by Owner as forfeiture due to delays or other offsets. Owner may apply such withheld amount or amounts to the payment of such claim at Owner’s discretion. In doing so, Owner shall be deemed the agent of Contractor and any payments so made by Owner shall be considered as a payment made under the Contract by Owner to Contractor, and Owner shall not be liable to Contractor for

such payment made in good faith. Such payments may be made without prior judicial determination of the claim or claims. Owner shall render to Contractor a proper account of any such funds disbursed in or on behalf of Contractor.

8. Contractor shall disburse money paid to him, including any interest Contractor receives, to Subcontractors and Suppliers within 15 days after Contractor receives the money, in direct proportion to the Subcontractors' and Suppliers' basis in the total Contract between Contractor and Owner. Any money which is payable to a Subcontractor pursuant to this section accrues interest at the legal rate. Contractor may withhold 10 percent from the amount of any partial payment under a subcontract which is made before 50 percent of the Work has been completed under the subcontract. Thereafter Contractor shall pay any additional funds if, in the opinion of Contractor, satisfactory progress is being made in the work under the subcontract, and the payment must be equal to that paid by Owner to Contractor for the Work performed by the Subcontractor.
 - a. The Contractor may retain the amount withheld under the subcontract until the subcontract is satisfactorily completed.
 - b. The amount withheld under the subcontract is due within 15 days after the acceptance of the subcontract work by Contractor.
 - c. Whenever Contractor receives a payment of interest earned on the amount withheld from the Contract, Contractor shall within 15 days pay to each Subcontractor that portion of the interest received from the state which is attributable to the amount of money withheld from the Subcontractor.

SC-15.01.D Delete paragraph 15.01.D.1 and insert the following paragraph in lieu thereof:

1. Sixty (60) days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended less amounts due to Owner and other amounts which are authorized to be reserved or retained by state law will (subject to the provisions of paragraph 15.01) become due and when due will be paid by Owner to Contractor.

SC-15.03.A Add the following subparagraphs immediately after paragraph 15.03.A:

1. A phase of the Work shall be Substantially Complete when the Work associated with that phase can convey water in accordance with the Contract Documents. All process equipment, associated facilities, and controls associated with a phase of the work shall be installed and operational or temporary arrangements satisfactory to Owner shall have been made. Not all performance testing need be completed prior to the date of Substantial Completion.
2. For the work to be considered substantially complete, all portions of the work must be operational and ready for Owner's continuous use.

SC-15.06.D In the first sentence of paragraph 15.06.D, delete the word "Thirty" and replace with "Sixty".

SC-15.06.E Final Payments: Add the following subparagraphs immediately after paragraph 15.06.D:

- E. *Final Payments:* At the project's completion, the Contractor shall execute a Release and Lien Waiver to release all claims against the Owner arising under and by virtue of his Contract. The date of the Release shall be that agreed to for the final acceptance of the project with the Owner. The Release form and Contractor's Affidavit form are included at the end of these Supplementary Conditions.

SC-15.08.A Delete “Substantial Completion” and insert “final acceptance” in lieu thereof.

SC-15.08.B Delete “Substantial Completion” and insert “final acceptance” in lieu thereof.

SC-15.08 Add the following paragraphs immediately after paragraph 15.08.E:

- F. Contractor's obligation under this paragraph includes also providing a correction period from the substantial completion of any early completion items until the project's final completion and the beginning and completion of the 2-year completion's period as defined in paragraph 15.08.A.
- G. Remedying Defects: If, at any time before expiration of the correction period under 15.08.A, Owner determines that the goods are defective, Contractor shall either correct the defects or remove the goods and replace them with non-defective goods.
- H. Owner May Remedy: If Contractor fails to take action as required by Owner in accordance with paragraph 15.08.B, Owner may, after ten days' written notice to Contractor, remedy any such deficiency, instead of requiring removal or replacement. In an emergency where delay would cause serious risk of loss or damage, Owner may take such action without notice to or waiting for action by Contractor.
- I. Correction Period: Contractor's responsibility for remedying defects will extend for a period of two (2) years after date of final acceptance, or for such longer period of time as may be prescribed by law or by provisions of manufacturer's warranty or guarantee in conformance with the Contract Documents.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

SC-16.01 Delete paragraph 16.01.A and insert the following in lieu thereof:

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. At the discretion of the Owner, the Contractor may be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

SC-16.02 Delete paragraphs 16.02.A through 16.02.D and insert the following in lieu thereof:

- A. If Contractor refuses or fails to prosecute the Work or any separable part thereof with such diligence as will ensure the completion of the Work within the Contract Times, or any extension thereof, or fails or refuses to complete such Work within such extension, or if Contractor should be adjudged bankrupt, or if Contractor should make assignment for the benefit of Contractor's creditors, or if Contractor files a petition to take advantage of any debtor's act, or if a receiver should be appointed on account of Contractor's insolvency, or if Contractor or any Subcontractor should violate any provision of the Contract, or if Contractor should persistently refuse or should fail to supply enough properly skilled workmen or proper materials to complete the Work in the time specified, or if Contractor should fail to make prompt payment to Subcontractors or for materials or labor, or if Contractor should disregard laws, ordinances, or instructions given by Owner, Engineer, or Owner's Operating Agent or disregard in any substantial way any provisions of the Contract Documents; Owner may without prejudice to any other right or remedy, serve written notice upon Contractor and Contractor's surety of Owner's intention to terminate the Contract. Such notice will contain the reasons for Owner's intention to terminate the Contract and unless such violations shall cease and satisfactory arrangements for the corrections thereof have been accepted by Owner in writing within 10 days after the service of such notice, the Contract shall upon the expiration of said 10 days cease and terminate. In the event of such termination, the Owner shall immediately serve written notice upon the Surety and Contractor, and Contractor shall be liable for all costs necessary to complete the Work.

- B. The Surety shall, after receipt of notification from Owner of termination of the Contract, take over and perform the Work, utilizing a contractor which qualified under the prequalification criteria and which is acceptable to Engineer. The Surety shall, within 10 days after receipt of the notice of termination, provide Owner with written notice of Surety's intent to take over and complete the Work in accordance with the Contract Documents, and shall commence the Work within 10 days thereafter.
- C. If the Surety does not reply to the notice of termination, or fails to perform the Work in compliance with the Contract Documents, or provides the Owner with written notice that Surety does not intend to take over and perform the Work to completion, Owner may without prejudice on the part of the Surety, take over the Work and prosecute the same to completion by any method Owner may deem advisable for the account at the expense of Contractor, and the Surety shall be liable to Owner for any excess cost or other damage occasioned Owner thereby. In such event Owner may, without liability for so doing, take possession of and utilize in completing the Work such materials, appliances, plant, and other property belonging to Contractor that may be on the work sites and be necessary therefor. Contractor shall turn over to Owner's Operating Agent all materials and equipment in Contractor's possession that is to be incorporated into the Project, and shall make arrangements with Owner to turn over any materials or equipment in which Owner has made payment or partial payment but is not in Owner's possession.
- D. Upon completion of the Work, if the unpaid balance of the Contract Price exceeds the direct and indirect cost of completing the Work, including, but not limited to, all costs incurred by Owner from professional services and attorneys' fees and all costs generated to insure or bond the Work of substituted contractors or subcontractors used to complete the Work, such excess shall be paid to Contractor. If such costs exceed the unpaid balance, Contractor shall pay the difference to Owner within 30 days upon demand; on failure of Contractor to pay, the Surety shall promptly pay the difference to Owner upon written notice of Contractor's failure of payment. Such difference or any portion thereof not paid by the Contractor or the Surety within the 30 days following the date of mailing of the demand for payment, shall earn interest at the rate of 10 percent per annum or the maximum rate authorized by state law, whichever is lower.

SC-16.04 *Delete paragraph 16.04 in its entirety.*

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.02 *Add the following new paragraph immediately after Paragraph 17.01.*

SC-17.02 Arbitration

- A. All matters subject to final resolution under this Article will be decided by arbitration in accordance with the rules of Construction Arbitration Rules & Mediation Procedures of the American Arbitration Association in effect as of the effective date of the Agreement, subject to the conditions and limitations of this paragraph. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.
- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations. The demand for arbitration should include specific reference to Paragraph SC-17.02.D below.
- C. No arbitration arising out of or relating to the Contract shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's

consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

1. The inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and
 2. Such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.
- D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include a concise breakdown of the award, and a written explanation of the award specifically citing the Contract provisions deemed applicable and relied on in making the award.
- E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
- F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

SC-17.03 Add the following new paragraph immediately after Paragraph 17.02.

SC-17.03 Attorneys' Fees: For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys' fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties' initial demand or defense positions in comparison with the final result.

ARTICLE 18 – MISCELLANEOUS

No modifications.

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RELEASE

FROM: Contractor's Name _____

Address _____

TO: Owner's Name _____

Address _____

DATE OF CONTRACT:

Upon receipt of the final payment and in consideration of that amount, the undersigned does hereby release the Owner and its agents from any and all claims arising under or by virtue of this Contract or modification thereof occurring from the undersigned's performance in connection with the _____ project.

Contractor's Signature_____
Title

Subscribed and sworn to before me this _____ day of _____, 20____.

Notary Public

My Commission Expires:

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

CONTRACTOR'S AFFIDAVIT

FROM: Contractor's Name _____

Address _____

TO: Owner's Name _____

Address _____

DATE OF CONTRACT: _____

I hereby certify that all claims for material, labor, and supplies entered into contingent and incident to the construction or used in the course of the performance of the work on the _____ project have been fully satisfied.

Contractor's Signature_____
Title

Subscribed and sworn to before me this _____ day of _____, 20____.

Notary Public

My Commission Expires:

The Surety Company consents to the release of the retained percentage on this project with the understanding that should any unforeseen contingencies arise having a right of action on the bond that the Surety Company will not waive liability through the consent to the release of the retained percentage.

Dated _____
Surety CompanyBy _____
Resident Agent, State of TX

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

CITY OF CELINA SPECIAL PROVISIONS

APPENDIX A – DRUG-FREE JOBSITE ON CITY CONSTRUCTION PROJECTS

APPENDIX B – CONTRACTOR’S AFFIDAVIT OF FINAL PAYMENT

APPENDIX C – APPROVED MATERIALS LIST

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

APPENDIX “A”
DRUG-FREE JOBSITE ON CITY CONSTRUCTION PROJECTS

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

DRUG-FREE JOBSITE ON CITY CONSTRUCTION PROJECTS

- I. In the interest of job safety and to protect the general public, other CONTRACTORS and the OWNER'S employees from the consequences of accidents that are caused by worker abuse of controlled substances on City construction projects, the bidder certifies by submission of its bid that it will make a good faith effort to maintain a drug-free jobsite, and also certifies that to further this objective it will:
- (a) Establish a controlled substance abuse program that will test for controlled substance use by:
 - (1) Employees utilized by the bidder on this project, as listed in the Prevailing Wage Rate for Municipal Construction, if performance by a person impaired by the effects of a controlled substance, would or could: (i) pose a serious risk of death or personal injury to the employee, fellow employees or other persons in the vicinity; or (ii) compromise the quality of construction in such manner as would impose a significant public safety risk in the use or operation of the City improvement in question;
 - (2) Employees when there is a reasonable suspicion that an employee is using a controlled substance on the jobsite, or off the jobsite in a manner that affects jobsite performance;
 - (3) Employees as part of a voluntary drug testing program; or
 - (4) Employees as part of or as a follow-up to counseling for or rehabilitation from abuse of a controlled substance;
 - (b) Establish a program that will test an employee utilized by the bidder on this project on any position listed in the Prevailing Wage Rate when there is a reasonable suspicion that the employee is impaired by the effects of alcohol on the jobsite;
 - (c) Publish a statement notifying employees that the unlawful manufacture, distribution, selling, dispensing, possession or use of a controlled substance is prohibited on the jobsite and specifying the actions that will be taken against employees for violations of such prohibitions;
 - (d) Establish a drug-free awareness program to inform employees about the dangers of drug abuse on the jobsite, about the bidder's policy regarding a drug-free jobsite, about available counseling and rehabilitation programs, and about the penalties that may be imposed upon employees for drug abuse violations occurring on the jobsite; and

(e) Provide a copy of the statement required by subsection (c) to all employees of the bidder who will be involved in performance of the Contract.

- II. Employees who test positive for controlled substance use in one of the tests conducted pursuant to paragraph I.(a), or who are impaired by the effects of alcohol on the jobsite pursuant to paragraph I.(b), shall be considered unfit for purposes of Item 108.4 (Employees) of the N.C.T.C.O.G. Standard Specifications for Public Works Construction, Latest Edition, as amended.
- III. For purposes of Section I. above, the term "controlled substance" means a drug, substance or immediate precursor listed in Schedules I through V of Subchapter A of the Texas Controlled Substances Act, Tex. Rev. Civ. Stat. Ann. Articles 481.032 - 481.036. These substances include, but are not limited to, marijuana, heroin, LSD, concentrated cannabis or cannabinoids, hashish or hash oil, morphine or its derivatives, mescaline, peyote, phencyclidine (PCP, Angel Dust), opium, opiates, methodone, cocaine, qualudes, amphetamines, "exotic/designer" drugs, benzodiazepines, seconal, codeine, barbiturates, phenobarbital, or valium.
- IV. The bidder shall be solely responsible for the maintenance and administration of the program required in Section I. above. Nothing in these provisions shall be construed on the OWNER'S part as authorizing, permitting or requiring the bidder to engage in conduct that is in violation of the United States or Texas constitutions, that is otherwise illegal or that otherwise constitutes an unreasonable or unlawful invasion of privacy under Texas or federal law.

APPENDIX "A" ATTACHMENT A

Drug-Free Workplace Program Certification

- A. By submission of its offer, the offeror certifies and agrees that, with respect to the offeror and all employees of the offeror to be utilized in the performance of any contract resulting from this solicitation, it will establish a drug-free workplace program that complies with the provisions of the clause of the General Provisions entitled "Drug-Free Workplace Program."
- B. Failure of the offeror to have the drug-free workplace program complying with this certification and the clause of the General Provisions entitled "Drug-Free Workplace Program available for City's review and approval as part of City's pre-award responsibility survey will be deemed a lack of responsibility rendering the offeror unqualified and ineligible for award.

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

APPENDIX "A" ATTACHMENT B
DRUG-FREE WORKPLACE PROGRAM

A. As used in this clause:

- (1) "Alcohol" means ethyl alcohol and any beverage containing ethyl alcohol.
- (2) "Controlled substance(s)" means a substance, including a drug and an immediate precursor listed in Schedules I through V of Subchapter A of the Texas Controlled Substances Act, Tex. Rev. Civ. Stat. Ann. Articles 481.032 - 481.036. These substances include, but are not limited to, marijuana, heroin, LSD, concentrated cannabis or cannabinoids, hashish or hash oil, morphine or its derivatives, mescaline, peyote, phencyclidine (PCP, Angel Dust), opium, opiates, methadone, cocaine, quaaludes, amphetamines, "exotic/designer" drugs, benzodiazepines, seconal, codeine, barbiturates, phenobarbital, or valium.
- (3) "Drug-free workplace" means a site for the performance of work done in connection with a City construction contract at which employees are prohibited from using alcohol or from engaging in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance.
- (4) "Employee" means an employee of a CONTRACTOR or SUBCONTRACTOR who may be directly engaged in the performance of work under a City construction contract.
- (5) "Reasonable suspicion" means the presence or absence of specific criteria identified in the CONTRACTOR'S drug free workplace program (indicating the possibility that a person is under the influence of alcohol or a controlled substance) as observed by the CONTRACTOR'S supervisory personnel with reasonable training in the identification of such criteria.

B. The program may, at the CONTRACTOR'S discretion, include mandatory employee drug testing under the following circumstances:

- (1) As part of or as a follow-up to counseling or rehabilitation for controlled substance use;
or
- (2) As part of a voluntary employee drug testing program.

C. A random testing procedure to detect the use of alcohol or a controlled substance by employees performing tasks on the project maybe required as part of the CONTRACTOR'S program for the purpose of preventing or deterring hazardous performance.

D. All testing by or on behalf of the CONTRACTOR because of a requirement in a City contract shall be conducted only for employees engaged (or to be engaged) in tasks on the project and only for use of alcohol or a controlled substance and shall be conducted in a manner and under written policies that minimize the intrusion on the employee's privacy and personal dignity. This provision shall not preclude the CONTRACTOR from adding its own additional testing requirements.

- E. The CONTRACTOR shall publish a statement notifying employees that the use of alcohol at the workplace or the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance by employees at any time is prohibited and specifying the actions that will be taken against employees for violations of such prohibition.
- F. The program must require each employee who will perform a task on the project, prior to working under a City contract to (i) acknowledge in writing the CONTRACTOR'S drug-free workplace program and (ii) give advance written consent to any drug testing that may be conducted under the CONTRACTOR'S program and the use of test results for decisions related to employment, disciplinary action, or continued employment. The CONTRACTOR will agree, in connection with the employee's consent, that the results of testing for alcohol and controlled substances will not be voluntarily referred to any law enforcement agency. If the CONTRACTOR is subject to a collective bargaining agreement (i) the procedure for obtaining the individual employees' acknowledgment and consent must be consistent with the CONTRACTOR'S obligations under the collective bargaining agreement, and (ii) employees shall have the right to be accompanied by a union representative when any specimen is obtained for testing.
- G. The CONTRACTOR will establish a drug-free awareness program to inform its employees about:
- (1) The dangers of drug abuse in the workplace;
 - (2) The CONTRACTOR'S policy of maintaining a drug-free workplace;
 - (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
 - (4) The penalties that may be imposed upon employees who refuse to submit to required testing and for other violations of the drug-free workplace program including, but not limited to, being unable to remain employed at the workplace until approval to return is obtained from City.
- H. The CONTRACTOR'S drug-free workplace program shall, at a minimum, include:
- (1) Policies and procedures for specimen collection, chain of custody for specimens, laboratory qualification standards laboratory analysis procedures, quality control requirements, and test result reporting procedures which substantially conform to the material requirements of the Mandatory Guidelines for Federal Workplace Drug testing Programs promulgated by the U.S. Department of Health and Human Services in effect on the date of award of the City construction contract.
- Procedures for the CONTRACTOR'S employees to report their use of prescription drugs used in the course of medical treatment or which have been prescribed and authorized for use by a licensed medical practitioner.
- (3) The criteria the CONTRACTOR will use for "reasonable suspicion" testing.

- (4) The levels of alcohol or controlled substances which will be used in conjunction with a determination that an employee is "under the influence" or is impaired by the effects of "alcohol or controlled substance(s)".
- I. The CONTRACTOR shall display a notice, prominently placed near each entrance to the workplace, stating that, by entering the premises, persons are consenting to an inspection of themselves and their property including, but not limited to, their clothing, vehicles, briefcases, lunch boxes, tool boxes, purses, and packages.
- J. The CONTRACTOR agrees to use its best efforts to establish and maintain a work environment free of use by employees of alcohol or controlled substances through implementation of subparagraphs "B" through "I" of this clause. The CONTRACTOR shall prepare and maintain records in sufficient detail to demonstrate compliance with the requirements of this clause including, but not limited to, certifications from SUBCONTRACTORS and records of drug or alcohol tests conducted during performance of the contract. Such records shall be subject to inspection and audit by City.
- K. A Drug-Free Workplace Program Clause identical to this clause (except for changes appropriate for designation of the parties), including this subparagraph "I", will be included in every subcontract entered into in connection with this contract.

APPENDIX “B”
CONTRACTOR’S AFFIDAVIT OF FINAL PAYMENT AND RELEASE

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

CONTRACTOR'S AFFIDAVIT OF FINAL PAYMENT AND RELEASE**FOR: CELINA BOOSTE PUMP STATIONS IMPROVEMENTS PHASE II****W.O. NO. _____****THE STATE OF TEXAS §****COUNTY OF COLLIN §**

BEFORE ME, the undersigned authority, on this day personally appeared ("Affiant"), who, after being by duly sworn, deposes and says that he is _____ of a
(corporation, partnership, trade name)

_____ of Collin County, State of Texas (the "CONTRACTOR"), which said CONTRACTOR was awarded the contract dated the day of , for the construction of , -

W.O.# _____ (The "Work") for a total consideration of \$ _____

(_____) to be paid to the said CONTRACTOR (the "Contract"), and that Affiant has full power of authority to make this affidavit.

That THE CITY OF CELINA, TEXAS (the "OWNER") has approved the final estimate on said Work, and that the said CONTRACTOR has fully satisfied and paid any and all claims that may be covered by Chapter 53 of the State of Texas, or any other applicable statutes or charter provisions, and that all just bills for labor and materials have been paid and discharged by said CONTRACTOR insofar as they pertain to the Work in question.

That in addition to any funds which may have been previously paid by the OWNER, the CONTRACTOR hereby accepts the amount of \$ () as FULL AND FINAL PAYMENT under the aforementioned Contract, and hereby waives and releases any right Affiant and/or the CONTRACTOR may have to pursue claims of any nature against the OWNER arising out of or in any manner connected with the performance of the work and/or the Contract, including but not limited to claims of third parties that supplied material and/or labor for the Work for or through the CONTRACTOR ("SUBCONTRACTORS"), as well as claims for delay, additional compensation or for recovery of liquidated damages which may have been withheld by the OWNER. The CONTRACTOR shall defend, hold harmless and indemnify the OWNER from any such claims of such SUBCONTRACTORS. The CONTRACTOR further releases the OWNER from any claim or liability arising from any act or neglect of the OWNER related to or connected with the Contract. This affidavit is given pursuant to the final payment provisions of the Contract, and shall not be deemed to alter or modify the terms and provisions of said Contract.

CONTRACTOR'S AFFIDAVIT OF FINAL PAYMENT AND RELEASE FOR:**CELINA BOOSTER PUMP STATIONS IMPROVEMENTS PHASE II****C.I.P. #**_____

By:_____ (Affiant)

(Printed Name)SUBSCRIBED AND SWORN TO BEFORE ME, this the _____ day of
_____, A.D., 20_____._____
(Notary Public, in and for the
State of Texas)By:_____
(Printed Name of Notary)

My Commission Expires _____

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

Attachment "1"**City of Celina**

Check List for Partial & Final Pay Estimates

Project Title: CELINA WWTP IMPROVEMENTS

Project Work Order No: _____

CONTRACTOR Name: _____

CONTRACTOR's Representative: _____

Representative Contact Information: _____

Please check where applicable:

		Partial Pay Estimate No. _____
		Final Pay Estimate
		Updated Construction Schedule
		SWPPP Report (_____Not Applicable)
		As-built Drawing Update
		Proof of current certificate of insurance.
		Test Reports (Please Specify Below)
		Density and Moisture Tests (_____Not Applicable)
		Water Samples (_____Not Applicable)
		Pressure Tests (_____Not Applicable)
		Concrete Compressive Strength (_____Not Applicable)
		TV Inspection (_____Not Applicable)

Submitted by: _____

Date: _____

Reviewed by: _____

(City Inspector)

| Recommended for Processing

| Rejected as noted Above

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

Attachment 2

INSPECTION REPORT – Erosion Control

DATE: _____ PROJECT FILE NO.: _____

INSPECTOR: _____ TITLE: _____

REASON FOR INSPECTION: 14 day period/ ½” Rain
(Circle one) 7 day period

PROJECT NAME: _____

SITE CONDITIONS:

EROSION AND SEDIMENTATION CONTROLS	IN CONFORMANCE ?	EFFECTIVE ?
Construction Entrance and Exit	YES / NO / NA	YES / NO
Sediment Traps	YES / NO / NA	YES / NO
Rock Filter Dams	YES / NO / NA	YES / NO
Inlet Protection	YES / NO / NA	YES / NO
Stabilization	YES / NO / NA	YES / NO
Silt Fence	YES / NO / NA	YES / NO
Erosion Control Blankets	YES / NO / NA	YES / NO
Hay Bales	YES / NO / NA	YES / NO
Vegetative Buffer Strips	YES / NO / NA	YES / NO
Other	YES / NO / NA	YES / NO

VIOLATIONS NOTED:

RECOMMENDED REMEDIAL ACTIONS:

COMMENTS:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system,

those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

INSPECTOR: _____ DATE: _____

Signature: _____

COPY: _____

ATTACHMENT “3”



TO: Project Engineer _____

FROM: Chief Engineering Inspector _____

DATE: _____

SUBJECT: Change Order Request # _____ Project # _____ Plan # _____

LOCATION: _____ STA: _____

PROJECT NAME: _____

PROJECT CONTRACTOR: _____

Please submit a Change Order for the Following Items:

Reason for Change Order: _____

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

Inspector: _____

Chief Engineering Inspector: _____

ATTACHMENT “4”



Project Title and W.O

Request for information Form (RFI)

Date: RFI No:		Project Name location:	
To:	Design Engineer (engineer of records) Project manager, Chief	Consulting firm or City G.P	(Phone Number)
cc:	inspector, project inspector	City of Grand Prairie	(Phone Number)
From:	CONTRACTOR/Superintendent	CONTRACTOR	(Phone Number)

Requests for Information will be addressed within 24-48 hours and CONTRACTOR will be notified in writing of the decision made or progress underway.

INFORMATION REQUESTED

UTILITY AND LOCATION:

Example: Waterline D Sta 32 + 30

DRAWING/SPECIFICATION PAGE NO.:

Example: 23

EXISTING CONDITION:

Example: Gas line not shown on plans at south end of bore under road.

STATEMENT OF CONCERN:

Example: Gas line in the way

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

PROPOSED SOLUTION:

Example: **Extend the bore 5' to the south**

RESPONSE:

Agree with solution. We will prepare a change order

By: _____

APPENDIX “C” **APPROVED MATERIALS LIST**

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

APPROVED MATERIALS LIST

- I. The CONTRACTOR shall refer to the City's approved materials list before making any material selections. For any conflicts between materials listed herein and materials that are identified in the contract drawings or specifications, the approved materials list should govern. Refer to the following attached document for the approved materials list.

**City of Celina Approved Materials List
July, 2018**

DESIGN REFERENCE	AWWA OR ASTM	PRODUCT	DESCRIPTION	TYPE / STYLE / MODEL	SIZE	MANUFACTURER
WATER						
2.1.6.A	C900	PIPE MAIN	PVC WATER	DR14 BLUE	4" - 8"	DOMESTIC
2.1.6.A	C900	PIPE MAIN	PVC WATER	DR18 BLUE	10"-12"	DOMESTIC
2.1.6.A	C900-16	PIPE MAIN	PVC WATER	DR18 BLUE	16" AND LARGER	DOMESTIC
		TRACER WIRE	OPEN CUT	1430B - SF		COPPERHEAD
		TRACER WIRE	DIRECTIONAL DRILLING	1245B - EHS		COPPERHEAD
		TRACER WIRE	PIPE BURST	PBX-50B		COPPERHEAD
		TRACER WIRE TEST STATION	SNAKEPIT	RB14BTP		COPPERHEAD
2.1.6.B	ANSI/AWWA C151 / A21.50	PIPE MAIN	DUCTILE	CL51 / ENGINEER APPROVAL	4"-64"	DOMESTIC
	PE4710	PIPE SERVICE	HDPE	SDR9 POLY	1" - 2"	DOMESTIC
	A-36 A-568 A-135 / AWWA C-210	PIPE CASING	STEEL ENCASEMENT	0.25 WALL W/RED OXIDE PRIMER	4" -24"	
	A-36 A-568 A-135 / AWWA C-210	PIPE CASING	STEEL ENCASEMENT	0.375 WALL W/ RED OXIDE PRIMER	27" - 42"	
	AWWA C105	POLY WRAP	POLYETHYLENE ENCASEMENT	8MILS		
		ADHESIVE TAPE		SCOTCHRAP NO.50	2" WIDE	POLYKEN
	ISO 9001:2000	CASING SPACER	HDPE	CASING SPACER	VARIOUS	RACI OR APPROVED EQUAL
2.1.6.C	ANSI/AWWA C153/A21.53 / NSF 61	FITTING WATER	MECHANICAL JOINT	C153 COMPACT	2" - 48"	DOMESTIC - TYLER UNION OR APPROVED EQUAL



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Attachment: Contract Doc (Pump Stations Improvement Phase 2)

7.E.a

**City of Celina Approved Materials List
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DESIGN REFERENCE	AWWA OR ASTM	PRODUCT	DESCRIPTION	TYPE / STYLE / MODEL	SIZE	MANUFACTURER
WATER						
2.1.6.	ANSI/AWWA C153/A21.53	FITTING RESTRAINT	EBAA MEGALUG	PV1100 FOR DUCTILE IRON	2" - 48"	EBAA IRON
2.1.6.	ANSI/AWWA C153 UL/FM ISO 9001-2008	FITTING RESTRAINT	TYLER TUFF GRIP	SERIES 100 FOR DUCTILE IRON	2" - 48"	DOMESTIC - TYLER UNION
2.1.6.	ANSI/AWWA C153 UL/FM ISO 9001-2008	FITTING RESTRAINT	TYLER TUFF GRIP	SERIES 2000 FOR PVC	2" - 48"	DOMESTIC - TYLER UNION
2.1.7.	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	SADDLE	202B X CC THREAD	1" - 2" TAP	FORD
		METER SERVICE	SADDLE	BR2B X CC THREAD	1" - 2" TAP	MUELLER
2.1.7.	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	CORPORATION STOP	F10003GNL / F10004GNL / FB10006GNL / FB10007GNL	1" - 2"	FORD
2.1.7.	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	CORPORATION STOP	G15008/ B25008	1" - 2"	MUELLER
2.1.7.	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	SETTER	VBHH74-10W-41-44-GNL	1"	FORD
		METER SERVICE	SETTER	G2577N-2A	1"	MUELLER
	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	SETTER	VBHC77-12W-41-77-GNL	2"	FORD
		METER SERVICE	SETTER	G2422N-6A	2"	MUELLER
	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	NIPPLE		1"X12" /2"/12"	DOMESTIC



**City of Celina Approved Materials List
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DESIGN REFERENCE	AWWA OR ASTM	PRODUCT	DESCRIPTION	TYPE / STYLE / MODEL	SIZE	MANUFACTURER
WATER						
2.1.7.	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	COUPLING	C44-44G NL / C44-66G NL / C44-77G NL	1" - 2"	FORD
		METER SERVICE	COUPLING	G15403	1" - 2"	MUELLER
2.1.7.	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	INSERT / SS STIFFENER	52 / 54 / 55	1" - 2"	FORD
		METER SERVICE	INSERT / SS STIFFENER	528705 / 528706 / 528707	1" - 2"	MUELLER
		METER BOX	PLASTIC METER BOX	DFW37A-14-1SDFDEEP CELINA	1" METER	DFW PLASTICS
		METER BOX	PLASTIC METER BOX	DFW65C-14-1SDFDEEP CELINA	2" METER	DFW PLASTICS
		METER VAULT	LARGE METER	ENGINEER APPROVAL	3" AND LARGER	PARK, TURNER, OLDCASTLE, OR APPROVED EQUAL
2.1.8.	C-515	VALVE MAIN	GATE VALVE	RESILIENT WEDGE	2" - 16"	MUELLER OR APPROVED EQUAL
2.1.8.	C-515	VALVE MAIN	GATE VALVE	RESILIENT WEDGE WITH SPUR GEAR	18" AND LARGER	MUELLER OR APPROVED EQUAL
2.1.8.	C-504	VALVE MAIN	BUTTERFLY VALVE	150B FLANGED OR MECHANICAL JOINT	20" AND LARGER	PRATT, MUELLER, OR APPROVED EQUAL
2.1.8. B	MANUAL M51	VALVE AIR	AIR RELEASE VALVE	RBX	2" AND LARGER	VENT O MAT, VENT TECH
2.1.18.B	MANUAL M51	VALVE AIR	AIR RELEASE VALVE	SERIES WAR 02	2" AND LARGER	PRATT
	A-48 AASHTO	VALVE BOX	THREE PIECE VALVE BOX	6850 WITH LID	2" AND LARGER	DOMESTIC- TYLER UNION OR APPROVED EQUAL



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DESIGN REFERENCE	AWWA OR ASTM	PRODUCT	DESCRIPTION	TYPE / STYLE / MODEL	SIZE	MANUFACTURER
WATER						
2.1.9.		FIRE HYDRANT	HYDRANT WITH INTEGRAL STORZ FITTING	MA423 SUPER CENTURION-CELINA	6" LEAD	MUELLER
		FIRE HYDRANT	HYDRANT WITH INTEGRAL STORZ FITTING	K-81-D GUARDIAN-CELINA	6" LEAD	KENNEDY
		FIRE HYDRANT	HYDRANT WITH INTEGRAL STORZ FITTING	MEDALLION-F2545-CELINA	6" LEAD	CLOW
		FIRE HYDRANT	HYDRANT WITH INTEGRAL STORZ FITTING	WATERMASTER 5CD250-CELINA	6" LEAD	EAST JORDON
		FIRE RISER	IN-BUILDING RISER	SERIES IBR WITH FLANGED END CONNECTION ON THE OUTLET		AMES FIRE AND WATER WORKS
2.1.10	C-207	TAP MAIN	TAPPING SLEEVE	665 316 ALL STAINLESS/ H304SS		SMITH BLAIR, MUELLER OR EQUAL
2.1.11.		VALVE FLUSHING	AUTO FLUSHING VALVE	9800	DEAD END MAIN	ECLIPSE
		VALVE FLUSHING	AUTO FLUSHING VALVE	HG4	DEAD END MAIN	MUELLER



City of Celina Approved Materials List
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DESIGN REFERENCE	AWWA OR ASTM	PRODUCT	DESCRIPTION	TYPE / STYLE / MODEL	SIZE	MANUFACTURER
SANITARY SEWER						
2.2.6.A	D3034	PIPE MAIN	PVC SEWER	SDR35	4" - 15"	
2.2.6.A	F679	PIPE MAIN	PVC SEWER	SDR26 HEAVY WALL	4" - 15"	
2.2.6.A	F679	PIPE MAIN	PVC SEWER	PS46 / PS115	18" AND LARGER	
2.2.6.A	D2241	PIPE FORCE MAIN	PVC SEWER	SDR26 CLASS 160	4" - 12"	
2.2.6.A	C900-16	PIPE FORCE MAIN	PVC SEWER	DR25 CLASS 165 GREEN	14" AND LARGER	
		TRACER WIRE(FORCE MAIN)	OPEN CUT	1430G - SF		COPPERHEAD OR APPROVED EQUAL
		TRACER WIRE (FORCE MAIN)	DIRECTIONAL DRILLING	1245G - EHS		COPPERHEAD OR APPROVED EQUAL
		TRACER WIRE	PIPE BURST	PBX-50G		COPPERHEAD OR APPROVED EQUAL
		TRACER WIRE TEST STATION	SNAKE PIT	RB14GTP		COPPERHEAD OR APPROVED EQUAL
	ISO 9001:2000	CASING SPACER	HDPE	CASING SPACER	VARIOUS	RACI OR APPROVED EQUAL
	A-36 A-568 A-135 / AWWA C-210	PIPE CASING	STEEL ENCASEMENT	0.25 WALL W/RED OXIDE PRIMER	4" -24"	
	A-36 A-568 A-135 / AWWA C-210	PIPE CASING	STEEL ENCASEMENT	0.375 WALL W/ RED OXIDE PRIMER	27" - 42"	
	ASTM D3212	GRAVITY FLOW PIPE ADAPTOR	SEWER TAP (REHAB)	INSERTA TEE		INSERTA FITTING CO.
2.2.6.C	D3034 / F679 / F170 / ISO 9000	FITTING SEWER	GASKETED	SDR35 / SDR26 TO MATCH MAIN	4" - 18"	
		VALVE AIR	AIR RELEASE VALVE	WWAR 01	2" AND LARGER	PRATT,ARI D-025 NYLON COMBINATION AIR VALVE OR APPROVED EQUAL
		MANHOLE SAN SEWER	MANHOLE WITH ANTIMICROBIAL ADDITIVE	CONSHIELD PRECAST	48" AND LARGER	HANSON (FORTERRA) AND TURNER
2.2.8. D	C-478					



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SANITARY SEWER					
	MANHOLE SAN SEWER	MANHOLE WITH ANTIMICROBIAL ADDITIVE	CONSHIELD CAST IN PLACE	48" AND LARGER	REDIMIX
	PATCHING MATERIAL	MANHOLE	CONSHIELD JOINT SET		CONSHIELD
	MANHOLE SAN SEWER	MANHOLE	GATOR WRAP	6" WIDE	INF1-SHIELD
	MANHOLE SAN SEWER	MANHOLE	I & I BARRIER		STRIKE PRODUCTS
	MANHOLE SAN SEWER	HDPE	MANHOLE INSERT	30" OD	S.S.I SEALING SYSTEMS INC.
	MANHOLE SAN SEWER	GRADE RING	INFRA-RISER IC3340F	33" I.D. x 40" O.D.	EAST JORDON
	MANHOLE SAN SEWER	MANHOLE RING COVER	1480 30" NEW CONSTRUCTION	30" CLEAR OPENING	BASS HAYES, EAST JORDAN IRON WORKS
	MANHOLE SAN SEWER	WATERTIGHT MANHOLE RING COVER	1432 30" NEW CONSTRUCTION WATERTIGHT	30" CLEAR OPENING	BASS HAYES, EAST JORDAN IRON WORKS
STREET SIGNS AND LIGHT					
	SIGN POLE	FLUTED	SP4X 12	4" OD	BRANDON INDUSTRIES OR APPROVED EQUAL
	POLE BASE	SLIP-OVER	SB94	4" OD	BRANDON INDUSTRIES OR APPROVED EQUAL
	POLE FINIAL		FIN- CS4	4" OD	BRANDON INDUSTRIES OR APPROVED EQUAL



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Attachment: Contract Doc (Pump Stations Improvement Phase 2)

City of Celina Approved Materials List
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City of Celina
Approved Materials List for Grass in Detention Ponds, Swales, Bio-retention Areas

GRASS/TURF				REMARKS	
COMMON NAME	SCIENTIFIC NAME	ACCEPTABLE FORM			
PRAIRIE CORDGRASS	<i>SPARTINA PECTINATA</i>	CONTAINER/ SEED		BOTTOM	
BUSHY BLUESTEM	<i>ANDROPOGON GLOMERATUS</i>	CONTAINER/ SEED		BOTTOM	
CROWFOOT CARIC SEDGE	<i>CAREX CRUS-CORVI</i>	CONTAINER/ SEED		BOTTOM	
EASTERN GRAMAGRASS	<i>TRIPSACUM DACTYLOIDES</i>	CONTAINER/ SEED		BOTTOM	
LOWLAND SWITCHGRASS	<i>PANICUM VIRGATUM L</i>	CONTAINER/ SEED		BOTTOM	
ALAMO SWITCHGRASS	<i>PANICUM VIRGATUM 'ALAMO'</i>	CONTAINER/ SEED		BOTTOM	
LOMETA INDIANGRASS	<i>SORGHASTRUM NUTANS 'LOMETA'</i>	CONTAINER/ SEED		SLOPE	
EARL BIG BLUESTEM	<i>ANDROPOGON GERARDII 'EARL'</i>	CONTAINER/ SEED		SLOPE	
LITTLE BLUESTEM	<i>SCHIZACHYRIUM SCOPARIUM</i>	CONTAINER/ SEED		SLOPE	
CANADA WILDRIE	<i>ELYMUS CANADENSIS</i>	CONTAINER/ SEED		SLOPE	
SPRING OBEDIENT PLANT	<i>PHYSOSTEGIA INTERMEDIA</i>	CONTAINER/ SEED		SLOPE	
MAXIMILIAN SUNFLOWER	<i>HELIANTHUS MAXIMILIANA</i>	CONTAINER/ SEED		SLOPE	
HALBERD-LEAF HIBISCUS	<i>HIBISCUS LAEVIS</i>	CONTAINER/ SEED		SLOPE	
HASKELL SIDEOATS GRAMA	<i>BOUTELLOUA CURTIPENDULA</i>	CONTAINER/ SEED		SLOPE	
BUFFALOGRASS	<i>BOUTELLOUA DACTYLOIDES</i>	SOD		NATIVE	
BERMUDAGRASS	<i>CYNODON DACTYLON</i>	SOD OR HYDRO-MULCH		ADAPTED	

Common Name	Scientific Name	Container Size to be Planted	Maximum Mature Size	Remarks
TREES (LARGE SHADE)				
OAK, CHINQUAPIN	<i>QUERCUS MUEHLENBERGII</i>	SEE PLANS	80' H 80' W	NATIVE
TREES (MEDIUM SHADE)				
BALD CYPRESS	<i>TAXODIUM DISTICHUM</i>	SEE PLANS	80' H 50' W	NATIVE
ELM, CEDAR	<i>ULMUS CRASSIFOLIA</i>	SEE PLANS	90' H 80' W	NATIVE
PISTACHIO, CHINESE	<i>PISTACIA CHINENSIS</i>	SEE PLANS	70' H 50' W	ADAPTED
TREES (LIVING SCREEN)				
HOLLY, FOSTER	<i>ILEX X ATTENUATA 'FOSTERI'</i>	SEE PLANS	20' H 10' W	ADAPTED
HOLLY, NELLIE R. STEVENS	<i>ILEX X 'NELLIE STEVENS'</i>	SEE PLANS	25' H 15' W	ADAPTED
SHRUBS				
DWARF CRAPE MYRTLE	<i>LAGERSTROEMIA INDICA</i>	SEE PLANS	3' H 3' W	DWARF
DWARF NANDINA	<i>NANDINA DOMESTICA</i>	SEE PLANS	3' H 3' W	DWARF



City of Celina Approved Materials List
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SHRUBS				
DWARF YAUPON HOLLY	<i>ILEX VOMITORIA 'NANA'</i>	SEE PLANS	3' H 3' W	DWARF
HAWTHORN, INDIAN	<i>RHAPHIOLEPSIS INDICA</i>	SEE PLANS	3' H 4' W	ADAPTED
RED YUCCA	<i>HESPERALOE PARVIFLORA</i>	SEE PLANS	3' H 3' W	NATIVE
TEXAS SAGE, SILVERADO	<i>LEUCOPHYLLUM FRUTESCENS 'SILVERADO'</i>	SEE PLANS	3' H 3' W	NATIVE

Approved Materials List for Irrigation

BASIC PRODUCT CATEGORY	SUBCATEGORY	MANUFACTURER	MODEL, TYPE, OR STYLE APPROVED	SPECIFICATION	NOTES	NSF 61 CERTIFIED
ROTORS		HUNTER, RAINBIRD, TORO	HIGH EFFICIENCY			
SPRAY NOZZELS (TURF AREAS)		HUNTER, RAINBIRD, TORO	HIGH EFFICIENCY			
SHRUB NOZZLE ADAPTER (PLANT BED AREAS)		RAINBIRD				
SHRUB NOZZLES (PLANT BED AREAS)		RIGGS	SN8-24			
BRASS GATE VALVE, DOMESTIC MANUFACTURER		NIBCO	T-113			
DRIP IRRIGATION		NETAFIM	UNITECHLINE OR TECHLINE			
SOLENOID VALVE W/ DC LATCHING SOLENOID		RAIN BIRD	PEB-PRS-B SERIES			
QUICK COUPLING VALVES		RAIN BIRD	MODEL 44RC			
PVC BALL VALVES		SPEARS OR APPROVED EQUAL	COMPACT UNIT			
BACKFLOW PREVENTER		FEBCO	DOUBLE CHECK VALVE			
DOUBLE CHECK BOX			PLASTIC "JUMBO" DCA			



TECHNICAL SPECIFICATIONS

DIVISION 1

GENERAL REQUIREMENTS

SECTION 01 11 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- A. The completed Work will provide the Owner with removal and replacement of existing pumps, associated electrical equipment, and piping at the existing Celina Road Pump Station and Downtown Pump Station. More specifically, the Project includes, but is not limited to construction of the following:
1. Mobilization
 2. Celina Road Pump Station
 - a. Vertical split-case centrifugal pumps
 - b. Valves and fittings
 - c. Interconnecting piping
 - d. Temporary pumping to maintain pump station operation during construction, if needed
 - e. Electrical instrumentation
 - f. Installation of new Variable Frequency Drives
 - g. Installation of new electrical control panels
 - h. External recoating of the existing Ground Storage Tank
 - i. Backup power (additive alternate)
 3. Downtown Pump Station
 - a. Vertical split-case centrifugal pump (with one pump as an additive alternate)
 - b. Valves and fittings
 - c. Interconnecting piping
 - d. Temporary pumping to maintain pump station operation during construction, if needed
 - e. Electrical instrumentation
 - f. Installation of new Variable Frequency Drives
 - g. Installation of new electrical control panels
 - h. SCADA improvements to existing PRV
 - i. Demolition inside old Pump Station building
 - j. Demolition of existing Ground Storage Tank and associated piping
 - k. Driveway and roadway improvements
 - l. Installation of new fencing and electric gate
 - m. Installation of new landscape screening (additive alternate)
 - n. Landscaping improvements (additive alternate)
 4. SCADA improvements to RTUs at existing Light Farms EST and Morgan Lake EST
 5. Storm Water Pollution Prevention Plan (SWPPP)
 6. Trench Safety System
 7. Power Coordination Study
 8. All other facility elements and features indicated by the drawings, by the details, and as specified herein.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 11 20 - BID ALTERNATES COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Identification and description of coordination work of the Additive Bid Alternates and Deductive Bid Alternates which may be incorporated into the Work.
- B. Related sections:
 - 1. Section 01 11 00 – Summary of Work.
 - 2. Section 01 14 00 – Work Restrictions.
 - 3. Section 01 50 00 – Temporary Facilities and Controls.

1.2 THE WORK

- A. The BASE BID Project's elements includes all elements identified in the Contract Documents except for the following elements:
 - 1. The Additive Bid Alternative A.1: Celina Road Pump Station Backup Power defined by CR-E drawings.
 - 2. The Additive Bid Alternative A.2: Downtown Pump Station Pump No. 4 defined by DT-M, DT-S, and DT-E drawings.
 - 3. The Additive Bid Alternative A.3: Downtown Pump Station Landscaping Improvements as outlined by the DT-L drawings.
 - 4. The Deductive Bid Alternative D.1: Morgan Lake EST SCADA improvements as outlined by the DT-E drawings.
- B. In addition to the Base Bid Project, the Owner may elect to construct a combination of any of the following Bid Alternates as detailed within the following table:

Item Identifier	Item Description
Alternate A.1	Alternate A.1: Celina Road Pump Station Backup Power as outlined by the CR-E drawings.
Alternate A.2	Alternate A.2: Downtown Pump Station Pump No. 4 as outlined by the DT-M, DT-E, and DT-S drawings.
Alternate A.3	Alternate A.3: Downtown Pump Station Landscaping Improvements as outlined by the DT-L drawings.
Alternate D.1	Alternate D.1: Morgan Lake EST SCADA improvements as outlined by the DT-E drawings.

With this bid, the Contractor agrees that the Contractor has carefully examined the plans and other contractual documents and has coordinated the scopes between the Base Bid Documents and the Bid Alternate Documents. Through submittal of a bid, the Contractor agrees and understands that the documents have been prepared with the highest level of care in the effort to coordinate the scopes of the Base Bid Project documents and the Bid Alternate documents. The Contractor agrees and accepts the responsibilities to coordinate and construct all required interconnections and coordination facilities between the Base Bid Project and any of, any combination of, and/or a total combination of the Bid Alternates to develop complete and operational facilities that meet the regulatory requirements for the facilities and the requirements set forth by these contract documents.

- C. Except as specifically noted otherwise, provide and pay for:
 - 1. Insurance and bonds.

2. Labor, materials, and equipment.
 3. Tools, equipment, and machinery required for construction.
 4. Utilities required for construction.
 5. Temporary facilities including sheeting and shoring.
 6. Traffic control and dust control measures.
 7. Other facilities and services necessary for proper execution and completion of the Work.
- D. Secure and pay for all permits including City of Celina permits, Department of Transportation permits, Storm Water General Permit for Construction Activities from TCEQ, and any other government fees and licenses.
- E. Comply with codes, ordinances, regulations, orders, and other legal requirements of public authorities having bearing on the performance of the Work.
- F. When the Work depends for proper execution or results upon work performed by others, inspect and promptly report apparent discrepancies or defects in work performed by others.
1. Assume responsibility for work performed by others, except for defects reported as specified in this paragraph and defects which may become apparent in work performed by others after execution of the Work.
- 1.3 COORDINATION OF WORK
- A. Maintain overall coordination of the Work.
- B. Coordinate the scopes of the Base Bid Project documents and the scopes of the Bid Alternate documents.
- C. With his bid, Contractor acknowledges and understands that the scope of the Bid Alternates is documented via several methods within the Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 14 00 - WORK RESTRICTIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of:
 - 1. General constraints for sequencing and scheduling the Work.
 - 2. Interruption of pump station operation.
 - 3. Work affected by existing site and facility.
 - 4. Work restrictions and coordination between construction operations and pump station operations, including:
 - a. Access to site.
 - b. Use of site and premises.
 - c. Utilities.
 - d. Work by Others.
 - e. Work Sequence.
 - f. Temporary Services, Materials and Equipment.
- B. Related sections:
 - 1. Section 01 11 00 - Summary of Work.
 - 2. Section 01 26 00 - Contract Modification Procedures.
 - 3. Section 01 31 00 - Project Management and Coordination
 - 4. Section 01 50 00 - Temporary Facilities and Controls.
 - 5. Section 09 90 00 - Painting and Protective Coatings

1.2 GENERAL CONSTRAINTS ON SEQUENCE AND SCHEDULING OF WORK

- A. Water Projects:
 - 1. The existing Celina Road and Downtown Pump Stations are the City of Celina's only means of distributing potable water to the City's potable water customers. Impairing the operational capabilities of these facilities will result in water usage restrictions for the City's potable water customers.
 - 2. Conduct work in a manner that will not impair the operational capabilities of essential elements of the distribution process.
 - 3. The status of the new pump stations shall be defined as "operational" when it is capable of maintaining existing pumping capacity.
- B. Work Sequence and Constraints:
 - 1. Utilize description of critical events in work sequence in this Section as a guideline for scheduling and undertaking the Work.
 - 2. Work sequence and constraints presented do not include all items affecting completion of the Work, but are intended to describe critical events necessary to minimize disruption of the existing facilities.

1.3 INTERRUPTION OF FACILITY PROCESSES

- A. Execute the Work while the existing facility is in operation.
- B. Indicate required shutdowns of existing facilities or interruptions of existing operations on Progress Schedule. Shutdowns will be permitted to the extent that existing operation will not be jeopardized and identified constraints are satisfied.
- C. Submit written notification of required shutdowns of existing facilities at least 14 days prior to the planned date of shutdown.

- D. The Engineer and the Facility Personnel will evaluate the request based on the pump stations' ability to reliably meet capacity demands.
- E. Do not begin alterations until Engineer's written permission has been received.
- F. Minimize shutdown times by thorough advanced planning. Have required equipment, materials, and labor on hand at time of shutdown.
- G. Where required to minimize process interruptions while complying with specified sequencing constraints, provide temporary pumping, power, lighting, controls, instrumentation, and safety devices.

1.4 REQUIREMENTS FOR OPERATION OF PUMP STATIONS AND MAINTAINING CONTINUOUS OPERATION OF EXISTING FACILITIES

- A. Facilities or conditions required to keep the existing pump stations operational include, but are not limited to, the following:
 1. Electrical power, including transformers, distribution wiring, and motor control centers.
 2. Piping for conveyance of potable water.
 3. All existing pumps.
 4. Chemical storage, metering, conveyance, and control facilities. These are provided with cylinders for gaseous chlorine, chlorine residual analyzers, and chemical solution piping. Potable water is required at all times to permit chlorination.
 - a. The ability to continuously apply chlorine is required.
 5. Fencing and gates.
 6. Lighting.
 7. Heating, ventilation, and air conditioning equipment.
 8. Instrumentation, meters, controls, and telemetry equipment.
 9. Safety equipment and features.
 10. Parking for City employees and vehicles required for operation and maintenance of the existing pump stations.
 11. Telephone system.
 12. Storm drainage.
 13. Roadways to provide access route for chemical deliveries.
 14. Other incidentals necessary to continually operate the facilities.
- B. Conduct the Work and provide temporary facilities required to keep the existing pump stations continuously operational.
- C. Do not remove or demolish existing facilities required to keep the existing plant operational at the capacities specified until the existing facilities are replaced by temporary, or new facilities equipment. The replacement facilities shall have been tested and demonstrated to be operational prior to removing or demolishing existing facilities.

1.5 OPERATIONS AND MAINTENANCE ACCESS

- A. Provide safe, continuous access to process control equipment for pump station operations personnel.

1.6 SHUTDOWN CONSTRAINTS

- A. Comply with Shutdown Constraints as described in Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION, and described in General Terms as follows:
 1. Provide 14 days advance notice to Engineer and Owner of need for a minor shutdown.
 2. Provide 30 days advance notice to Engineer and Owner of need for a major shutdown.

3. Shutdowns will be allowed, but will be limited to low demand periods from 10:00 PM to 5:00 AM.
4. Any shutdowns shall require a shutdown plan, including detailed schedule, backup tools and equipment, personnel involved, contingency plan, and any procedures involved in restarting the process or facility. Owner's approval of the Shutdown Plan is required prior to any shutdowns.
5. Contractor shall coordinate continuous 24-hour temporary pumping as necessary if either of the Celina Road or Downtown Pump Stations need to be offline for more than 2 hours during construction.

1.7 UTILITIES

- A. Provide advance notice to and utilize services of 811 for location and marking of underground utilities operated by utility agencies other than the Owner. Contact information: Call 811 for marking of utilities.
- B. Maintain electrical, telephone, water, gas, sanitary facilities, and other utilities within existing facilities in service. Provide temporary utilities when necessary.

1.8 WORK BY OTHERS

- A. Where proper execution of the Work depends upon work by others, inspect and promptly report discrepancies and defects.

1.9 WORK SEQUENCE

- A. The project schedule assumes that all project efforts will be delivered in a concurrent, logical fashion. The following sequences does not detail the integration of all work included in the Contract. The Contractor is responsible to perform all required work and coordinate that work with the continuing appropriate operation of the existing facilities. This possible sequence is included for informational purposes only. It is intended that Construction be performed concurrently at all locations: the Celina Road Pump Station, the Downtown Pump Station, and the Light Farms EST and Morgan Lake EST.
 1. The anticipated sequence of events at the Celina Road Pump Station is as follows:
 - a. Replacement of existing sections of suction and discharge piping to fix pump alignment
 - b. Installation of new pumps, associated electrical gear, and associated building mechanical improvements to the electrical building can all occur concurrently
 - c. Installation of the generator (additive alternate)
 - d. Recoating the Ground Storage Tank may take place at any time
 2. The anticipated sequence of events at the Downtown Pump Station is as follows:
 - a. Installation of the new pumps, associated electrical gear, and the associated building mechanical improvements can all occur concurrently
 - 1) Installation of Pump No. 4 and associated piping between isolation valves (additive alternate)
 - b. Installation of the associated piping and connections to the new suction and discharge transmission lines must be coordinated with the Celina Water Transmission Project B
 - c. The demolition of the ground storage tank must be coordinated with the completion of the new suction piping.
 - d. The demolition of the old pump station building and associated piping may take place at any time
 - e. Installation of the decorative metal fence, motorized gate, and roadway improvements may take place at any time

3. Installation of the associated electrical gear for the SCADA improvements to the Light Farms EST and Morgan Lake EST may take place at any time and should be coordinated with the Owner

1.10 TEMPORARY SERVICES, MATERIALS, AND EQUIPMENT

- A. Locate temporary facilities in a manner that minimizes interference to Owner's operation and maintenance personnel.
- B. Unless otherwise specified, install temporary pipelines of the same size as its connection to the existing facility at the downstream end of the pipeline.
- C. Provide piping of suitable material for the material being conveyed.
- D. Provide submittals on proposed temporary electrical and instrumentation components necessary to maintain existing facilities.
- E. Dewater and promptly clean basins and channels temporarily removed from service.
- F. Dimensions for all existing structures, piping, paving, and other nonstructural items are approximate. The Contractor shall field verify all dimensions and conditions and report any discrepancies to the Engineer a minimum of 14 days in advance of any construction in the area.
- G. Discrepancies between coordinates, bearings and lengths, and stationing shall be resolved in the following order of precedence:
 1. Coordinates.
 2. Bearings and lengths.
 3. Stationing.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 22 00 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section stipulates the method of measurement and payment for items of Work for which Unit Prices and Lump Sum Prices are stated in the Bid Form.
- B. Payment for submittals shall be described in this section.
- C. Related sections:
 - 1. Section 00 41 00 – Bid Form.

1.2 SCOPE OF PAYMENT

- A. Units of measurement of items of Work for which Unit and/or Lump Sum Prices are stated will be as herein subsequently defined.
- B. The estimated quantities for items of Work for which Unit Prices are given in the Bid Form are subject to variation, and payment shall be based upon the final measurement of the items of work actually installed and approved by the Owner for payment.
- C. All work not specifically set forth as a pay item shall be considered as a subsidiary obligation of the Contractor, and costs of these items is included in the overall cost of the project.
- D. The unit price and lump sum prices shall include all costs in connection with the proper and successful completion of the Work, including:
 - 1. Furnishing all materials, equipment, supplies, and appurtenances, providing all construction, equipment, and tools and performing all necessary labor and supervision to complete the work.

1.3 CONTRACTOR'S COSTS AND OVERHEADS

- A. Contractor shall include in the Work Offer, all costs and overheads, including home office overhead, for continuous, full time management of the Contract as described in the Contract Documents, covering a period of time not less than from Administrative Notice to Proceed through the entire duration of the project.

1.4 LUMP SUM OR UNIT PRICE ITEMS

- A. The total work offer price indicated by the sum of the unit price and lump sum items shall be payment for the complete Project as set forth in the Contract Documents
 - 1. A general description of the Work involved is given for each item.
 - 2. Work items not specifically named or otherwise described in this schedule shall be considered appurtenant to the Project and the cost associated with such Work shall be considered in Contractor's work offer.
- B. The quantities shown for unit price items are estimated and are for the purpose of comparing work offers.
 - 1. Owner is not obligated to use the total quantities or any quantity of the unit price or lump sum items listed in the Work Offer Form.

2. Owner may request deletion of all or any portion of the quantities estimated in the respective items and the Contractor shall not be entitled to payment for these items unless specifically authorized in writing.
 3. Contractor agrees that the Contractor will make no claim for damages, anticipated profits, or otherwise on account of any difference between the amounts of Work actually performed and materials actually furnished and the estimated amounts thereof.
 4. Payments will be based on actual quantities furnished and installed, complete, in full conformance with these Contract Documents.
- C. Contractor agrees that the lump sum and Unit Prices represent a true measure of the labor and materials required to perform the Work, including all allowances for overhead and profit for each type and unit of Work called for in these Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CELINA ROAD PUMP STATION IMPROVEMENTS (ITEM NO. 1)

A. Description and Measurement

1. Description
 - a. This item shall include all Work at the Celina Road pump station in accordance with the specifications and drawings except those items listed separately below.
 - b. This item shall include the work to install the two vertical split-case pumps, the addition of all associated piping, valves, and appurtenances, yard piping, site civil improvements, the relocation of the old generator, electrical and HVAC improvements, and other incidental items as described in the specifications and shown on the plans.
 - c. This item includes all testing and quality control as described in the specifications.
2. Measurement
 - a. Measurement will be made per lump sum.
3. Payment
 - a. Payment will be based upon a percentage of the complete installation.

3.2 DOWNTOWN PUMP STATION IMPROVEMENTS (ITEM NO. 2)

1. Description
 - a. This item shall include all Work at the Downtown pump station in accordance with the specifications and drawings except those items listed separately below.
 - b. This item shall include the work to install one vertical split-case pump, the addition of all associated piping, valves, and appurtenances, one chlorine booster pump and associated chlorine injection modifications, yard piping, electrical improvements, SCADA improvements to include the transfer of the equipment associated with the SCADA control room from the old pump station to the new pump station and all materials associated with upgrading the control system and tying in the existing PRV to SCADA, demolition of all remaining electrical, HVAC, and piping associated with the old pump station building, site civil and landscaping improvements to include a new decorate metal fence and motorized gate system; and other incidental items as described in the specifications and shown on the plans.
 - c. This item includes all testing and quality control as described in the specifications.
2. Measurement
 - a. Measurement will be made per lump sum.

3. Payment
 - a. Payment will be based upon a percentage of the complete installation.
- 3.3 VERTICAL SPLIT CASE PUMPS AND ASSOCIATED MOTORS AND ELECTRICAL GEAR (ITEM NO. 3)
- A. Description and Measurement
 1. Description
 - a. This item shall include the provision of two Fairbanks Vertical Split-Case pumps, two motors, and two VFDs, related electrical gear, spare parts, and the pump performance testing, hydrostatic testing, and complete shop test and report as required by the drawings and specifications for the Celina Road pump station.
 - b. This item shall include the provision of two Fairbanks Vertical Split-Case pumps, two motors, and two VFDs, related electrical gear, spare parts, and the pump performance testing, hydrostatic testing, and complete shop test and report as required by the drawings and specifications for the Downtown pump station.
 - c. This item also includes a two-year warranty after startup or 30 months after shipment (whichever comes first) for all items.
 2. Measurement
 - a. Measurement will be made per lump sum.
 3. Payment
 - a. Payment will be based upon a percentage of the receipt of the materials on site.
- 3.4 EXTERNAL RECOATING OF THE CELINA ROAD GROUND STORAGE TANK (ITEM NO. 4)
- A. Description and Measurement
 1. Description
 - a. This item shall include the paint removal and recoating of the exterior of the existing Ground Storage Tank (GST) and the addition of the new City of Celina logo and other incidental items as described in the specifications and shown on the plans. This item also includes lead paint testing but assumes the tank does not possess lead-based paint. This item includes all testing and quality control as described in the specifications.
 2. Measurement
 - a. Measurement will be made per lump sum.
 3. Payment
 - a. Payment will be based upon a percentage of the complete installation.
- 3.5 DECORATIVE METAL FENCING AND MOTORIZED GATE SYSTEM (ITEM NO. 5)
- A. Description and Measurement
 1. Description
 - a. This item shall include the demolition, removal, and disposal of the existing fence, the installation of a temporary construction fence, furnishing and installing ashlar stone columns and decorative metal fencing, furnishing and installing a motorized gate and associated operator, keypads, bollards, and electrical appurtenances, and other incidental items as described in the specifications and shown on the plans. This item includes all testing and quality control as described in the specifications.
 2. Measurement
 - a. Measurement will be made per lump sum.
 3. Payment
 - a. Payment will be based upon a percentage of the complete installation.

3.6 DECOMMISSIONING, REMOVAL, AND DISPOSAL OF THE EXISTING DOWNTOWN GROUND STORAGE TANK (GST) (ITEM NO. 6)

A. Description and Measurement

1. Description

- a. This item shall include the decommissioning, removal, and disposal of the Downtown Ground Storage Tank, associated above-grade piping and valves, and all clean up required to return the area to grade and other incidental items as described in the specifications and shown on the plans. This item also includes lead paint testing but assuming the tank does not possess lead-based paint.

2. Measurement

- a. Measurement will be made per lump sum.

3. Payment

- a. Payment will be based upon a percentage of the complete removal and disposal.

3.7 ADDITIONAL DISPOSAL COSTS REQUIRED FROM A POSITIVE LEAD PAINT TEST ASSOCIATED WITH BID ITEM NO. 5 OF THE DOWNTOWN GROUND STORAGE TANK (GST) (ITEM NO. 7)

A. Description and Measurement

1. Description

- a. This item shall include all additional disposal costs associated with a positive lead paint test in accordance with Specification 09 96 33.

2. Measurement

- a. Measurement will be made per lump sum.

3. Payment

- a. Payment will be based upon a percentage of the completed work.

3.8 PLC HMI AND SCADA PROGRAMMING (ITEM NO. 8)

A. Description and Measurement

1. Description

- a. This item shall include all necessary labor to provide PLC and HMI programming, SCADA programming, radio telemetry configuration, and all other programming tasks for implementation of the control system. This item does not include material associated with the control system.

2. Measurement

- a. Measurement will be made per lump sum.

3. Payment

- a. Payment will be based upon a percentage of the completed work.

3.9 REMOVE EXISTING CAP AND CONNECT TO EXISTING 30-INCH WATER LINE (ITEM NO. 9)

A. Description and Measurement

1. Description

- a. This item includes the removal of the existing cap and connection to the existing 30-inch water line by the pump station. This item includes any survey, coordination during construction, shutoffs, and all other items necessary for this connection to be completed. This item includes quality control.

2. Measurement

- a. Measurement will be made per each connection including the removal of the existing cap and connection to the water line.

3. Payment
 - a. Payment will be at the conclusion of the connection to the existing water line including all testing required.
- 3.10 REMOVE EXISTING CAP AND CONNECT TO EXISTING 36-INCH WATER LINE (ITEM NO. 10)
- A. Description and Measurement
 1. Description
 - a. This item includes the removal of the existing cap and connection to the existing 36-inch water line by the pump station. This item includes any survey, coordination during construction, shutoffs, and all other items necessary for this connection to be completed. This item includes quality control.
 2. Measurement
 - a. Measurement will be made per each connection including the removal of the existing cap and connection to the water line.
 3. Payment
 - a. Payment will be at the conclusion of the connection to the existing water line including all testing required.
- 3.11 DESIGN AND IMPLEMENT STORMWATER POLLUTION PREVENTION PLAN (SWPPP) (ITEM NO. 11)
- A. Description and Measurement
 1. Description
 - a. This item shall include all necessary labor, materials, and equipment to prepare and provide SWPPP for the duration of the project. This includes all fees associated with, but not limited to, preparation of the SWPPP, review and permitting fees, installation, maintenance, removal and proper offsite disposal of devices and measures in the proposed SWPPP, fines, and other incidental items as described in the specifications. If project duration changes due to changes by the Owner, no additional payment will be made to the Contractor.
 2. Measurement
 - a. Measurement will be made per lump sum.
 3. Payment
 - a. Payment will be based upon a percentage of the complete installation.
- 3.12 TRENCH SAFETY SYSTEM DEVELOPMENT, DESIGN, AND IMPLEMENTATION AS REQUIRED BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION AND THE ASSUMPTION OF RESPONSIBILITY FOR SYSTEM COMPLETE AND IN PLACE (ITEM NO. 12)
- A. Description and Measurement
 1. Description
 - a. This item shall include the development, design, and implementation of a trench safety plan and shoring system signed and sealed by an Engineer licensed to practice by the state of Texas as required by the Occupational Safety and Health Administration and the assumption of responsibility for the system.
 2. Measurement
 - a. Measurement will be made per lump sum for the design and implementation of the system for the duration of the project.
 3. Payment

- a. Payment will be based upon a percentage of the complete installation.

3.13 CONTINGENCY ALLOWANCE 1 FOR WORK CHANGE DIRECTIVES (MISCELLANEOUS WORK ON A CHANGE AUTHORIZATION BASIS) REQUIRED DURING COMPLETION OF THE PROJECT TO BE USED SOLELY AT THE DISCRETION OF OWNER AND ENGINEER (ITEM NO. 13)

A. Description and Measurement

1. Description

- a. This item includes items currently not identified in the field or on the plans.
- b. This item includes other works by others instructed by the Owner.

2. Measurement

- a. Measurement will be determined based on the item.
- b. Measurement of other works by others will be based on work items completed.

3. Payment

- a. Payment will be based on the completion of the contingency item.
- b. Payment for other works by others will be based on invoices received by others. No markup allowed.

3.14 CONTINGENCY ALLOWANCE 2 FOR INDEPENDENT TESTING (MISCELLANEOUS TESTING TO CONFIRM CONTRACTOR RESULTS ON A CASE BY CASE BASIS) REQUIRED DURING COMPLETION OF THE PROJECT TO BE USED SOLELY AT THE DISCRETION OF OWNER AND ENGINEER (ITEM NO. 14)

A. Description and Measurement

1. Description

- a. This item includes Quality Assurance testing provided by an independent testing laboratory, agency, and special inspectors as described by the specifications.

2. Measurement

- a. Measurement will be determined based on the item.

3. Payment

- a. Payment will be based on the completion of the contingency item and invoices received by others. No markup allowed.

3.15 BID ALTERNATE

- A. In addition to the Base Bid Project, the Owner may elect to construct a combination of any of the following Additive and Deductive Bid Alternates as detailed below.

B. PROVIDE AND INSTALL CELINA ROAD BACK-UP POWER (ALTERNATE A.1)

1. Description and Measurement

a. Description

- 1) This item shall include all necessary labor, materials, and equipment to provide and install a new generator and associated electrical equipment to provide back-up power at the Celina Road pump station and all other incidental items as described in the specifications and shown on the plans. This item includes all testing and quality control as described in the specifications.

b. Measurement

- 1) Measurement will be made per lump sum. This will include all testing and quality control.

- c. Payment
 - 1) Payment will be based upon a percentage of the complete installation.
- C. PROVIDE AND INSTALL DOWNTOWN PUMP STATION PUMP #2 AND ASSOCIATED APPURTENANCES (ALTERNATE A.2)
 - 1. Description and Measurement
 - a. Description
 - 1) This item shall include all necessary labor, materials, and equipment to provide and install Pump #4 (DTBP04) at the Downtown pump station and all associated piping and appurtenances between the isolation valves and the associated electrical equipment and other incidental items as described in the specifications and shown on the plans. This item includes all testing and quality control.
 - b. Measurement
 - 1) Measurement will be made per lump sum. This will include all testing and quality control.
 - c. Payment
 - 1) Payment will be based upon a percentage of the complete installation.
- D. PROVIDE AND INSTALL DOWNTOWN PUMP STATION LANDSCAPE SCREENING (ALTERNATE A.3)
 - 1. Description and Measurement
 - a. Description
 - 1) This item shall include all necessary labor, materials, and equipment to provide and install landscape screening at the Downtown pump station and other incidental items as described in the specifications and shown on the plans.
 - b. Measurement
 - 1) Measurement will be made per lump sum.
 - c. Payment
 - 1) Payment will be based upon a percentage of the complete installation.
- E. REMOVE ALL WORK ASSOCIATED WITH THE MORGAN LAKE EST SCADA PROGRAMMING (ALTERNATE D.1)
 - 1. Description and Measurement
 - a. Description
 - 1) This item shall include the removal of all necessary labor, materials, and equipment to provide and install the new RTU, conduit, wire, and associated electrical and programming improvements and other incidental items as described in the specifications and shown on the plans as included under Bid Items No. 2 and No. 8.
 - b. Measurement
 - 1) Measurement will be made per lump sum.
 - c. Payment
 - 1) Not Applicable.

END OF SECTION

SECTION 01 26 00 – CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes description and requirements of:
 - 1. Proposal Requests.
 - 2. Claims.
 - 3. Change Orders and Written Amendments.
 - 4. Field Order Procedures.

1.2 PROPOSAL REQUEST

- A. Owner may, in anticipation of ordering an addition, deletion, or revision to the Work, request Contractor to prepare a detailed proposal of cost and times to perform contemplated change.
- B. Proposal request will include reference number for tracking purposes and detailed description of and reason for proposed change, and such additional information as appropriate and as may be required for Contractor to accurately estimate cost and time impact on the Project.
- C. Proposal request is for information only; Contractor is neither authorized to execute proposed change nor to stop Work in progress as result of such request.
- D. Contractor's written proposal shall be transmitted to Engineer promptly, but not later than 14 days after Contractor's receipt of Owner's written request. Proposal shall remain firm for a maximum period of 45 days after receipt by Engineer.
- E. Owner's request for proposal or Contractor's failure to submit such proposal within the required time period will not justify a claim for an adjustment in Contract Price or Contract Times (or Milestones).

1.3 CLAIMS

- A. Include, at a minimum:
 - 1. Specific references including:
 - a. Drawing numbers.
 - b. Specification section and article/paragraph number.
 - c. Submittal type, Submittal number, date reviewed, Engineer's comment, as applicable, with appropriate attachments.
 - 2. Stipulated facts and pertinent documents, including photographs and statements.
 - 3. Interpretations relied upon.
 - 4. Description of:
 - a. Nature and extent of claim.
 - b. Who or what caused the situation.
 - c. Impact to the Work and work of others.
 - d. Discussion of claimant's justification for requesting a change to price or times or both.
 - 5. Estimated adjustment in price claimant believes it is entitled to with documentation and justification.
 - 6. Requested Change in Contract Times: Include at least;
 - a. Progress schedule documentation showing logic diagram for request.
 - b. Documentation that float times available for Work have been used.
 - c. Revised activity logic with durations including sub-network logic revisions, duration changes, and other interrelated schedule impacts, as appropriate.

7. Documentation as may be necessary as set forth below for Work Change Directive, and as Engineer may otherwise require.

1.4 WORK CHANGE DIRECTIVES

A. Procedures:

1. Upon completion of Work covered by the Work Change Directive or when final Contract Times and Contract Price is determined, Contractor shall submit documentation for inclusion in a Change Order via email.
2. Engineer will:
 - a. Initiate, including a description of the Work involved and any attachments.
 - b. Affix signature, demonstrating Engineer's recommendation.
 - c. Engineer will update Owner monthly on the status of the Work Change Directives.
3. Owner will:
 - a. Affix signature, demonstrating approval of the changes involved.
 - b. Return one electronic copy to Engineer. Engineer will retain one electronic copy, send one electronic copy to the Resident Project Representative or other field representative, and forward one electronic copy to Contractor.
4. Contractor's documentation shall include but not be limited to:
 - a. Appropriately detailed records of Work performed to enable determination of value of the Work.
 - b. Full information required to substantiate resulting change in Contract Times and Contract Price for Work. On request of Engineer, provide additional data necessary to support documentation.
 - c. Support data for Work performed on a unit price or Cost of the Work basis with additional information such as:
 - 1). Dates Work was performed, and by whom.
 - 2). Time records, wage rates paid, and equipment rental rates.
 - 3). Invoices and receipts for materials, equipment, and subcontracts, all similarly documented.
 - d. Claim for additional cost must be made within 10 days of the directive by the Engineer. Claims on work made after 10 days will not be considered.

- B. Effective Date of Work Change Directive: Date of signature by Owner, unless otherwise indicated thereon.

1.5 CHANGE ORDERS OR WRITTEN AMENDMENTS

A. Procedure:

1. Engineer will prepare the proposed Change Order or Written Amendment and transmit an electronic copy of such with Engineer's written recommendation (Change Order only) and request to Contractor for signature.
2. Contractor shall, upon receipt, either:
 - a. Promptly execute the document, retaining one electronic copy for its file, and return one electronic copy to Engineer for Owner's signature, or
 - b. Return unsigned one electronic copy with written justification for not executing Change Order or Written Amendment.
3. Engineer will, upon receipt of Contractor-executed copy, promptly forward Engineer's written recommendation and partially executed copy for Owner's signature, or if Contractor fails to execute the Change Order or Written Amendment, Engineer will promptly so notify Owner and transmit Contractor's justification to Owner.
4. Upon receipt of Contractor-executed Change Order or Written Amendment, Owner will promptly either:
 - a. Execute Change Order or Written Amendment, retaining one copy for its file and returning one electronic copy to Engineer, or

- b. Return to Engineer unsigned copy with written justification for not executing Change Order or Written Amendment.
- 5. Upon receipt of Owner-executed Change Order or Written Amendment, Engineer will transmit one electronic copy to Contractor, one copy to Resident Project Representative or other field representative, and retain one electronic copy, or if Owner fails to execute the Change Order or Written Amendment, Engineer will promptly so notify Contractor and transmit Owner's justification to Contractor.
- 6. Upon receipt of Owner-executed Change Order, Contractor shall:
 - a. Perform Work covered by Change Order or Written Amendment.
 - b. Revise Schedule of Values to adjust Contract Price and submit with next Application for Payment.
 - c. Revise progress schedule to reflect changes in Contract Times, if any, and to adjust times for other items of Work affected by change.
 - d. Enter changes in Project record documents after completion of change related Work.
- B. In signing a Change Order or Written Amendment, Owner and Contractor acknowledge and agree that:
 - 1. Stipulated compensation (Contract Price or Contract Times, or both) set forth includes payment for:
 - a. The Cost of the Work covered by the Change Order or Written Amendment.
 - b. Contractor's fee for overhead and profit.
 - c. Interruption of progress schedule.
 - d. Delay and impact, including cumulative impact, on other Work under the Contract Documents, and
 - e. Extended overheads.
 - 2. Change Order or Written Amendment constitutes full mutual accord and satisfaction for the change to the Work.
 - 3. Unless otherwise stated in the Change Order or Written Amendment, all requirements of the original Contract Documents apply to the Work covered by the Change Order or Written Amendment.

1.6 FIELD ORDER PROCEDURES

- A. Engineer will issue Field Orders, with one electronic copy to Contractor.
- B. Effective date of the Field Order shall be the date of signature by Engineer, unless otherwise indicated thereon.
- C. Contractor shall acknowledge receipt by signing and returning one electronic copy to Engineer.
- D. Field Orders will be incorporated into subsequent Change Orders, as a no-cost change to the Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUBMITTALS

- A. Informational Submittals:
 - 1. Schedule of Values: Submit on Contractor's standard form.
 - 2. Schedule of Estimated Progress Payments:
 - a. Submit with initially acceptable Schedule of Values.
 - b. Submit adjustments thereto with Application for Payment.
 - 3. Application for Payment.
 - 4. Final Application for Payment.

1.2 CASH ALLOWANCES

- A. Consult with Engineer in selection of products or services. Obtain proposals from Suppliers and installers and offer recommendations.
- B. Cash allowances will be administered in accordance with the General Conditions and as specified herein.
- C. Contractor Agrees:
 - 1. The Lump Sum Work includes the allowances specified and includes all Work to perform such items covered by the Cash Allowance as approved by Owner and Engineer.
 - 2. The Allowances include the cost of material and equipment required by the allowances to be delivered to the Site and applicable taxes.
 - 3. Contractor's cost for unloading, handling, labor, installation cost, overhead, profit, and other expenses for the allowance have been included in the Lump Sum Work and not in the allowance.
 - 4. Accept payment equal to the amount of the actual invoices for services and products without markup.
- D. Expenditure of any portion of Cash Allowances shall only be done with authorization by Owner and Engineer. Cash Allowances are estimated amounts and final payment shall be based on actual costs as authorized by Change Order and the Contract Price shall be correspondingly adjusted.
- E. Work Change Directive Cash Allowance: The purpose of this allowance is to cover cost of unknown items that cannot be foreseen at this time. Authorization for expenditure of any portion of this allowance shall be for specifically approved work change directives and issuance of a Change Order.
- F. Submit, with application for payment, invoice showing date of purchase, from which the purchase was made, the date of delivery of the product or service, and the price, including delivery to the Site and applicable taxes.

1.3 SCHEDULE OF VALUES

- A. Prepare a separate Schedule of Values for each schedule of the Work under the Agreement.
- B. Upon request of Engineer, provide support documentation to support the accuracy of the Schedule of Values.
- C. Unit Price Work: Reflect unit price quantity and price breakdown from conformed Bid Form.

- D. Lump Sum Work:
 1. Reflect Schedule of Values format included in conformed Bid Form, specified allowances, alternates, and equipment selected by Owner, as applicable.
 2. List bonds and insurance premiums, mobilization, demobilization, preliminary and detailed progress schedule preparation, facility startup, and contract closeout separately.
 3. Break down by Division 2 through 44 with appropriate subdivision of each Specification for each Project facility. The apparent "low bidder" is required to deliver a Bid breakdown by specification within 2 working days after Bid opening.

E. An unbalanced or front-end loaded schedule will not be acceptable.

F. Summation of the complete Schedule of Values representing all the Work shall equal the Contract Price.

G. Submit Schedule of Values in an electronic spreadsheet format compatible with latest version of Excel.

1.4 SCHEDULE OF ESTIMATED PROGRESS PAYMENTS

- A. Show estimated payment requests throughout Contract Times aggregating initial Contract Price.
- B. Base estimated progress payments on initially acceptable progress schedule. Adjust to reflect subsequent adjustments in progress schedule and Contract Price as reflected by modifications to the Contract Documents.

1.5 APPLICATION FOR PAYMENT

- A. Transmittal Summary Form: Attach one Summary Form with each detailed Application for Payment for each schedule and include Request for Payment of Materials and Equipment on Hand as applicable. Execute certification by authorized officer of Contractor.
- B. Use detailed Application for Payment Form suitable to Engineer.
- C. Provide separate form for each schedule as applicable.
- D. Include accepted Schedule of Values for each schedule or portion of Work, the unit price breakdown for the Work to be paid on unit price basis, a listing of Owner-selected equipment, if applicable, and allowances, as appropriate.
- E. Preparation:
 1. Round values to nearest dollar.
 2. List each Change Order executed prior to date of submission as separate line item. The totals will equal those shown on the Transmittal Summary Form for each schedule as applicable.
 3. Submit Application for Payment, including a Transmittal Summary Form and detailed Application for Payment Form(s) for each schedule as applicable, a listing of materials on hand for each schedule as applicable, and such supporting data as may be requested by Engineer.

1.6 PAYMENT

- A. General:
 1. Progress payments will be made monthly.
 2. The date for Contractor's submission of monthly Application for Payment shall be established at the Preconstruction Conference.

- B. Payment for all the Work shown or specified in Contract Documents is included in the Contract Price. No measurement or payment will be made for individual items.
- C. Payment for Lump Sum Work covers all Work specified or shown in the Contract Documents.

1.7 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

- A. Payment will not be made for following:
 1. Loading, hauling, and disposing of rejected material.
 2. Quantities of material wasted or disposed of in manner not called for under Contract Documents.
 3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of Contract Documents.
 4. Material not unloaded from transporting vehicle.
 5. Defective Work not accepted by Owner.
 6. Material remaining on hand after completion of Work.

1.8 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Partial Payment: No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings and preliminary operation and maintenance manuals are accepted by Engineer. Thereafter, partial payment for materials and equipment delivered and stored, but not yet incorporated in work, shall not exceed 90% of the equipment or material value.
- B. Final Payment: Will be made only for products incorporated in Work and following approval of final operations and maintenance manuals; remaining products, for which partial payments have been made, shall revert to Contractor unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of:
 1. Submittals Related to Project Management and Coordination.
 2. Utility Notification and Coordination.
 3. Work Sequencing/Constraints.
 4. Facility Operations.
 5. Adjacent Facilities and Properties.
 6. Owner's Occupancy.
 7. Partial Utilization by the Owner.
 8. Physical Conditions.
 9. Construction Photographs.
 10. Audio-Video Recordings.
 11. Cutting, Fitting and Patching.
- B. Related sections:
 1. Section 01 34 00 – Photographic and Videographic Documentation

1.2 SUBMITTALS

- A. Informational:
 1. Statement of Qualification (SOQ) for land surveyor or civil engineer.
 2. Photographs and other records of examination.
 3. Video Recordings: Submit one copy, including updated copy of project video log, within 5 days of being taken.

1.3 UTILITY NOTIFICATION AND COORDINATION

- A. Coordinate the Work with various utilities within Project limits. Notify applicable utilities prior to commencing Work, if damage occurs, or if conflicts or emergencies arise during Work.
 1. Downtown Pump Station Electric Company:
 - a. ONCOR ELECTRIC DELIVERY COMPANY LLC, ph 972-569-1205
 2. Celina Road Pump Station, Light Farms EST, and Morgan Lake EST Electric Company:
 - a. COSERV ELECTRIC, ph 940-321-7800
 3. Public Works Department: Andrew Moore, email AMoore@celina-tx.gov
- B. Before excavation, contact Texas One Call System, Inc., ph 811 to arrange for field location of known utilities.

1.4 WORK SEQUENCING/CONSTRAINTS

- A. This Section identifies several construction constraints that must be reflected in the Contractor project coordination. An overall outline is presented in this Section for the Construction coordination, demolition, and seasonal/process constraints that shall be considered during construction. The sequence of Work for this Project must reflect the constraints identified herein.
- B. Definitions:
 1. Low demand period shall be from 10:00 p.m. to 5:00 a.m.
 2. Minor Shutdown: Any shutdown requiring less than 8 hours.
 3. Major Shutdown: Any shutdown other than a minor shutdown.

- C. Shutdown of Pump Station Operations:
 1. Provide 14 days advance notice to Engineer and Owner of need for a minor shutdown.
 2. Provide 30 days advance notice to Engineer and Owner of need for a major shutdown.
 3. Contractor shall schedule a shutdown coordination meeting with Owner and Engineer one week prior to each shutdown.
 4. Do not proceed with work affecting a facility's operation without obtaining Owner and Engineer advance approval of the need for, and duration of, such work. The Owner will endeavor to grant Contractor requests where possible. However, because Owner's primary responsibility is to maintain water service, the requested timing may not be possible.
 5. Any shutdowns shall require a shutdown plan, including detailed schedule, backup tools and equipment, personnel involved, contingency plan, and any procedures involved in restarting the process or facility. Owner's approval of the Shutdown Plan is required prior to any shutdowns.
 6. Shutdowns will be allowed, but may be limited to low demand periods, such as from 10:00 PM to 5:00 AM.
 7. No minor or major shutdowns allowed within 7 days of a previous shutdown.
- D. Incorporate the Following Construction Constraints into the Work:
 1. Contractor shall coordinate continuous 24-hour temporary pumping as necessary if either of the Celina Road or Downtown Pump Stations needs to be offline for more than 2 hours during construction.

1.5 FACILITY OPERATIONS

- A. Continuous operation of Owner's facilities is of critical importance. Schedule and conduct activities to enable existing facilities to operate continuously, unless otherwise specified, and to minimize the number of shutdowns of the pump stations.
- B. Perform Work continuously during critical connections and changeovers, as required, to prevent interruption of Owner's operations.
- C. Conduct Work outside regular working hours on prior written consent of Owner to meet Project schedule and avoid undesirable conditions.
- D. Be responsible for planning, designing, and providing various temporary services, utilities, connections, temporary piping, bypass facilities and temporary connections, and similar items to maintain continuous operations of Owner's facility. Sequences other than those specified will be considered upon written request to Owner and Engineer, provided they afford equivalent continuity of operations.
- E. Do not close lines, open or close valves, or take other action which would affect the operation of existing systems, except as specifically required by the Contract Documents and after authorization by Owner and Engineer. Such authorization will be considered within 48 hours after receipt of Contractor's written request.
- F. Any tanks or pipelines requiring drainage prior to construction will be drained by the Owner's staff to the maximum extent possible utilizing existing piping and drains where they exist. Contractor shall provide temporary pumping and effort to complete drainage of tank or pipeline as required. Provide minimum 7 days' notice to Engineer and Owner of need to drain a facility, unless otherwise specified.
- G. Power outages will be considered upon 48 hours written request to Owner and Engineer. Describe the reason, anticipated length of time, and areas affected by the outage in the written

request. Provide temporary provisions for continuous power supply to critical existing facility components, is requested by Owner.

- H. Coordinate proposed work with Engineer and Owner before implementing unit shutdowns. Under no circumstances shall Work end if such actions may inadvertently cause a cessation of any facility operation. In such cases, remain onsite until necessary repairs are complete and facility is brought back online.

1.6 ADJACENT FACILITIES AND PROPERTIES

- A. Examination:
 1. After Effective Date of the Agreement and before Work at Site is started Contractor, Engineer, and affected property owners and utility owners shall make a thorough examination of pre-existing conditions including existing buildings, structures, and other improvements in vicinity of Work, as applicable, which could be damaged by construction operations.
 2. Periodic reexamination shall be jointly performed to include, but not limited to, cracks in structures, settlement, leakage, and similar conditions.
- B. Documentation:
 1. Record and submit documentation of observations made on examination inspections for signature of Engineer and Contractor and in accordance with paragraph Construction Photographs and Audio-Video Recordings.
 2. Upon receipt, Engineer will review, sign, and return one record copy of documentation to Contractor to be kept on file in field office. Such documentation shall be used as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of Contractor's operations, and is for the protection of adjacent property owners, Contractor, and Owner.

1.7 OWNER'S OCCUPANCY

- A. Owner will occupy the premises during the period of construction for the conduct of its normal operations. Cooperate with Owner in all construction operations to minimize conflict and to facilitate Owner usage.

1.8 PARTIAL UTILIZATION BY THE OWNER

- A. Schedule operations for completion of portions of the Work, as designated under Work Sequence/Constraints, herein, for Owner's occupancy or separate operation prior to Substantial Completion of the entire Work.
- B. Unless agreed in writing prior to Owner's use, the following conditions shall apply:
 1. Contractor's Responsibilities:
 - a. Allow access for Owner's personnel.
 - b. Allow operation of ventilation and electrical systems.
 - c. All other responsibilities as specified in the General Conditions.
 2. Owner's Responsibilities:
 - a. Operate ventilating systems and pay cost of same.
 - b. Assume responsibility of power requirements.
 - c. Assume responsibility for security and fire protection in utilized areas, but not extending to Contractor's materials and equipment in utilized areas.
 - d. Assume responsibility for property insurance of utilized areas.
 3. Other Conditions of Owner's Use: The correction period for the occupied or separately operated portion of Work shall commence at the date of Substantial Completion for that separate part.

1.9 PHYSICAL CONDITIONS

- A. Exercise reasonable care to verify locations of existing subsurface facilities and utilities.
- B. Areas immediate and adjacent to planned excavations shall be thoroughly checked by means of visual examination and with electronic metal and pipe detection equipment for indications of underground utilities and facilities.
- C. Make exploratory excavation where existing underground facilities or utilities may potentially conflict with proposed excavations and facilities or where there is reasonable cause to verify the presence or absence of, or to obtain physical information regarding underground facilities or utilities. Conduct exploratory excavations as acceptable to and in the presence of Engineer prior to proceeding with major excavation in the area and sufficiently in advance of construction to avoid possible delays to Contractor's Work. Promptly take measurements, photographs, and obtain survey data.

1.10 CONSTRUCTION PHOTOGRAPHS

- A. Photographically document all phases of the project including preconstruction, construction progress, and post-construction.
- B. Engineer shall have the right to select the subject matter and vantage point from which photographs are to be taken.
- C. Photograph Format: Reference Section 01 34 00 for photograph requirements.
- D. Preconstruction and Post-Construction:
 - 1. After Effective Date of the Agreement and before Work at Site is started, and again upon issuance of Substantial Completion, take photographs of all areas of the Construction Site and property adjacent to perimeter of Construction Site.
 - 2. Particular emphasis shall be directed to structures both inside and outside the Site.
- E. Construction Progress Photos:
 - 1. Photographically demonstrate progress of construction, showing every aspect of Site and adjacent properties as well as interior and exterior of new or impacted structures.
 - 2. Take photos as frequent as required to document all major aspects of construction. Coordinate with Engineer.

1.11 AUDIO-VIDEO RECORDINGS

- A. Prior to beginning Work on Construction Site or of a particular area of the Work, and again within 10 days following date of Substantial Completion, video-graph Construction Site and property adjacent to Construction Site.
- B. In the case of preconstruction recording, no Work shall begin in the area prior to Engineer's review and approval of content and quality of video for that area.
- C. Particular emphasis shall be directed to physical condition of existing vegetation, structures, and pavements within Construction Site and areas adjacent to and within the right-of-way or easement, and on Contractor storage and staging areas.
- D. Engineer shall have right to select subject matter and vantage point from which videos are to be taken.

- E. Video Format and Quality:
1. Video:
 - a. Produce bright, sharp, and clear images with accurate colors, free of distortion and other forms of picture imperfections. Make sure sound is clear and free of distortion.
 - b. Electronically, and accurately display the month, day, year, and time of day of the recording.
 2. Audio:
 - a. Audio documentation shall be done clearly, precisely, and at a moderate pace.
 - b. Indicate date, project name, and a brief description of the location of taping, including:
 - 1). Facility name.
 - 2). Street names or easements.
 - 3). Addresses of private property.
 - 4). Direction of coverage, including engineering stationing, if applicable.
 3. Documentation:
 - a. Electronic File Name:
 - 5). Date of coverage in year-month-day-time format followed by a short description of video coverage.
 4. Transmission of Files:
 - a. Transmit electronic files via Info Exchange, or;
 - b. Place electronic files on flash drive with enough storage size to hold all videos being transmitted and deliver to Engineer via acceptable method to Engineer.
 5. Project Video Log: Maintain an ongoing log that incorporates above noted information for videos on Project.
 6. Reference specification Section 01 34 00 for additional requirements.

1.12 REFERENCE POINTS AND SURVEYS

- A. Location and elevation of benchmarks are shown on Drawings.
- B. Dimensions for lines and elevations for grades of structures, appurtenances, and utilities are indicated on the Drawings, together with the other pertinent information required for laying out Work. If conditions vary from those indicated, immediately notify Engineer.
- C. Any existing survey points or other control markers destroyed without proper authorization will be replaced by Owner of the survey points or control markers at the Contractor's expense.
- D. Contractor's Responsibilities:
 1. Provide additional survey and layout required to layout the Work.
 2. Locate and protect reference points prior to starting site preparation.
 3. Check and establish exact location of existing facilities prior to construction of new facilities and any connections thereto.
 4. In event of discrepancy in data or staking provided by Owner, request clarification before proceeding with Work.
 5. Retain professional land surveyor or civil engineer registered in state of Project who shall perform or supervise engineering surveying necessary for additional construction staking and layout.
 6. Maintain complete accurate log of survey Work as it progresses as a Record Document.
 7. On request of Engineer, submit documentation.
 8. Provide competent employee(s), tools, stakes, and other equipment and materials as Engineer may require to:
 - a. Establish control points, lines, and easement boundaries.
 - b. Check layout, survey, and measurement Work performed by others.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 31 19 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Requirements for conducting conferences and meetings for the purposes of addressing issues related to the Work, reviewing and coordinating progress of the Work and other matters of common interest, and includes the following:
 1. General Requirements.
 2. Qualifications of Meeting Participants.
 3. Preconstruction Conference.
 4. Progress Meetings.
 5. Pre-Installation Meetings.
 6. Post Construction Meeting.

1.2 GENERAL REQUIREMENTS

- A. Contractor will schedule physical arrangements for meetings throughout progress of Work, prepare meeting agenda with regular participant input and distribute with written notice of each meeting, preside at meetings, record minutes to include significant proceedings and decisions, and reproduce and distribute copies of minutes within 5 days after each meeting to participants and parties affected by meeting decisions.

1.3 QUALIFICATIONS OF MEETING PARTICIPANTS

- A. Representatives of entities participating in meetings shall be qualified and authorized to act on behalf of entity each represents.

1.4 PRECONSTRUCTION CONFERENCE

- A. Contractor shall be prepared to discuss the following subjects, as a minimum:
 1. Required schedules.
 2. Status of bonds and insurance.
 3. Sequencing of critical path work items.
 4. Progress payment procedures.
 5. Project changes and clarification procedures.
 6. Use of site, access, office and storage areas, security and temporary facilities.
 7. Major product delivery and priorities.
 8. Contractor's safety plan and representative.
- B. Attendees will include:
 1. Owner's representatives.
 2. Contractor's representative.
 3. Subcontractor's representatives whom Contractor may desire or Engineer may request to attend.
 4. Engineer's representatives.
 5. Others as appropriate.
- C. Upon issuance of Notice to Proceed, or earlier when mutually agreeable, Contractor will arrange a preconstruction conference in a convenient place for most persons invited, in accordance with the General Conditions.
- D. Contractor will preside at conference.

- E. Purpose of conference: To establish working understanding between parties and to discuss Construction Schedule, shop drawing and other submittals, cost breakdown of major lump sum items, processing of submittals and applications for payment, and other subjects pertinent to execution of the Work.
- F. Agenda will include:
 - 1. Adequacy of distribution of Contract Documents.
 - 2. Distribution and discussion of list of major subcontractors and suppliers.
 - 3. Proposed progress schedules and critical construction sequencing.
 - 4. Major equipment deliveries and priorities.
 - 5. Project coordination.
 - 6. Designation of responsible personnel.
 - 7. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.
 - c. Submittals.
 - d. Change Orders.
 - e. Applications for Payment.
 - f. Record Documents.
 - 8. Use of premises:
 - a. Office, construction, and storage areas.
 - b. Owner's requirements.
 - 9. Construction facilities, controls, and construction aids.
 - 10. Temporary utilities.
 - 11. Safety and first aid procedures.
 - 12. Security procedures.
 - 13. Housekeeping procedures.
- G. Contractor will record minutes of meeting and distribute copies of minutes within 5 days of meeting to participants and interested parties.

1.5 PROGRESS MEETINGS

- A. Contractor will schedule regular progress meetings at site, conducted weekly, to review the Work progress, progress schedule, Shop Drawing and Sample submissions schedule, Application for Payment, contract modifications, and other matters needing discussion and resolution. At one meeting each month the Contractor's updated narrative progress report and overall schedule will be a topic of discussion.
- B. Attendees will include:
 - 1. Owner's representative(s), as appropriate.
 - 2. Contractor, Subcontractors, and Suppliers, as appropriate.
 - 3. Engineer's representative(s) (monthly).
 - 4. Others as appropriate.
- C. Conduct progress meetings at least once every month in Contractor's field office, Engineer's field office, or other mutually agreed upon place.
- D. Distribute to each anticipated participant written notice and agenda of each meeting at least 2 days before meeting.
- E. Require attendance of Contractor's superintendent and subcontractors who are or are proximate to be actively involved in the Work, or who are necessary to agenda.

- F. Invite Owner, Engineer, utility companies when the Work affects their interests, and others necessary to agenda.
- G. Complete and bring Application for Payment and Progress Schedule to progress meeting.
- H. Prepare and distribute agenda.
- I. Preside at meetings.
- J. Purpose of progress meetings: To expedite work of subcontractors or other organizations that are not meeting scheduled progress, resolve conflicts, and coordinate and expedite execution of the Work.
- K. Review progress of the Work, Progress Schedule, narrative report, Application for Payment, record documents, and additional items of current interest that are pertinent to execution of the Work.
- L. Verify:
 - 1. Actual start and finish dates of completed activities since last progress meeting.
 - 2. Durations and progress of activities not completed.
 - 3. Reason, time, and cost data for Change Order Work that will be incorporated into Progress Schedule and application for payment.
 - 4. Percentage completion of items on Application for Payment.
 - 5. Reasons for required revisions to Progress Schedule and their effect on Contract Time and Contract Price.
- M. Discuss potential problems which may impede scheduled progress and corrective measures.
- N. Contractor will record minutes of meeting and distribute copies of minutes within 7 days of meeting to participants and interested parties.

1.6 QUALITY CONTROL AND COORDINATION MEETINGS

- A. Scheduled by Engineer on regular basis and as necessary to review test and inspection reports, and other matters relating to quality control of Work and work of other contractors.
- B. Attendees will include:
 - 1. Contractor.
 - 2. Contractor's designated quality control representative.
 - 3. Subcontractors and Suppliers, as necessary.
 - 4. Engineer's representatives (as necessary).

1.7 FACILITY STARTUP MEETINGS

- A. Schedule and attend a minimum of one facility startup meeting for each pump station. The first of such meetings shall be held prior to submitting the Facility Startup Plan, as specified in Section 01 79 00, DEMONSTRATION AND TRAINING, and shall include preliminary discussions regarding such plan.
- B. Agenda items shall include, but not be limited to, content of Facility Startup Plan, coordination needed between various parties in attendance, and potential problems associated with startup.
- C. Attendees will include:
 - 1. Contractor.
 - 2. Contractor's designated quality control representative.

3. Subcontractors and equipment Manufacturer's representatives whom Contractor deems to be directly involved in facility startup.
4. Engineer's representatives.
5. Owner's operations personnel.
6. Others as required by Contract Documents or as deemed necessary by Contractor.

1.8 POST CONSTRUCTION MEETING

- A. Meet with and inspect the Work at 11 months after date of Substantial Completion with OWNER.
- B. Arrange meeting at least 7 days before meeting.
- C. Meet in Owner's office or other mutually agreed upon place.
- D. Inspect the Work and draft list of items to be completed or corrected.
- E. Review service and maintenance contracts, and take appropriate corrective action when necessary.
- F. Complete or correct defective work and extend correction period accordingly.
- G. Require attendance of Superintendent, appropriate manufacturers and installers of major units of constructions, and affected subcontractors.

1.9 OTHER MEETINGS

- A. In accordance with Contract Documents and as may be required by Owner and Engineer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Preparation, submittal, and maintenance of computerized progress schedule and reports, contract time adjustments, and payment requests, including the following:
 1. Preliminary Schedule.
 2. Detailed Progress Schedule.
 3. Schedule Updates.
 4. Schedule Revisions.

1.2 SUBMITTALS

- A. Informational Submittals:
 1. Preliminary Progress Schedule: Submit at least 7 days prior to preconstruction conference.
 2. Detailed Progress Schedule:
 - a. Submit initial Detailed Progress Schedule within 45 days after Effective Date of the Agreement.
 - b. Submit an Updated Progress Schedule at each update, in accordance with Article Detailed Progress Schedule.
 3. Submit with Each Progress Schedule Submission:
 - a. Contractor's certification that Progress Schedule submission is actual schedule being utilized for execution of the Work.
 - b. Electronic files compatible with latest version of the Contractor's selected software, or compatible with Microsoft Project, or compatible with Microsoft Excel.
 - c. Progress Schedule: Legible copies.
 - d. Narrative Progress Report: Same number of copies as specified for Progress Schedule.
 4. Prior to final payment, submit a final Updated Progress Schedule.

1.3 PRELIMINARY PROGRESS SCHEDULE

- A. In addition to basic requirements outlined in General Conditions, show a detailed schedule, beginning with Notice to Proceed, for minimum duration of 90 days, and a summary of balance of Project through Final Completion.
- B. Show activities including, but not limited to the following:
 1. Notice to Proceed.
 2. Permits.
 3. Submittals, with review time. Contractor may use Schedule of Submittals specified in Section 01 33 00, SUBMITTAL PROCEDURES.
 4. Early procurement activities for long lead equipment and materials.
 5. Initial Site work.
 6. Earthwork.
 7. Specified Work sequences and construction constraints.
 8. Contract Milestone and Completion Dates.
 9. Owner-furnished products delivery dates or ranges of dates.
 10. Major structural, mechanical, equipment, electrical, architectural, and instrumentation and control Work.
 11. System startup summary.
 12. Project close-out summary.
 13. Demobilization summary.

- C. Update Preliminary Progress Schedule monthly; as part of progress payment process. Failure to do so may result in the Owner withholding all or part of the monthly progress payment until the Preliminary Progress Schedule is updated in a manner acceptable to Engineer.
- D. Format: In accordance with Article Progress Schedule Critical Path Network.
- E. Update monthly to reflect actual progress and occurrences to date, including weather delays.

1.4 DETAILED PROGRESS SCHEDULE

- A. General: Comprehensive computer-generated schedule using a "Critical Path Method" (CPM), generally as outlined in Associated General Contractors of America (AGC) 580, "Construction Project Planning and Scheduling Guidelines." If a conflict occurs between the AGC publication and this Specification, this Specification shall govern. Adjust or confirm schedules in accordance with General Conditions on a monthly basis and submit to Engineer.
- B. Contents:
 - 1. Schedule shall begin with the date of Notice to Proceed and conclude with the date of Final Completion.
 - 2. Identify Work calendar basis using days as a unit of measure.
 - 3. Show complete interdependence and sequence of construction and Project-related activities reasonably required to complete the Work.
 - 4. Identify the Work of separate stages and other logically grouped activities, and clearly identify critical path of activities.
 - 5. Reflect sequences of the Work, restraints, delivery windows, review times, Contract Times and Project Milestones set forth in the Agreement and Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION.
 - 6. Include as applicable, at a minimum:
 - a. Obtaining permits, submittals for early product procurement, and long lead time items.
 - b. Mobilization and other preliminary activities.
 - c. Initial Site work.
 - d. Specified Work sequences, constraints, and Milestones, including
 - e. Substantial Completion date(s) Subcontract Work.
 - f. Major equipment design, fabrication, factory testing, and delivery dates.
 - g. Delivery dates for Owner-furnished products, as specified in Section 01 11 00, SUMMARY OF WORK.
 - h. Site work.
 - i. Concrete Work.
 - j. Structural steel Work.
 - k. Architectural features Work.
 - l. Conveying systems Work.
 - m. Equipment Work.
 - n. Mechanical Work.
 - o. Electrical Work.
 - p. Instrumentation and control Work.
 - q. Interfaces with Owner-furnished equipment.
 - r. Other important Work for each major facility.
 - s. Equipment and system startup and test activities.
 - t. Project closeout and cleanup.
 - u. Demobilization.
 - 7. No activity duration exclusive of those for Submittals review and product fabrication/delivery, shall be less than 1 day and not more than 14 days, unless otherwise approved.
 - 8. Activity duration for Submittal review shall not be less than review time specified unless clearly identified and prior written acceptance has been obtained from Engineer.

9. If Contractor provides an accepted schedule with an early completion date, Owner reserves the right to reduce Contract Times to match the early completion date by issuing a deductive Change Order at no change in Contract Price.

C. Network Graphical Display:

1. Plot or print on paper not greater than 30" x 42" or smaller than 22" x 34", unless otherwise approved.
2. Title Block: Show name of Project, Owner, date submitted, revision or update number, and the name of the scheduler. Updated schedules shall indicate data date.
3. Identify horizontally across top of schedule the time frame by year, month, and day.
4. Identify each activity with a unique number and a brief description of the Work associated with that activity.
5. Indicate the critical path.
6. Show, at a minimum, the controlling relationships between activities.
7. Plot activities on a time-scaled basis, with the length of each activity proportional to the current estimate of the duration.
8. Plot activities on an early start basis unless otherwise requested by Engineer.
9. Provide a legend to describe standard and special symbols used.

D. Schedule Report:

1. 8-1/2" x 11" white paper, unless otherwise approved.
2. List information for each activity in tabular format, including, at a minimum:
 - a. Activity Identification Number.
 - b. Activity Description.
 - c. Original Duration.
 - d. Remaining Duration.
 - e. Early Start Date (Actual start on Updated Progress Schedules).
 - f. Early Finish Date (Actual finish on Updated Progress Schedules).
 - g. Late Start Date.
 - h. Late Finish Date.
 - i. Total Float.
3. Sort reports, in ascending order, as listed below:
 - a. Activity number sequence with predecessor and successor activity.

E. Cost -Loading:

1. Note the estimated cost to perform each Work activity, with the exception of Submittals or Submittal reviews, in the network in a tabular listing.
2. The sum of all activity costs shall equal the Contract Price. An unbalanced or front-end-loaded schedule will not be acceptable.
3. The accepted cost-loaded Progress Schedule shall constitute the Schedule of Values specified in Section 01 29 00, PAYMENT PROCEDURES.

1.5 PROGRESS OF THE WORK

A. Updated Progress Schedule shall reflect:

1. Progress of Work to within 5 working days prior to submission.
2. Approved changes in Work scope and activities modified since submission.
3. Delays in Submittals or re-submittals, deliveries, or Work.
4. Adjusted or modified sequences of Work.
5. Other identifiable changes.
6. Revised projections of progress and completion.
7. Report of changed logic.

- B. Produce detailed sub schedules during Project, upon request of Owner or Engineer, to further define critical portions of the Work such as facility shutdowns.

- C. If Contractor fails to complete activity by its latest scheduled completion date and this Failure is anticipated to extend Contract Times (or Milestones), Contractor shall, within 7 days of such failure, submit a written statement as to how Contractor intends to correct nonperformance and return to acceptable current Progress Schedule. Actions by Contractor to complete the Work within Contract Times (or Milestones) will not be justification for adjustment to Contract Price or Contract Times.
- D. Owner may order Contractor to increase plant, equipment, labor force or working hours if Contractor fails to:
 - 1. Complete an activity by its completion date.
 - 2. Satisfactorily execute Work as necessary to prevent delay to overall completion of Project, at no additional cost to Owner.

1.6 SCHEDULE ACCEPTANCE

- A. Engineer's acceptance will demonstrate agreement that:
 - 1. Proposed schedule is accepted with respect to:
 - a. Contract Times, including Final Completion are within the specified times.
 - b. Specified Work sequences and constraints are shown as specified.
 - c. Access restrictions are accurately reflected.
 - d. Startup and testing times are as specified.
 - e. Submittal review times are as specified.
 - f. Startup testing duration is as specified and timing is acceptable.
 - 2. In all other respects, Engineer's acceptance of Contractor's schedule indicates that in the Engineer's judgment, the schedule represents reasonable plan for constructing Project in accordance with the Contract Documents. Engineer's review will not make any change in Contract requirements. Lack of comment on any aspect of schedule that is not in accordance with the Contract Documents will not thereby indicate acceptance of that change, unless Contractor has explicitly called the nonconformance to Engineer's attention in submittal. Schedule remains Contractor's responsibility and Contractor retains responsibility for performing all activities, for activity durations, and for activity sequences required to construct Project in accordance with the Contract Documents.
- B. Unacceptable Preliminary Progress Schedule:
 - 1. Make requested corrections; resubmit within 10 days.
 - 2. Until acceptable to Engineer as Baseline Progress Schedule, continue review and revision process, during which time Contractor shall update schedule on a monthly basis to reflect actual progress and occurrences to date.
- C. Unacceptable Detailed Progress Schedule:
 - 1. Make requested corrections; resubmit within 10 days.
 - 2. Until acceptable to Engineer as Baseline Progress Schedule, continue review and revision process.
- D. Narrative Report: All changes to activity duration and sequences, including addition or deletion of activities subsequent to Engineer's acceptance of Baseline Progress Schedule shall be delineated in Narrative Report current with proposed Updated Progress Schedule.

1.7 ADJUSTMENT OF CONTRACT TIMES

- A. Reference the General Conditions and Section 01 26 00, CONTRACT MODIFICATION PROCEDURES.

- B. Evaluation and reconciliation of Adjustments of Contract Times shall be based on the Updated Progress Schedule at the time of proposed adjustment or claimed delay.
- C. Float:
 - 1. Float time is a Project resource available to both parties to meet contract Milestones and Contract Times.
 - 2. Use of float suppression techniques, such as preferential sequencing or logic, special lead/lag logic restraints, and extended activity times are prohibited. Use of float time disclosed or implied by use of alternate float-suppression techniques shall be shared to proportionate benefit of Owner and Contractor.
 - 3. Pursuant to above float-sharing requirement, no time extensions will be granted nor delay damages paid until a delay occurs, which:
 - a. Impacts Project's critical path,
 - b. Consumes all available float or contingency time, and
 - c. Extends Work beyond contract completion date.
- D. Claims Based on Contract Times:
 - 1. Where Engineer has not yet rendered formal decision on Contractor's Claim for adjustment of Contract Times, and parties are unable to agree as to amount of adjustment to be reflected in Progress Schedule, Contractor shall reflect an interim adjustment in the Progress Schedule as acceptable to Engineer.
 - 2. It is understood and agreed that such interim acceptance will not be binding on either Contractor or Owner, and will be made only for the purpose of continuing to schedule Work until such time as formal decision has been rendered as to an adjustment, if any, of the Contract Times.
 - 3. Contractor shall revise Progress Schedule prepared thereafter in accordance with Engineer's formal decision.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 32 90 - SAFETY PLAN

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Development and maintenance of a Construction Safety Plan.

1.2 REFERENCES

- A. OSHA.

1.3 CONSTRUCTION SAFETY PLAN

- A. Detail the Methods and Procedures to comply with Federal, and Local Health and Safety Laws, Rules and Requirements for the duration of the Contract Times. Include the following:
 1. Identification of the Certified or Licensed Safety Consultant, who will prepare, initiate, maintain and supervise safety programs, and procedures.
 2. Procedures for providing workers with an awareness of safety and health hazards expected to be encountered in the course of construction.
 3. Safety equipment appropriate to the safety and health hazards expected to be encountered during construction. Include warning devices, barricades, safety equipment in public right-of-way and protected areas, and safety equipment used in multi-level structures.
 4. Methods for minimizing employees' exposure to safety and health hazards expected during construction.
 5. Procedures for reporting safety or health hazards.
 6. Procedures to follow to correct a recognized safety and health hazard.
 7. Procedures for investigation of accidents, injuries, illnesses and unusual events that have occurred at the construction site.
 8. Periodic and scheduled inspections of general work areas and specific work stations.
 9. Training for employees and workers at the jobsite.
 10. Methods of communication of safe working conditions, work practices and required personal protection equipment.
- B. Assume responsibility for every aspect of Health and Safety on the jobsite, including the health and safety of subcontractors, suppliers, and other persons on the jobsite:
 1. Forward available information and reports to the Safety Consultant who shall make the necessary recommendations concerning worker health and safety at the jobsite.
 2. Employ additional health and safety measures specified by the Safety Consultant, as necessary, for workers in accordance with OSHA guidelines.
- C. Transmit to Owner and Engineer copies of reports and other documents related to accidents or injuries encountered during construction.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of:
 - 1. Submittals Related to Project Submittals as related to:
 - a. Action Submittals
 - b. Informational Submittals
- B. Related sections:
 - 1. 01 29 00 – Payment Procedures.
 - 2. 01 31 00 – Project Management and Coordination.
 - 3. 01 77 00 – Closeout Procedures.
 - 4. 01 78 23 – Operation and Maintenance Data.
 - 5. 01 79 00 – Demonstration and Training.

1.2 DEFINITIONS

- A. Action Submittal: Written and graphic information submitted by Contractor that requires Engineer's approval.
- B. Informational Submittal: Information submitted by Contractor that does not require Engineer's approval.

1.3 PROCEDURES

- A. Direct Submittals to Engineer.
- B. Contractor will submit all submittals electronically, except for final O&M manuals.
- C. Transmittal of Submittal:
 - 1. Contractor shall:
 - a. Review each submittal and check for compliance with Contract Documents.
 - b. Stamp each submittal with uniform approval stamp before submitting to Engineer.
 - 1). Stamp to include Project name, submittal number, Specification number, Contractor's reviewer name, date of Contractor's approval and statement certifying that submittal has been reviewed, checked, and approved for compliance with Contract Documents.
 - 2). Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
 - 2. Complete, sign, and transmit with each submittal package, one Transmittal of Contractor's Submittal form. A blank Transmittal of Contractor's Submittal form may be provided by Engineer.
 - 3. Identify Each Submittal with the Following:
 - a. Numbering and Tracking System:
 - 1) Submittal No. 8300-001, etc.
 - b. Sequentially number each submittal.
 - c. Resubmission of submittal shall have original number with sequential alphabetic suffix (ie: Resubmittal No. 8300-001-A).
 - 1). Specification section and paragraph to which submittal applies.
 - 2). Project title and Engineer's project number.
 - 3). Date of transmittal.

- 4). Names of Contractor, subcontractor or Supplier and Manufacturer as appropriate.
 4. Identify and describe each deviation or variation from Contract Documents.
 - D. Format:
 1. Do not base Shop Drawings on reproductions of Contract Documents.
 2. Package submittal information by individual Specification section. Do not combine different Specification sections together in submittal package, unless otherwise directed in Specification.
 3. Present in a clear and thorough manner and in sufficient detail to show kind, size, arrangement, and function of components, materials, and devices, and compliance with Contract Documents.
 4. Index with labeled tab dividers in orderly manner.
 - E. Timeliness: Schedule and submit in accordance Schedule of Submittals, and requirements of individual Specification sections.
 - F. Processing Time:
 1. Time for review shall commence on Engineer's receipt of submittal.
 2. Engineer will act upon Contractor's submittal and transmit response to Contractor not later than 30 days after receipt, unless otherwise specified.
 3. Re-submittals will be subject to same review time.
 4. No adjustment of Contract Times or Price will be allowed due to delays in progress of Work caused by rejection and subsequent re-submittals.
 - G. Re-submittals: Clearly identify each correction or change made.
 - H. Incomplete Submittals:
 1. Engineer will return entire submittal for Contractor's revision if preliminary review deems it incomplete.
 2. When any of the following are missing, submittal will be deemed incomplete:
 - a. Contractor's review stamp completed and signed.
 - b. Transmittal of Contractor's Submittal completed and signed.
 3. Submittals not required by Contract Documents:
 4. Will not be reviewed and will be returned stamped "Not Reviewed."
 5. Engineer will keep one electronic copy and return one electronic copy to Contractor.
 - I. Coordination with Project:
 1. It is the Contractor's responsibility to coordinate all equipment furnished with project elevations and dimensions. Approval of the submittal does not relieve the Contractor of the responsibility.
 2. Contractor shall be responsible for coordinating all project aspects and project changes with all submittals.
- 1.4 ACTION SUBMITTALS
- A. Prepare and submit Action Submittals required by individual Specification sections.
 - B. Contractor will submit all submittals electronically using the **Info Exchange** project website to facilitate the transfer of submittals and related files.
 - C. Shop Drawings:
 1. Identify and Indicate:
 - a. Applicable Contract Drawing and Detail number, products, units and assemblies, and system or equipment identification or tag numbers.

- b. Equipment and Component Title: Identical to title shown on Drawings.
 - c. Critical field dimensions and relationships to other critical features of Work. Note dimensions established by field measurement.
 - d. Project-specific information drawn accurately to scale.
 - 2. Manufacturer's standard schematic drawings and diagrams as follows:
 - a. Modify to delete information that is not applicable to the Work.
 - b. Supplement standard information to provide information specifically applicable to the Work.
 - 3. Product Data: Provide as specified in individual Specifications.
 - 4. Foreign Manufacturers: When proposed, include following additional information:
 - a. Names and addresses of at least two companies that maintain technical service representatives close to Project.
 - b. Complete list of spare parts and accessories for each piece of equipment.
- D. Samples:
- 1. Copies: One, unless otherwise specified in individual Specifications.
 - 2. Preparation: Mount, display, or package Samples in manner specified to facilitate review of quality. Attach label on unexposed side that includes the following:
 - a. Manufacturer name.
 - b. Model number.
 - c. Material.
 - d. Sample source.
 - 3. Manufacturer's Color Chart: Units or sections of units showing full range of colors, textures, and patterns available.
 - 4. Full-size Samples:
 - a. Size as indicated in individual Specification section.
 - b. Prepared from same materials to be used for the Work.
 - c. Cured and finished in manner specified.
 - d. Physically identical with product proposed for use.
- E. Action Submittal Dispositions: Engineer will review, mark, and stamp as appropriate, and distribute marked-up copies as noted:
- 1. Furnish as Submitted:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal.
 - b. Distribution
 - 1). One electronic copy furnished to Owner's Field Representative.
 - 2). One electronic copy retained in Engineer's file.
 - 3). One electronic copy returned to Contractor appropriately annotated.
 - 2. Furnish as Corrected or Noted:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal, in accordance with Engineer's notations.
 - b. Distribution:
 - 1). One electronic copy furnished to Owner's Field Representative.
 - 2). One electronic copy retained in Engineer's file.
 - 3). One electronic copy to Contractor appropriately annotated.
 - 3. Partial Resubmittal
 - a. Make corrections or obtain missing portions, and resubmit.
 - b. Except for portions indicated, Contractor may begin to incorporate product(s) or implement Work covered by submittal, in accordance with Engineer's notations.
 - c. Distribution:
 - 1) One electronic copy furnished to Owner's Field Representative.
 - 2) One electronic copy retained in Engineer's file.
 - 3) One electronic copy to Contractor appropriately annotated.
 - 4. Revise and Resubmit:
 - a. Make corrections or obtain missing portions, and resubmit.
 - b. Distribution:

- 1). One electronic copy furnished to Owner's Field Representative.
 - 2). One electronic copy retained in Engineer's file.
 - 3). One electronic copy to Contractor appropriately annotated.
5. Rejected:
- a. Contractor may not incorporate product(s) or implement Work covered by submittal.
 - b. Distribution:
 - 1). One electronic copy furnished to Owner's Field Representative.
 - 2). One electronic copy retained in Engineer's file.
 - 3). One electronic copy returned to Contractor appropriately annotated.

1.5 INFORMATIONAL SUBMITTALS

A. General:

1. Contractor will submit all submittals electronically using the **Info Exchange** project website to facilitate the transfer of submittals and related files.
2. Refer to individual Specification sections for specific submittal requirements.
3. Engineer will review each submittal. If submittal meets conditions of the Contract, Engineer will forward electronic copies to appropriate parties. If Engineer determines submittal does not meet conditions of the Contract and is therefore considered unacceptable, Engineer will retain one electronic copy and return one electronic copy with review comments to Contractor, and require that submittal be corrected and resubmitted.
4. Application for Payment: In accordance with Section 01 29 00, PAYMENT PROCEDURES.
5. Certificates:
 - a. General:
 - 1). Provide notarized statement that includes signature of entity responsible for preparing certification.
 - 2). Signed by officer or other individual authorized to sign documents on behalf of that entity.
6. Welding: In accordance with individual Specification sections.
7. Installer: Prepare written statements on Manufacturer's letterhead certifying that installer complies with requirements as specified in individual Specification sections.
8. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
9. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual Specification sections.
10. Manufacturer's Certificate of Compliance: In accordance with Section 01 79 00, DEMONSTRATION AND TRAINING.
11. Manufacturer's Certificate of Proper Installation: In accordance with Section 01 79 00, DEMONSTRATION AND TRAINING.

B. Construction Photographs and Video: In accordance with Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION, and as may otherwise be required in Contract Documents.

C. Contract Closeout Submittals: In accordance with Section 01 77 00, CLOSEOUT PROCEDURES.

D. Contractor-Design Data:

1. Written and graphic information.
2. List of assumptions.
3. List of performance and design criteria.
4. Summary of loads or load diagram, if applicable.
5. Calculations.
6. List of applicable codes and regulations.

7. Name and version of software.
 8. Information requested in individual Specification section.
- E. Manufacturer's Instructions: Written or published information that documents Manufacturer's recommendations, guidelines, and procedures in accordance with individual Specification sections.
- F. Operation and Maintenance Data: As required in Section 01 78 23, OPERATION AND MAINTENANCE DATA.
- G. Schedules:
1. Schedule of Submittals: Prepare separately or in combination with Progress Schedule.
 - a. Show for Each, at a Minimum, the Following:
 - 1). Specification section number.
 - 2). Identification by numbering and tracking system as specified under Paragraph "Transmittal of Submittal".
 - 3). Estimated date of submission to Engineer, including reviewing and processing time.
 - b. On a monthly basis, submit updated schedule to Engineer if changes have occurred or re-submittals are required.
 2. Schedule of Values: In accordance with Section 01 29 00, PAYMENT PROCEDURES.
 3. Progress Schedules: Provide monthly in Critical Path Method format.
- H. Special Guarantee: Supplier's written guarantee as required in individual Specification sections.
- I. Statement of Qualification: Evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty Subcontractor, trade, Specialist, consultant, installer, and other professionals.
- J. Submittals Required by Laws, Regulations, and Governing Agencies:
1. Submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable Federal, State, or local governing agency or their representative.
 2. Transmit to Engineer for Owner's records one electronic copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and governing agency.
- K. Test and Inspection Reports:
1. General: Shall contain signature of person responsible for test or report.
 2. Factory:
 - a. Identification of product and Specification section, type of inspection or test with referenced standard or code.
 - b. Date of test, Project title and number, and name and signature of authorized person.
 - c. Test results.
 - d. If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
 - e. Provide interpretation of test results, when requested by Engineer.
 - f. Other items as identified in individual Specification sections.
 3. Field: As a minimum, include the following:
 - a. Project title and number.
 - b. Date and time.
 - c. Record of temperature and weather conditions.
 - d. Identification of product and Specification section.
 - e. Type and location of test, Sample, or inspection, including referenced standard or code.

- f. Date issued, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.
- g. If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
- h. Provide interpretation of test results, when requested by Engineer.
- i. Other items as identified in individual Specification sections.
- 4. Testing and Startup Data: In accordance with Section 01 79 00, DEMONSTRATION AND TRAINING.
- 5. Training Data: In accordance with Section 01 79 00, DEMONSTRATION AND TRAINING.

1.6 FINAL SUBMITTALS

- A. Submit final copy of all submitted information to OWNER as component of Final Close Out. Prepare final data in electronic media format.
- B. Organizational Format:
 - 1. Identify electronic files with title "FINAL PROJECT SUBMITTALS" and list each submittal with the following information on each file's cover sheet:
 - a. Project title.
 - b. Designate applicable system, equipment, material, or finish.
 - c. Identity of separate structure as applicable.
 - d. Identity of general subject matter covered in manual.
 - e. Identity of equipment number and Specification section.
 - 2. Provide Title Page file with the following:
 - a. Contractor name, address, and telephone number.
 - b. Subcontractor, Supplier, installer, or maintenance contractor's name, address, and telephone number, as appropriate.
 - 1) Identify area of responsibility of each.
 - 2) Provide name and telephone number of local source of supply for parts and replacement.
 - 3. Provide electronic searchable Table of Contents for all files:
 - a. Arranged in systematic order with consecutive page numbers.
 - b. Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.
 - 4. Text: Manufacturer's printed data, or neatly identified
 - 5. Material shall be suitable for reproduction, with quality equal to original.
 - 6. All drawings and oversized figures shall be presented electronically in 11x 17 format.
- C. Electronic Media Format:
 - 1. Portable Document Format (PDF):
 - a. After all preliminary data has been found to be acceptable to Engineer, submit Operation and Maintenance data in PDF format on CD.
 - b. Files to be exact duplicates of Engineer-accepted preliminary data. Arrange by specification number and name.
 - c. Files to be fully functional, fully viewable and fully searchable in most recent version of Adobe Acrobat.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 34 00 - PHOTOGRAPHIC AND VIDEOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes Requirements for:
 - 1. Pre-construction photographs.
 - 2. Pre-construction videos.
 - 3. Post-construction photographs.
 - 4. Post-construction videos.
- B. The purpose of the photographs and videos is to document the condition of the facilities prior to the Contractor beginning work at the Project site and after Substantial Completion of the Work.
- C. Areas to be photographed and videoed shall include the site of the Work and all existing facilities either on or adjoining the Project site, including the interior of existing structures, that could be damaged as a result of the Contractor's Work.
- D. The scope of the photographic and videographic documentation shall be the sole responsibility of the Contractor, but shall be acceptable to the Engineer.
- E. Related sections:
 - 1. Section 01 31 00 – Project Management and Coordination
 - 2. Section 01 31 19 – Project Meetings.
 - 3. Section 01 33 00 – Submittal Procedures.
 - 4. Section 01 77 00 – Closeout Procedures.

1.2 SUBMITTALS

- A. Key Plan: Submit key plan of Project site with notation of vantage points marked for location and direction of each photograph. Include the same label information as the corresponding set of photographs.
- B. Photographs:
 - 1. Digital Media:
 - a. Provide photos as individual, indexed JPG files with the following characteristics:
 - 1) Compression shall be set to preserve quality over file size.
 - 2) Highest resolution JPG images shall be submitted. Resizing to a smaller size when high resolution JPGs are available shall not be permitted.
 - 3) JPG image resolution shall be 4000 by 3000 or higher.
 - 4) Images shall have rectangular clean images. Artistic borders, beveling, drop shadows, etc. are not permitted.
- C. Videos:
 - 1. Submit 1 electronic copy of each video within 7 days of recording.
 - 2. Videos shall be submitted in a digital color video format.
 - 3. Electronic File Name:
 - a. Date of coverage in year-month-day-time format followed by a short description of video coverage.
- D. Pre-Construction Photographs and Videos: Submit prior to beginning work at the Project site or prior to the Preconstruction Conference specified in Section 01 31 19, whichever occurs earlier. Reference Section 01 31 00 for additional requirements.

- E. Post-Construction Photographs and Videos: Submit with project closeout documents as specified in Section 01 77 00. Reference Section 01 31 00 for additional requirements.

PART 2 - PRODUCTS

2.1 MEDIA

- A. Paper Media:
 - 1. Commercial grade, glossy surface, acid-free photographic paper.
- B. Digital Media:
 - 1. One hundred and twenty millimeters, 700-MB, 80-minute CD compatible with latest version of Microsoft Windows.
- C. Videos:
 - 1. One hundred and twenty millimeters, DVD compatible with standard DVD players.

PART 3 - EXECUTION

3.1 GENERAL

- A. Photographs (Paper and Digital Media):
 - 1. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
- B. Videos:
 - 1. Display continuous running time.
 - 2. At start of each video recording, record weather conditions from local newspaper or television and the actual temperature reading at Project Site.

END OF SECTION

SECTION 01 35 00 - SPECIAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Special procedures for locating and verifying concealed existing facilities.

1.2 CONCEALED EXISTING FACILITIES

- A. Verify locations of utilities and facilities which may exist by consulting with the Owner, utility companies, and Texas811 (Texas One-Call System) or other service available in area of Project (see dig/call information on the Drawings):
 - 1. Abide by easement and right-of-way restrictions.
- B. Notify the Owner, owners of facilities when the Work will be in progress. Make arrangements for potential emergency repairs in accordance with requirements of owners of utility facilities, including individual or residential facilities.
- C. Assume responsibility for repair of facilities damaged by performance of the Work.
- D. Expose sanitary and storm sewers, water, gas, electric, telephone utility lines, and other underground facilities indicated to permit survey location prior to commencement of Work in affected area:
 - 1. Expose in ample time to permit relocation of interfering utilities with minimum delaying effect on contract time.
- E. Work required for raising, lowering, or relocating utilities not indicated will be performed by affected utility owners or as part of the Work at option of affected owners of utilities:
 - 1. When part of the Work, perform work in accordance with standards of affected utility owner, and adjustment to Contract Price and Contract Times will be made as stipulated in conditions of contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 41 00 - REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Regulatory requirements:
 1. Building code.
 2. Electrical code.
 3. Energy code.
 4. Fire code.
 5. Mechanical code.
 6. Plumbing code.

1.2 REFERENCES

- A. International Code Council (ICC):
 1. International Building Code (IBC), 2009.
 2. International Existing Building Code (IEBC), 2009.
 3. International Energy Conservation Code (IECC), 2009.
 4. International Fire Code (IFC), 2009.
 5. International Mechanical Code (IMC), 2009.
 6. International Plumbing Code (IPC), 2009.
- B. National Fire Protection Association (NFPA):
 1. NFPA 70: National Electrical Code, 2011.
- C. National Electric Code Council:
 1. National Electric Code (NEC), NFPA 70, 2011

1.3 SYSTEM DESCRIPTION

- A. Design Requirements:
 1. Building code:
 - a. International Building Code.
 2. Electrical code:
 - a. NFPA 70: National Electric Code.
 3. Energy conservation code:
 - a. International Energy Conservation Code.
 4. Fire code:
 - a. International Fire Prevention Code.
 5. Mechanical codes:
 - a. International Mechanical Code.
 6. Plumbing code:
 - a. International Plumbing Code.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 REFERENCE TO STANDARDS AND SPECIFICATIONS OF TECHNICAL SOCIETIES

- A. Reference to standards and specifications of technical societies and reporting and resolving discrepancies associated therewith shall be as provided in the General Conditions, and as may otherwise be required herein and in the individual Specification sections.
- B. Work specified by reference to published standard or specification of government agency, technical association or trade association, professional society or institute, testing agency, or other organization shall meet requirements or surpass minimum standards of quality for materials and workmanship established by designated standard or specification.
- C. Where so specified, products or workmanship shall also meet or exceed additional prescriptive or performance requirements included within Contract Documents to establish a higher or more stringent standard of quality than required by referenced standard.
- D. Where two or more standards are specified to establish quality, product and workmanship shall meet or exceed requirements of most stringent.
- E. Where both a standard and a brand name are specified for a product in Contract Documents, proprietary product named shall meet or exceed requirements of specified reference standard.
- F. Copies of Standards and Specifications of Technical Societies:
 - 1. Copies of applicable referenced standards have not been bound in these Contract Documents.
 - 2. Where copies of standards are needed by Contractor, obtain a copy or copies directly from publication source and maintain in an orderly manner at the Site as Work Site records, available to Contractor's personnel, Subcontractors, Owner, and Engineer.

1.2 ABBREVIATIONS

- A. Abbreviations for trade organizations and government agencies: Following is a list of construction industry organizations and government agencies to which references may be made in the Contract Documents, with abbreviations used.
 - 1. AA Aluminum Association
 - 2. AABC Associated Air Balance Council
 - 3. AAMA American Architectural Manufacturers Association
 - 4. AASHTO American Association of State Highway and Transportation Officials
 - 5. ABMA American Bearing Manufacturers' Association
 - 6. ACI American Concrete Institute
 - 7. AEIC Association of Edison Illuminating Companies
 - 8. AGA American Gas Association
 - 9. AGMA American Gear Manufacturers' Association
 - 10. AI Asphalt Institute
 - 11. AISC American Institute of Steel Construction
 - 12. AISI American Iron and Steel Institute
 - 13. AITC American Institute of Timber Construction
 - 14. ALS American Lumber Standards
 - 15. AMCA Air Movement and Control Association
 - 16. ANSI American National Standards Institute
 - 17. APA The Engineered Wood Association
 - 18. API American Petroleum Institute

19.	APWA	American Public Works Association
20.	ARI	Air-Conditioning and Refrigeration Institute
21.	ASAE	American Society of Agricultural Engineers
22.	ASCE	American Society of Civil Engineers
23.	ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
24.	ASME	American Society of Mechanical Engineers
25.	ASNT	American Society for Nondestructive Testing
26.	ASTM	ASTM International
27.	AWI	Architectural Woodwork Institute
28.	AWPA	American Wood Preservers' Association
29.	AWPI	American Wood Preservers' Institute
30.	AWS	American Welding Society
31.	AWWA	American Water Works Association
32.	BHMA	Builders Hardware Manufacturers' Association
33.	CBM	Certified Ballast Manufacturer
34.	CDA	Copper Development Association
35.	CGA	Compressed Gas Association
36.	CIS PI	Cast Iron Soil Pipe Institute
37.	CMAA	Crane Manufacturers' Association of America
38.	CRSI	Concrete Reinforcing Steel Institute
39.	CS	Commercial Standard
40.	CSA	Canadian Standards Association
41.	CSI	Construction Specifications Institute
42.	DIN	Deutsches Institute für Normung e.V.
43.	DIPRA	Ductile Iron Pipe Research Association
44.	EIA	Electronic Industries Alliance
45.	EJCDC	Engineers Joint Contract Documents' Committee
46.	ETL	Electrical Test Laboratories
47.	FAA	Federal Aviation Administration
48.	FCC	Federal Communications Commission
49.	FDA	Food and Drug Administration
50.	FEMA	Federal Emergency Management Agency
51.	FIPS	Federal Information Processing Standards
52.	PM	Factory Mutual
53.	Fed. Spec.	Federal Specifications (FAA Specifications)
54.	FS	Federal Specifications and Standards (Technical Specifications)
55.	GA	Gypsum Association
56.	GANA	Glass Association of North America
57.	ID	Hydraulic Institute
58.	HMI	Hoist Manufacturers' Institute
59.	IBC	International Building Code
60.	ICBO	International Conference of Building Officials
61.	ICC	International Code Council
62.	ICEA	Insulated Cable Engineers' Association
63.	IFC	International Fire Code
64.	IEEE	Institute of Electrical and Electronics Engineers, Inc.
65.	IESNA	Illuminating Engineering Society of North America
66.	IFI	Industrial Fasteners Institute
67.	IGMA	Insulating Glass Manufacturer's Alliance
68.	IMC	International Mechanical Code
69.	INDA	Association of the Non-woven Fabrics Industry
70.	IPC	International Plumbing Code
71.	ISA	Instrumentation, Systems, and Automation
72.	ISO	International Organization for Standardization
73.	ITL	Independent Testing Laboratory

74.	JIC	Joint Industry Conferences of Hydraulic Manufacturers
75.	MIA	Marble Institute of America
76.	Mil.	Military Specifications
77.	MMA	Monorail Manufacturers' Association
78.	NAAMM	National Association of Architectural Metal Manufacturers
79.	NACE	NACE International
80.	NEBB	National Environmental Balancing Bureau
81.	NEC	National Electrical Code
82.	NECA	National Electrical Contractors Association
83.	NEMA	National Electrical Manufacturers' Association
84.	NESC	National Electrical Safety Code
85.	NETA	International Electrical Testing Association
86.	NFPA	National Fire Protection Association
87.	NHLA	National Hardwood Lumber Association
88.	NICET	National Institute for Certification in Engineering Technologies
89.	NIST	National Institute of Standards and Technology
90.	NRCA	National Roofing Contractors Association
91.	NRTL	Nationally Recognized Testing Laboratories
92.	NSF	NSF International
93.	NSPE	National Society of Professional Engineers
94.	NTMA	National Terrazzo and Mosaic Association
95.	NWWDA	National Wood Window and Door Association
96.	OSHA	Occupational Safety and Health Act (both Federal and State)
97.	PCI	Pre-cast/Pre-stressed Concrete Institute
98.	PEI	Porcelain Enamel Institute
99.	PPI	Plastic Pipe Institute
100.	PS	Product Standards Section-U.S. Department of Commerce
101.	RMA	Rubber Manufacturers' Association
102.	RUS	Rural Utilities Service
103.	SAE	Society of Automotive Engineers
104.	SDI	Steel Deck Institute
105.	SDI	Steel Door Institute
106.	SJI	Steel Joist Institute
107.	SMACNA	Sheet Metal and Air Conditioning Contractors National Association
108.	SPI	Society of the Plastics Industry
109.	SSPC	The Society for Protective Coatings
110.	SWI	Steel Window Institute
111.	TEMA	Tubular Exchanger Manufacturers' Association
112.	TCA	Tile Council of North America
113.	TIA	Telecommunications Industry Association
114.	UBC	Uniform Building Code
115.	UFC	Uniform Fire Code
116.	UL	Underwriters Laboratories Inc.
117.	UMC	Uniform Mechanical Code
118.	USBR	U.S. Bureau of Reclamation
119.	WCLIB	West Coast Lumber Inspection Bureau
120.	WWPA	Western Wood Products Association

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 45 00 - QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 1. Quality control and control of installation.
 2. Tolerances.
 3. References.
 4. Authority and duties of Owner's representative or inspector.
 5. Sampling and testing.
 6. Testing and inspection services.
 7. Contractor's responsibilities.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- H. When specified, products will be tested and inspected either at point of origin or at Work site:
 1. Notify Engineer in writing well in advance of when products will be ready for testing and inspection at point of origin.
 2. Do not construe that satisfactory tests and inspections at point of origin is final acceptance of products. Satisfactory tests or inspections at point of origin do not preclude retesting or re-inspection at Work site.
- I. Do not ship products which require testing and inspection at point of origin prior to testing and inspection.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. When Manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM): E 329 - Standard for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.
- B. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- C. Conform to reference standard by date of issue current on date of Contract Documents, except where specific date is established by code.
- D. Obtain copies of standards where required by product specification sections.
- E. When specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

1.5 AUTHORITY AND DUTIES OF OWNER'S REPRESENTATIVE OR INSPECTOR

- A. Owner's Project Representative employed or retained by Owner is authorized to inspect the Work.
- B. Inspections may extend to entire or part of the Work and to preparation, fabrication, and manufacture of products for the Work.
- C. Deficiencies or defects in the Work which have been observed will be called to Contractor's attention.
- D. Inspector will not:
 - 1. Alter or waive provisions of Contract Documents.
 - 2. Inspect Contractor's means, methods, techniques, sequences, or procedures for construction.
 - 3. Accept portions of the Work, issue instructions contrary to intent of Contract Documents, or act as foreman for Contractor.
 - 4. Supervise, control, or direct Contractor's safety precautions or programs; or inspect for safety conditions on Work site, or of persons thereon, whether Contractor's employees or others.
- E. Inspector will:
 - 1. Conduct on-site observations of the Work in progress to assist Engineer in determining when the Work is, in general, proceeding in accordance with Contract Documents.
 - 2. Report to Engineer whenever Inspector believes that Work is faulty, defective, does not conform to Contract Documents, or has been damaged; or whenever there is defective material or equipment; or whenever Inspector believes the Work should be uncovered for observation or requires special procedures.

1.6 SAMPLING AND TESTING

- A. General:
 - 1. Prior to delivery and incorporation in the Work, submit listing of sources of materials, when specified in sections where materials are specified.
 - 2. When specified in sections where products are specified:
 - a. Submit sufficient quantities of representative samples of character and quality required of materials to be used in the Work for testing or examination.
 - b. Test materials in accordance with standards of national technical organizations.

- B. Sampling:
 - 1. Furnish specimens of materials when requested.
 - 2. Do not use materials which are required to be tested until testing indicates satisfactory compliance with specified requirements.
 - 3. Specimens of materials will be taken for testing whenever necessary to determine quality of material.
 - 4. Assist Engineer in preparation of test specimens at site of work, such as soil samples and concrete test cylinders.
- C. Testing:
 - 1. Contractor will employ and pay for services of independent testing laboratory to perform routine tests of materials to confirm compliance with requirements of Contract Documents, including concrete tests, mill tests, soil compaction test, and other specified tests.
 - 2. When protesting failed tests of material in place or to be used, take additional specimens and have specimens tested:
 - a. When original test proves to have been in error, file claim for reimbursement of direct costs for sampling and testing.
- D. Test standards:
 - 1. Perform sampling, specimen preparation, and testing of materials in accordance with specified standards, and when no standard is specified, in accordance with standard of nationally recognized technical organization.
 - 2. Physical characteristics of materials not particularly specified shall conform to standards published by ASTM, where applicable.
 - 3. Standards and publication references in Contract Documents shall be edition or revision in effect on date stipulated in the Contract Documents.

1.7 TESTING AND INSPECTION SERVICES

- A. Contractor will employ and pay for specified services of an independent firm; known as Contractor's independent testing firm, to perform Contractor quality control testing as required in the technical specifications for various work and materials.
- B. The Contractor's independent testing firm will perform tests, inspections and other services specified in individual specification sections and as required by Owner and requested by the Engineer.
- C. The qualifications of laboratory that will perform the testing, contracted by the Contractor, shall be as follows:
 - 1. Has authorization to operate in the state where the project is located.
 - 2. Meets "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.
 - 3. Meets requirements of ASTM E 329.
 - 4. Laboratory Staff: Maintain full time specialist on staff to review services.
 - 5. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to National Bureau of Standards (NBS) or accepted values of natural physical constants.
 - 6. Will submit copy of report of inspection of facilities made by Materials Reference Laboratory of NBS during most recent tour of inspection, with memorandum of remedies of deficiencies reported by inspection.
- D. Testing, inspections and source quality control may occur on or off project site. Perform off-site testing inspections and source quality control as required by Engineer or Owner.
- E. Reports will be submitted by Contractor's independent testing firm to Engineer, Contractor, and Owner in triplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents. Each report shall include:

1. Date issued.
 2. Project title and number.
 3. Testing laboratory name, address, and telephone number.
 4. Name and signature of laboratory inspector.
 5. Date and time of sampling or inspection.
 6. Record of temperature and weather conditions.
 7. Date of test.
 8. Identification of product and specification section.
 9. Location of sample or test in Project.
 10. Type of inspection or test.
 11. Results of tests and compliance with Contract Documents.
 12. Interpretation of test results, when requested by Engineer.
- F. Contractor shall furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
1. Notify Engineer and Owner 48 hours prior to expected time for operations requiring testing.
 2. Pay for additional samples and tests required for Contractor's use.
- G. Limitations of authority of testing Laboratory: Laboratory is not authorized to:
1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency or laboratory may not approve or accept any portion of the Work.
 3. Agency or laboratory may not assume duties of Contractor.
 4. Agency or laboratory has no authority to stop the Work.
- H. Testing and employment of a laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- I. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same Contractor's independent testing firm on instructions by Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
- J. The Contractor's independent testing firm responsibilities will include:
1. Test samples of mixes submitted by Contractor.
 2. Provide qualified personnel at site. Cooperate with Owner, Engineer, and Contractor in performance of services.
 3. Perform specified sampling and testing of products in accordance with specified standards.
 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 5. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or products.
 6. Perform additional tests required by Engineer.
 7. Attend preconstruction meetings and progress meetings.
- K. Contractor's independent testing firm individual test reports: After each test, Contractor's independent testing firm will promptly submit electronically and three hard copies of report to Owner, Engineer, and to Contractor. When requested by Engineer, the Contractor's independent testing firm will provide interpretation of test results. Include the following:
1. Date issued.
 2. Project title and number.
 3. Name of inspector.
 4. Date and time of sampling or inspection.
 5. Identification of product and specifications section.
 6. Location in Project.
 7. Type of inspection or test.
 8. Date of test.

9. Certified test results stamped and signed by a registered Engineer in the state that the project is located.
10. Summary of conformance with Contract Documents.

- L. Contractor's independent testing firm will provide monthly report of certification to identify all work performed for special inspections and other contract requirements on this project. The following certified monthly report at a minimum will include but not limited to:
 1. Results of testing.
 2. Testing logs.
 3. Outstanding deficiencies.
 4. Various statistical data.
 5. Testing curves (up to 4 types) as required by the Engineer.

1.8 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel and provide access to construction and manufacturing operations.
- B. Secure and deliver to laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.
- C. Provide to laboratory and Engineer preliminary mix design proposed to be used for concrete, and other materials mixes which require control by testing laboratory.
- D. Furnish electronic copies of product test reports.
- E. Furnish incidental labor and facilities:
 1. To provide access to construction to be tested.
 2. To obtain and handle samples at Work site or at source of product to be tested.
 3. To facilitate inspections and tests.
 4. For storage and curing of test samples.
- F. Notify laboratory 48 hours in advance of when observations, inspections and testing is needed for laboratory to schedule and perform in accordance with their notice of response time.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 1. Furnishing, maintaining, and removing construction facilities and temporary controls, including temporary utilities, construction aids, barriers and enclosures, security, access roads, temporary controls, project sign, field offices and sheds, and removal after construction.
- B. Related sections:
 1. Section 01 14 00 – Work Restrictions.
 2. Section 01 33 00 – Submittal Procedures
 3. Section 01 60 00 – Product Requirements

1.2 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 1. American Association of Nurserymen: American Standards for Nursery Stock.
 2. Federal Emergency Management Agency.
 3. NFPA, National Fire Prevention Standard for Safeguarding Building Construction Operations.
 4. Telecommunications Industry Association (TIA); Electronic Industries Alliance (EIA): 568B, Commercial Building Telecommunications Cabling Standard.
 5. U.S. Department of Agriculture: Urban Hydrology for Small Watersheds.
 6. U.S. Weather Bureau: Rainfall-Frequency Atlas of the U.S. for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years.

1.3 SUBMITTALS

- A. Informational Submittals:
 1. General: For products specified to be furnished under this Section, submit product data in accordance with Section 01 33 00.
 2. For Temporary Piping Systems:
 - a. Submit layout drawings showing proposed routing of piping, including proposed pipe support and pipe restraint locations.
 - b. Submit product data for piping, fittings, appurtenances, restraints, supports, and all other components of the temporary piping system.
 - c. Submit all information at least 28 days prior to when each temporary piping system is scheduled to be installed and allow 14 days for review and comment by Engineer and Owner.
 3. For Temporary Pumping Systems:
 - a. Submit pump data, performance curves, and other operating information.
 - b. Submit sketches showing layout of temporary pumping system, including pump quantity, tie-in locations to watermain, and proposed piping layout.
 - c. Submit piping headloss calculations based on proposed temporary piping system layout.
 - d. Submit all information at least 28 days prior to when the temporary pumping system is scheduled to be installed and allow 14 days for review and comment by Engineer and Owner.
 4. Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.
 5. Temporary Utility Submittals:
 - a. Electric power supply and distribution plans.

- b. Water supply and distribution plans.
 - c. Drainage plans.
 - d. Sanitary sewer.
- 6. Temporary Construction Submittals:
 - a. Access Roads: Routes, cross-sections, and drainage facilities.
 - b. Parking area plans.
 - c. Contractor's field office, storage yard, and storage building plans, including gravel surfaced area.
 - d. Fencing and protective barrier locations and details.
 - e. Staging area location plan.
 - f. Traffic and Pedestrian Control and Routing Plans: As specified herein, and proposed revisions thereto.
- 7. Temporary Control Submittals:
 - a. Noise control plan.
 - b. Plan for disposal of waste materials and intended haul routes.

1.4 MOBILIZATION

- A. Mobilization shall Include, but Not be Limited to, these Principal Items:
 - 1. Obtaining required permits.
 - 2. Moving Contractor's field office and equipment required for first month operations onto Site.
 - 3. Installing temporary construction power, wiring, and lighting facilities.
 - 4. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies.
 - 5. Arrange for and erection of Contractor's work and storage yard.
 - 6. Posting OSHA required notices and establishing safety programs and procedures.
 - 7. Have Contractor's superintendent at Site.
- B. Use area designated for Contractor's temporary facilities as shown on Drawings.

1.5 PROTECTION OF WORK AND PROPERTY

- A. Comply with Owner's safety rules while on Owner's property.
- B. Keep Owner informed of serious onsite accidents and related claims.
- C. Use of Explosives: No blasting or use of explosives will be allowed onsite.

1.6 VEHICULAR TRAFFIC

- A. Traffic Routing Plan: Show sequences of construction affecting use of roadways, time required for each phase of the Work, provisions for decking over excavations and phasing of operations to provide necessary access, and plans for signing, barricading, and striping to provide passages for pedestrians and vehicles.

1.7 TEMPORARY UTILITIES

- A. Temporary Electrical Power:
 - 1. Arrange with local utility to provide adequate temporary electrical service.
 - 2. Provide and maintain adequate jobsite power distribution facilities conforming to applicable Laws and Regulations.
 - 3. Provide, maintain, and pay for electric power for performance of the Work except for power required for the final 7-day operational test:
 - a. When using permanent facilities, provide separate meter and reimburse Owner for power used in connection with performance of the Work.

- B. Temporary Electrical Lighting:
 - 1. In work areas, provide temporary lighting sufficient to maintain lighting levels during working hours not less than lighting levels required by Occupational Safety and Health Administration (OSHA) and state agency which administers OSHA regulations where Project is located.
 - 2. When available, permanent lighting facilities may be used in lieu of temporary facilities:
 - a. Prior to Substantial Completion of the Work, replace bulbs, lamps, or tubes used by Contractor for lighting.
 - C. Temporary Heating, Cooling, and Ventilating:
 - 1. Heat and ventilate work areas to protect the Work from damage by freezing, high temperatures, weather, and to provide safe environment for workers.
 - 2. Permanent heating system may be utilized when sufficiently completed to allow safe operation.
 - D. Temporary Water:
 - 1. Pay for and construct facilities necessary to furnish potable water for human consumption and non-potable water for use during construction.
 - 2. Remove temporary piping and connections and restore affected portions of the facility to original condition before Substantial Completion.
 - 3. Pay for water used for construction prior to Substantial Completion. Owner will provide water for 7-day final test.
 - E. Temporary Sanitary Facilities:
 - 1. Provide suitable and adequate sanitary facilities that are in compliance with applicable Laws and Regulations.
 - 2. At completion of the Work, remove sanitary facilities and leave site in neat and sanitary condition.
 - F. Temporary Fire Protection: Provide sufficient number of fire extinguishers of type and capacity required to protect the Work and ancillary facilities.
 - G. First Aid: Post first aid facilities and information posters conforming to requirements of OSHA and other applicable Laws and Regulations in readily accessible locations.
 - H. Utilities in Existing Facilities: See Section 01 14 00, WORK RESTRICTIONS.
- 1.8 CONSTRUCTION AIDS
- A. Provide railings, kick plates, enclosures, safety devices, and controls required by Laws and Regulations and as required for adequate protection of life and property.
 - B. Use construction hoists, elevators, scaffolds, stages, shoring, and similar temporary facilities of ample size and capacity to adequately support and move loads.
 - C. Design temporary supports with adequate safety factor to assure adequate load bearing capability:
 - 1. When requested, submit design calculations by professional registered engineer prior to application of loads.
 - 2. Submitted design calculations are for information and record purposes only.
 - D. Accident Prevention:
 - 1. Exercise precautions throughout construction for protection of persons and property.
 - 2. Observe safety provisions of applicable Laws and Regulations.
 - 3. Guard machinery and equipment, and eliminate other hazards.

4. Make reports required by authorities having jurisdiction, and permit safety inspections of the Work.
 5. Before commencing construction work, take necessary action to comply with provisions for safety and accident prevention.
- E. Barricades:
1. Place barriers at ends of excavations and along excavations to warn pedestrian and vehicular traffic of excavations.
 2. Provide barriers with flashing lights after dark.
 3. Keep barriers in place until excavations are entirely backfilled and compacted.
 4. Barricade excavations to prevent persons from entering excavated areas in streets, roadways, parking lots, treatment plants, or other public or private areas.
- F. Warning Devices and Barricades: Adequately identify and guard hazardous areas and conditions by visual warning devices and, where necessary, physical barriers:
1. Devices shall conform to minimum requirements of OSHA and State agency which administers OSHA regulations where Project is located.
- G. Hazards in Public Right-of-Way:
1. Mark at reasonable intervals, trenches and other continuous excavations in public right-of-way, running parallel to general flow of traffic, with traffic cones, barricades, or other suitable visual markers during daylight hours:
 - a. During hours of darkness, provide markers with torches, flashers, or other adequate lights.
 2. At intersections or for pits and similar excavations, where traffic may reasonably be expected to approach head on, protect excavations by continuous barricades:
 - a. During hours of darkness, provide warning lights at close intervals.
- H. Hazards in Protected Areas: Mark or guard excavations in areas from which public is excluded, in manner appropriate for hazard.
- I. Above Grade Protection: On multi-level structures, provide safety protection that meets requirements of OSHA and State agency which administers OSHA regulations where Project is located.
- J. Protect existing structures, trees, shrubs, and other items to be preserved on Project site from injury, damage or destruction by vehicles, equipment, worker or other agents with substantial barricades or other devices commensurate with hazards.
- K. Fences:
1. Enclose site of the Work with fence adequate to protect the Work against acts of theft, violence and vandalism.
 2. Enclose temporary offices and storage areas with fence adequate to protect temporary facilities against acts of theft, violence and vandalism.
 3. When entire or part of site is to be permanently fenced, permanent fence may be built to serve for both permanent and temporary protection of the work site, provided that damaged or defaced fencing is replaced prior to Substantial Completion.
 4. Protect temporary and permanent openings and close openings in existing fences to prevent intrusion by unauthorized persons. Bear responsibility for protection of plant and material on site of the Work when openings in existing fences are not closed.
 5. During night hours, weekends, holidays, and other times when no work is performed at site, provide temporary closures or enlist services of security guards to protect temporary openings.
 6. Fence temporary openings when openings are no longer necessary.

1.9 SECURITY

- A. Make adequate provision for protection of the work area against fire, theft, and vandalism, and for protection of public against exposure to injury.

1.10 ACCESS ROADS

- A. General:
 1. Build and maintain access roads to and on site of the Work to provide for delivery of material and for access to existing and operating plant facilities on site.
 2. Build and maintain dust free roads which are suitable for travel at 20 miles per hour.
- B. Off-Site Access Roads:
 1. Build and maintain graded earth roads.
 2. Build roads only in public right-of-way or easements obtained by Owner.
 3. Obtain rights-of-way or easements when electing to build along other alignment.
- C. On-Site Access Roads:
 1. Maintain access roads to storage areas and other areas to which frequent access is required.
 2. Maintain similar roads to existing facilities on site of the Work to provide access for maintenance and operation.
 3. Protect buried vulnerable utilities under temporary roads with steel plates, wood planking, or bridges.
 4. Maintain on-site access roads free of mud. Under no circumstances shall vehicles leaving the site track mud off the site onto the public right-of-way.

1.11 TEMPORARY CONTROLS

- A. Dust Control:
 1. Prevent dust nuisance caused by operations, unpaved roads, excavation, backfilling, demolition, or other activities.
 2. Control dust by sprinkling with water, use of dust palliatives, modification of operations, or other means acceptable to agencies having jurisdiction.
- B. Noise Control:
 1. In inhabited areas, particularly residential, perform operations in manner to minimize noise.
 2. In residential areas, take special measures to suppress noise during night hours.
- C. Mud Control:
 1. Prevent mud nuisance caused by construction operations, unpaved roads, excavation, backfilling, demolition, or other activities.

1.12 PROJECT SIGN

- A. Provide and maintain Project identification sign consisting of painted 8 foot wide by 4 foot high exterior grade plywood and minimum 10 foot long 4 by 4 lumber posts, set in ground at least 3 feet, with exhibit lettering by professional sign painter using no more than 5 sign colors:
 1. List at least the title of the Project, and names of the OWNER, ENGINEER, and CONTRACTOR.
- B. Erect Project identification sign where directed.

1.13 REMOVAL

- A. Clean and repair damage caused by installation or use of temporary facilities.
- B. Remove underground installations to minimum depth of 24 inches and grade to match surrounding conditions.
- C. Restore existing facilities used during construction to specified or original condition.

1.14 TEMPORARY PROCESS PIPING

- A. Contractor shall provide all piping, appurtenances, and other materials as required to provide temporary piping systems as specified herein, as indicated on the Drawings, and as needed to perform the Work.
- B. Contractor shall field route piping as needed and as field conditions dictate, unless otherwise indicated on the Drawings, and determine appropriate lengths of piping and quantity/type of pipe fittings needed to construct temporary piping system. Do not block access points such as stairs, doors, and walkways to existing facilities unless approved in writing by the Owner.
- C. Restrain piping at valves and at fittings where piping changes direction, changes sizes, and at ends:
 - 1. When piping is buried, use concrete thrust block or mechanical restraints.
 - 2. When piping is exposed or under water, use mechanical or structural restraints.
 - 3. Determine thrust forces by multiplying the nominal cross sectional area of the piping by the operating pressure of the piping.
- D. Temporary piping systems shall be installed in a manner that will not damage existing or new facilities.
- E. Unless indicated otherwise, piping material, including gaskets, shall be suitable for the process fluid requiring temporary piping.
- F. After Temporary Piping System is no longer required:
 - 1. Remove temporary piping system.
 - 2. Clean and repair damage caused by installation or use of temporary piping system.
 - 3. Restore existing facilities to original condition.

1.15 TEMPORARY PROCESS PUMPING

- A. To achieve the Contractor's plan to complete the work, Contractor shall provide temporary pumping system to pump flow as required to complete the work.
 - 1. Anticipated pressure will vary based on headlosses developed and the final length of installed temporary piping. Contractor shall calculate headlosses and provide pump with sufficient pressure to meet flow requirements. Calculations shall be sealed and signed by a professional engineer registered in the state in which the project is located.
 - 2. Pump(s) shall be capable of passing a solid with a sphere size of 3 inches.
 - 3. Provide and pay for all power required to operate temporary pumps.
 - 4. All electrical and instrumentation components will comply with applicable code requirements for the area where the temporary pump is located.
 - 5. Temporary pumping will be required 24 hours per day during the time period when pumping is required and is critical to the proper operation of the Owner's distribution system. Provide 24-hour on-site supervision of pumps to ensure that pumps are always operational and performing as required. Notify the Owner immediately if temporary pumping cannot be provided.

6. Contractor shall be responsible for repairing any damage or reimbursing the Owner for any regulatory fines or additional staff time resulting from the Contractor's failure to maintain temporary pumping.
7. Provide 100 percent backup (a.k.a., standby, redundant, etc.) pumping capacity equal to the required process flow rate. Backup system shall be capable of providing required pumping capacity immediately upon failure of primary pumping system.
8. All necessary spare equipment and appurtenances shall be available on-site to allow immediate repair and/or replacement of any pumping system component that is not functioning properly.

B. Providing temporary piping systems as specified in Paragraph 1.14.

C. After Temporary Process Pumping System is no Longer Required:

1. Remove temporary process pumping system.
2. Clean and repair damage caused by installation or use of temporary process pumping system.
3. Restore existing facilities to original condition.

PART 2 - PRODUCTS

2.1 FIELD OFFICES AND SHEDS

A. Contractor's Field Office:

1. Maintain on Project Site weathertight space in which to keep copies of Contract Documents, progress schedule, shop drawings, and other relevant documents.

PART 3 - EXECUTION

3.1 TEMPORARY UTILITIES

A. Power:

1. Electric power will be available at or near Site. Determine type and amount available and make arrangements for obtaining temporary electric power service, metering equipment, and pay all costs for electric power used during contract period, except for portions of the Work designated in writing by Engineer as substantially complete.
2. Cost of electric power will be borne by Contractor.

B. Lighting: Provide temporary lighting to meet applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the Work.

C. Heating, Cooling, and Ventilating:

1. Provide as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for installation of materials, and to protect materials, equipment, and finishes from damage due to temperature or humidity. Costs for temporary heat shall be borne by Contractor.
2. Provide adequate forced air ventilation of enclosed areas to cure installed materials, to dispense humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.
3. Pay all costs of installation, maintenance, operation, removal, and fuel consumed.
4. Provide portable unit heaters, complete with controls, oil- or gas-fired, and suitably vented to outside as required for protection of health and property.

D. Water:

1. Potable water is available at the site. Secure written permission for connection and use from Owner and meet requirements for use. Contractor shall pay cost to connect water during construction. Owner shall pay cost to for water used during construction.
2. Include costs to connect and transport water to construction areas in Contract Price.
3. Provide a means to prevent water used for testing from flowing back into source pipeline.

E. Sanitary and Personnel Facilities:

1. Provide and maintain facilities for Contractor's employees, Subcontractors, and all other onsite employers' employees. Service, clean, and maintain facilities and enclosures.

F. Fire Protection: Furnish and maintain on Site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241).

3.2 PROTECTION OF WORK AND PROPERTY

A. General:

1. Provide continuous access for livestock through farm areas. Do not cut off ready access to portions of farmlands in which livestock are pastured. Maintain existing fences required to restrain livestock. Keep gates closed and secure.
2. Maintain in continuous service all existing oil and gas pipelines, underground power, telephone or communication cable, water mains, irrigation lines, sewers, poles and overhead power, and all other utilities encountered along line of the Work, unless other arrangements satisfactory to owners of said utilities have been made.
3. Where completion of the Work requires temporary or permanent removal or relocation of existing utility, coordinate all activities with owner of said utility and perform all work to their satisfaction.
4. Protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.
5. In areas where Contractor's operations are adjacent to or near a utility, such as gas, telephone, television, electric power, water, sewer, or irrigation system, and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection have been made by Contractor.
6. Notify property owners and utility offices that may be affected by construction operation at least 2 days in advance: Before exposing a utility, obtain utility owner's permission. Should service of a utility become interrupted due to Contractor's operation, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.
7. Do not impair operation of existing sewer system. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, pump stations, or other sewer structures.
8. Maintain original Site drainage wherever possible.

B. Site Security:

1. Erect a temporary security fence for protection of existing facilities. Maintain fence throughout construction period. Obtain Engineer's written permission before removal of temporary security fencing.
2. Provide and maintain additional temporary security fences as necessary to protect the Work and Contractor-furnished products not yet installed.

C. Barricades, Lights, Signs, and Equipment:

1. Provide as required by the Department of Transportation in the state having jurisdiction and in sufficient quantity to safeguard public and the Work.
2. Provide as necessary to prevent unauthorized entry to construction areas and affected roads, streets, and alleyways, inside and outside of fenced area, and as required to ensure

- public safety and the safety of Contractor's employees, other employer's employees, and others who may be affected by the Work.
 - 3. Provide to protect existing facilities and adjacent properties from potential damage.
 - 4. Locate to enable access by facility operators and property owners.
 - 5. Protect streets, roads, highways, and other public thoroughfares that are closed to traffic by effective barricades with acceptable warning signs.
 - 6. Locate barricades at the nearest intersecting public thoroughfare on each side of the blocked section.
 - 7. Illuminate barricades and obstructions with warning lights from sunset to sunrise.
- D. Trees and Plantings:
- 1. Protect from damage and preserve trees, shrubs, and other plants outside limits of the Work and within limits of the Work, which are designated on the Drawings to remain undisturbed.
- E. Existing Structures:
- 1. Where Contractor contemplates removal of small structures such as mailboxes, signposts, and culverts that interfere with Contractor's operations, obtain approval of property owner and Engineer.
 - 2. Move mailboxes to temporary locations accessible to postal service.
 - 3. Replace items removed in their original location and a condition equal to or better than original.
- F. Finished Construction: Protect finished floors and concrete floors exposed as well as those covered with composition tile or other applied surfacing.
- G. Waterways: Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.
- H. Dewatering: Construct, maintain, and operate cofferdams, channels, flume drains, sumps, pumps, or other temporary diversion and protection works. Furnish materials required, install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work. Maintain foundations and parts of the Work free from water.

3.3 TEMPORARY CONTROLS

- A. Air Pollution Control:
- 1. Minimize air pollution from construction operations.
 - 2. Burning: Of waste materials, rubbish, or other debris will not be permitted on or adjacent to Site.
 - 3. Conduct operations of dumping rock and of carrying rock away in trucks to cause a minimum of dust. Give unpaved streets, roads, detours, or haul roads used in construction area a dust-preventive treatment or periodically water to prevent dust. Strictly adhere to applicable environmental regulations for dust prevention.
 - 4. Provide and maintain temporary dust-tight partitions, bulkheads, or other protective devices during construction to permit normal operation of existing facilities. Construct partitions of plywood, insulating board, plastic sheets, or similar material. Construct partitions in such a manner that dust and dirt from demolition and cutting will not enter other parts of existing building or facilities. Remove temporary partitions as soon as need no longer exists.
- B. Noise Control:
- 1. Noise Control Plan: Propose plan to mitigate construction noise and to comply with noise control ordinances, including method of construction, equipment to be used, and acoustical treatments.

- C. Water Pollution Control:
1. Divert sanitary sewage and non-storm waste flow interfering with construction and requiring diversion to sanitary sewers. Do not cause or permit action to occur which would cause an overflow to existing waterway.
 2. Prior to commencing excavation and construction, obtain Engineer's agreement with detailed plans showing procedures intended to handle and dispose of sewage, groundwater, and storm water flow, including dewatering pump discharges.
 3. Comply with procedures outlined in U.S. Environmental Protection Agency manuals entitled, "Guidelines for Erosion and Sedimentation Control Planning," "Implementation, Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity," and "Erosion and Sediment Control- Surface Mining in Eastern United States."
 4. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.
- D. Erosion, Sediment, and Flood Control: Provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period.

3.4 STORAGE YARDS AND BUILDINGS

- A. Coordinate requirements with Section 01 60 00, PRODUCT REQUIREMENTS.
- B. Temporary Storage Yards: Construct temporary storage yards for storage of products that are not subject to damage by weather conditions.
- C. Temporary Storage Buildings:
1. Provide environmental control systems that meet recommendations of manufacturers of equipment and materials stored.
 2. Arrange or partition to provide security of contents and ready access for inspection and inventory.
 3. Store combustible materials (paints, solvents, fuels) in a well-ventilated and remote building meeting safety standards.
 4. Provide, at a minimum, one temporary storage building or storage trailer to house specified spare part during the duration of construction and until spare parts are accepted by Owner and Engineer.

3.5 ACCESS ROADS

- A. Construct access roads as required and within easements, rights-of-way, or Project limits. Obtain Engineer's approval of access roads.
- B. Maintain drainage ways. Install and maintain culverts to allow water to flow beneath access roads. Provide corrosion-resistant culvert pipe of adequate strength to resist construction loads.
- C. Provide gravel, crushed rock, or other stabilization material to permit access by all motor vehicles at all times.
- D. Maintain road grade and crown to eliminate potholes, rutting, and other irregularities that restrict access.
- E. Coordinate with Engineer detours and other operations affecting traffic and access. Provide at least 72 hours notice to Engineer of operations that will alter access to the Site.

- F. Where access road crosses existing fences, install and maintain gates.
- G. Upon completion of construction, restore ground surface disturbed by access road construction to original grade. Replace damaged or broken culverts with new culvert pipe of same diameter and material.

3.6 PARKING AREAS

- A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations.
- B. Provide parking facilities for personnel working on the Project. No employee or equipment parking will be permitted on Owner's existing parking areas, except as specifically designated for Contractor's use.

3.7 VEHICULAR TRAFFIC

- A. Comply with Laws and Regulations regarding closing or restricting use of public streets or highways. No public or private road shall be closed, except by written permission of proper authority. Assure the least possible obstruction to traffic and normal commercial pursuits.
- B. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.
- C. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.
- D. Coordinate traffic routing with that of others working in same or adjacent areas.

3.8 CLEANING DURING CONSTRUCTION

- A. In accordance with General Conditions, as may be specified in other Specification sections, and as required herein.
- B. Wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris. At least weekly, sweep all floors (basins, tunnels, platforms, walkways, roof surfaces), and pick up all debris and dispose.
- C. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least at weekly intervals, dispose of such waste materials, debris, and rubbish offsite.
- D. At least weekly, brush sweep entry drive and roadways, and all other streets and walkways affected by the Work and where adjacent to the Work.

END OF SECTION

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 DEFINITIONS

A. Products:

1. New items for incorporation in the Work whether purchased by Contractor or Owner for the Project, or taken from previously purchased stock and may also include existing materials or components required for reuse.
2. Includes the terms material, equipment, machinery, components, subsystem, system, hardware, software, and terms of similar intent and is not intended to change meaning of such other terms used in Contract Documents, as those terms are self-explanatory and have well recognized meanings in construction industry.
3. Items identified by Manufacturer's product name, including make or model designation, indicated in Manufacturer's published product literature, that is current as of the date of the Contract Documents.

1.2 DESIGN REQUIREMENTS

- A. Where Contractor design is specified, design of installation, systems, equipment, and components, including supports and anchorage, shall be in accordance with provisions of latest edition of International Building Code (IBC) by International Code Council.

1.3 ENVIRONMENTAL REQUIREMENTS

- A. Altitude: Provide materials and equipment suitable for installation and operation under rated conditions at elevations shown on Drawings.
- B. Provide equipment and devices installed outdoors or in unheated enclosures capable of continuous operation within an ambient temperature range of 0 °F to 104 °F.

1.4 PREPARATION FOR SHIPMENT

- A. When practical, have the factory assemble products, mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with strippable protective coating.
- B. Package products to facilitate handling and protect from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, name of Project and Contractor, equipment number, and approximate weight. Include complete packing list and bill of materials with each shipment.
- C. Extra Materials, Special Tools, Test Equipment, and Expendables:
 1. Furnish as Required by Individual Specifications.
 2. Schedule:
 - a. Ensure that shipment and delivery occur concurrently with shipment of associated equipment.
 - b. Transfer to Owner shall occur immediately subsequent to Contractor's acceptance of equipment from Supplier.
 3. Packaging and Shipment:
 - a. Package and ship extra materials and special tools to avoid damage during long term storage in original cartons insofar as possible, or in appropriately sized, hinged-cover, wood, plastic, or metal box.
 - b. Prominently Displayed on Each Package, the Following:

- 1). Manufacturer's part nomenclature and number, consistent with Operation and Maintenance Manual identification system.
 - 2). Applicable equipment description.
 - 3). Quantity of parts in package.
 - 4). Equipment manufacturer.
 4. Deliver materials to the site.
 5. Notify Engineer upon arrival for transfer of materials.
 6. Replace extra materials and special tools found to be damaged or otherwise inoperable at time of transfer to Owner.
- D. Request a minimum 7-day advance notice of shipment from manufacturer. Upon receipt of Manufacturer's advance notice of shipment, promptly notify Engineer of anticipated date of equipment arrival.
- E. Factory Test Results: Reviewed and accepted by Engineer before product shipment as required in individual Specification sections.

1.5 DELIVERY AND INSPECTION

- A. Deliver products in accordance with accepted current Progress Schedule and coordinate to avoid conflict with the Work and conditions at Site. Deliver anchor bolts and templates sufficiently early to permit setting prior to placement of structural concrete.
- B. Deliver products in undamaged condition, in Manufacturer's original container or packaging, with identifying labels intact and legible. Include on label, date of manufacture and shelf life, where applicable.
- C. Unload products in accordance with Manufacturer's instructions for unloading or as specified, and record receipt of products at Site. Promptly inspect for completeness and evidence of damage during shipment.
- D. Remove damaged products from Site, and expedite delivery of identical new undamaged products, and remedy incomplete or lost products to provide that specified, so as not to delay progress of the Work.

1.6 HANDLING, STORAGE, AND PROTECTION

- A. Handle and store products in accordance with Manufacturer's written instructions and in a manner to prevent damage. Store in approved storage yards or sheds provided in accordance with Section 01 50 00, TEMPORARY FACILITIES AND CONTROLS. Provide Manufacturer's recommended maintenance during storage, installation, and until products are accepted for use by Owner.
- B. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration. Keep running account of products in storage to facilitate inspection and to estimate progress payments for products delivered, but not installed in the Work.
- C. Store electrical, instrumentation, and control products, and equipment with bearings in weather-tight structures maintained above 60 °F. Protect electrical, instrumentation, and control products, and insulation against moisture, water, and dust damage. Connect and operate continuously all space heaters furnished in electrical equipment.

- D. Store fabricated products above ground on blocking or skids, prevent soiling or staining, and store loose granular materials in well-drained area on solid surface to prevent mixing with foreign matter. Cover products that are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.
- E. Store finished products that are ready for installation in dry and well-ventilated areas. Do not subject to extreme changes in temperature or humidity.
- F. After installation, provide coverings to protect products from damage due to traffic and construction operations. Remove coverings when no longer needed.
- G. Hazardous Materials: Prevent contamination of personnel, storage building, and Site. Meet requirements of product specification, codes, and manufacturer's instructions.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide the Manufacturers standard materials suitable for service conditions unless otherwise specified in the individual Specifications.
- B. Where product specifications include a named Manufacturer, with or without model number, and also include performance requirements, named Manufacturer's products must meet the performance specifications.
- C. Like items of products furnished and installed in the Work shall be end products of one Manufacturer and of the same series or family of models to achieve standardization for appearance, operation and maintenance, spare parts and replacement, Manufacturer's services, and implement same or similar process instrumentation and control functions in same or similar manner.
- D. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.
- E. Provide interchangeable components of the same Manufacturer, for similar components, unless otherwise specified.
- F. Equipment, components, systems, sub-systems: Design and manufacture with due regard for health and safety of operation, maintenance, and accessibility, durability of parts, and shall comply with applicable OSHA, State, and local health and safety regulations.
- G. Regulatory Requirement: Coating materials shall meet Federal, State, and local requirements limiting the emission of volatile organic compounds and for worker exposure.
- H. Safety Guards: Provide for all belt or chain drives, fan blades, couplings, or other moving or rotary parts. Cover rotating part on all sides. Design for easy installation and removal. Use 16-gauge or heavier; galvanized steel, aluminum coated steel, or galvanized or aluminum coated ½" mesh expanded steel. Provide galvanized steel accessories and supports, including bolts. For outdoors application, prevent entrance of rain and dripping water.
- I. Authority Having Jurisdiction (AHJ):
 - 1. Provide the Work in accordance with the Texas Fire Code that incorporates the 2015 International Building Code [with Texas Amendments]. Where required by the AHJ, material and equipment shall be labeled or listed by a nationally recognized testing

laboratory or other organization acceptable to the AHJ in order to provide a basis for approval under NEC.

2. Materials and equipment manufactured within the scope of standards published by Underwriters Laboratories, Inc. shall conform to those standards and shall have an applied UL listing mark.

J. Equipment Finish:

1. Provide Manufacturer's standard finish and color, except where specific color is indicated.
2. If Manufacturer has no standard color, provide equipment with gray finish as approved by Engineer.

- K. Special Tools and Accessories: Furnish to Owner, upon acceptance of equipment, all accessories required to place each item of equipment in full operation. These accessory items include, but are not limited to, adequate oil and grease (as required for first lubrication of equipment after field testing), light bulbs, fuses, hydrant wrenches, valve keys, hand wheels, chain operators, special tools, and other spare parts as required for maintenance.

- L. Lubricant: Provide initial lubricant recommended by equipment Manufacturer in sufficient quantity to fill lubricant reservoirs and to replace consumption during testing, startup, and operation until final acceptance by Owner.

2.2 FABRICATION AND MANUFACTURE

A. General:

1. Manufacture parts to U.S.A. standard sizes and gauges.
2. Two or more items of the same type shall be identical, by the same Manufacturer, and interchangeable.
3. Design structural members for anticipated shock and vibratory loads.
4. Use 1/4" minimum thickness for steel that will be submerged, wholly or partially, during normal operation.
5. Modify standard products as necessary to meet performance Specifications.

B. Lubrication System:

1. Require no more than weekly attention during continuous operation.
2. Convenient and accessible. Oil drains with bronze or stainless steel valves and fill-plugs easily accessible from the normal operating area or platform.
3. Locate drains to allow convenient collection of oil during oil changes without removing equipment from its installed position.
4. Provide constant-level oilers or oil level indicators for oil lubrication systems.
5. For grease type bearings, which are not easily accessible, provide and install stainless steel tubing; protect and extend tubing to convenient location with suitable grease fitting.

2.3 SOURCE QUALITY CONTROL

- A. Where Specifications call for factory testing to be witnessed by Engineer, notify Engineer not less than 14 days prior to scheduled test date, unless otherwise specified.
- B. Calibration Instruments: Bear the seal of a reputable laboratory certifying instrument has been calibrated within the previous 12 months to a standard endorsed by the National Institute of Standards and Technology (NIST).
- C. Factory Tests: Perform in accordance with accepted test procedures and document successful completion.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect materials and equipment for signs of pitting, rust decay, or other deleterious effects of storage. Do not install material or equipment showing such effects. Remove damaged material or equipment from the Site and expedite delivery of identical new material or equipment. Delays to the Work resulting from material or equipment damage that necessitates procurement of new products will be considered delays within Contractor's control.

3.2 INSTALLATION

- A. Equipment Drawings show general locations of equipment, devices, and raceway, unless specifically dimensioned.
- B. No shimming between machined surfaces is allowed.
- C. Install the Work in accordance with NECA Standard of Installation, unless otherwise specified.
- D. Repaint painted surfaces that are damaged prior to equipment acceptance.
- E. Do not cut or notch any structural member or building surface without specific approval of Engineer.
- F. Handle, install, connect, clean, condition, and adjust products in accordance with Manufacturer's instructions, and as may be specified. Retain a copy of Manufacturers' instruction at Site, available for review at all times.
- G. For material and equipment specifically indicated or specified to be reused in the Work:
 - 1. Use special care in removal, handling, storage, and reinstallation to assure proper function in the completed Work.
 - 2. Arrange for transportation, storage, and handling of products that require offsite storage, restoration, or renovation. Include costs for such Work in the Contract Price.

3.3 FIELD FINISHING

- A. In accordance with Section 09 90 00, PAINTING AND PROTECTIVE COATINGS and individual Specification sections.

3.4 ADJUSTMENT AND CLEANING

- A. Perform required adjustments, tests, operation checks, and other startup activities.

3.5 LUBRICANTS

- A. Fill lubricant reservoirs and replace consumption during testing, startup, and operation prior to acceptance of equipment by Owner.

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 73 20 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Cutting and patching existing and new construction.
- B. Related sections:
 - 1. Section 01 33 00 – Submittal Procedures.
 - 2. Section 01 60 00 – Product Requirements.

1.2 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Cutting and Patching Plan:
 - 1. Submit details of proposed construction before cutting and patching construction commences affecting:
 - a. Work of Owner or of others.
 - b. Structural integrity of element of Project.
 - 2. Cutting and Patching Plan shall include the Following:
 - a. Identification of Work.
 - b. Description of affected construction.
 - c. Necessity for cutting, patching, alteration, or excavation.
 - d. Description of proposed construction.
 - e. Scope of cutting, patching, alteration, or excavation. Verify locations of utilities and facilities which may exist by consulting with the Owner, utility companies, and the Texas One Call System or other service available in area of Project.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with specifications and standards for products involved.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Provide adequate temporary support as necessary to ensure structural integrity of affected portion of Work.
- B. Provide devices and methods to protect other portions of Project from damage and persons from injury.
- C. Provide protection from elements for that portion of Project which may be exposed by cutting and patching, and maintain excavations free from water.

3.2 CUTTING AND PATCHING

- A. Cut, Fit, and Patch when Required to:
 - 1. Make its several parts fit together properly.
 - 2. Remove and replace construction not conforming to Contract Documents.
 - 3. Remove samples of installed construction as specified for testing.

4. Provide routine penetrations of nonstructural surfaces for installation of piping and electrical conduit.
- B. Execute cutting and demolition by methods which will prevent damage and will provide proper surfaces to receive installation of repairs.
- C. Openings in Existing Concrete and Masonry:
1. Create Openings by:
 - a. Saw cutting completely through concrete or masonry, or
 - b. Scoring edges of opening with saw to at least 1 inch depth on both surfaces (when accessible) and removing concrete or masonry by chipping.
 2. Do not allow saw cuts to extend beyond limits of opening.
 3. Make corners square and true by combination of core drilling and grinding or chipping.
 4. Prevent debris from falling into adjacent tanks or channels in service or from damaging existing equipment and other facilities.
- D. Sizing of Openings in Existing Concrete or Masonry:
1. Make openings sufficiently large to permit final alignment of pipe and fittings without deflections.
 2. Allow adequate space for packing around pipes and conduit to ensure water tightness.
- E. Grouting Pipes in Place:
1. Sandblast concrete surfaces and thoroughly clean sand and other foreign material from surfaces prior to placing grout.
 2. Grout pipes, sleeves, castings, and conduits in place by pouring grout under a head of at least 4 inches. Vibrate grout into place. Completely fill the spaces occupied by pipes, sleeves, castings, and conduits.
 3. Water cure the grout.
- F. Connections to Existing Pipes:
1. Cut existing pipe square.
 2. Properly prepare the ends for the connection indicated on the Drawings.
 3. Repair any damage to existing lining and coating.
- G. Rehabilitate all areas affected by removal of existing equipment, equipment pads and bases, piping, supports, electrical panels, electric devices, and conduits such that little or no evidence of the previous installation remains:
1. Fill areas in existing floors, walls, and ceilings from removed piping, conduit and fasteners with non-shrink grout and finish smooth.
 2. Remove Concrete Bases for Equipment and Supports by:
 - a. Saw cutting clean, straight lines with a depth equal to the concrete cover over reinforcement minus 1/2 inch below finished surface. Do not cut existing reinforcement on floors.
 - b. Chip concrete within scored lines and cut exposed reinforcing steel and anchor bolts.
 - c. Patch with non-shrink grout to match adjacent grade and finish.
 3. Terminate abandoned piping and conduits with blind flanges, caps, or plugs.
- H. Treat Existing Concrete Reinforcement as Follows:
1. Where existing reinforcement is to remain, protect, clean, and extend into new concrete.
 2. Where Existing Reinforcement is not to be Retained, Cut Off as Follows:
 - a. Where new concrete joins existing concrete at the removal line, cut reinforcement flush with concrete surface at the removal line.
 - b. Where concrete surface at the removal line is the finished surface, cut reinforcement 2 inches below the surface, paint ends with epoxy, and patch holes with dry pack mortar.

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 73 80 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Demolition of portions of structures.

1.2 SUBMITTALS

- A. Shop Drawings: Include:
 1. Demolition methods of load bearing structures not indicated on the Drawings, signed and sealed by structural Professional Engineer registered in state where Project is located.
 2. Method of removing embedded relics and antiques.
- B. Submittals for Information Only:
 1. Permits and notices authorizing demolition.
 2. Certificates of severance of utility services.
 3. Permit for transport and disposal of debris.
 4. Demolition procedures and operational sequence.
- C. Project Record Documents: Include locations of service lines and capped utilities.

1.3 REGULATORY REQUIREMENTS

- A. Dispose of debris in accordance with governing regulatory agencies.
- B. Comply with applicable air pollution control regulations.
- C. Obtain permits for building demolition, transportation of debris to disposal site and dust control.

1.4 PREPARATION

- A. Obtain permission from adjacent property Owner's when outriggers, swinging cranes, and other equipment may have to traverse adjacent property.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not interfere with use of adjacent buildings. Maintain free and safe passage to and from all areas.
- B. Prevent movement, settlement or collapse of structures adjacent services, sidewalks, driveways and trees. Provide and place bracing or shoring. Assume liability for movement, settlement or collapse. Promptly repair damage.
- C. Cease operations and notify Engineer immediately when safety of structure appears to be endangered. Take precautions to properly support structure. Do not resume operations until safety is restored.
- D. Provide erect and maintain barricades, lighting, guardrails, and protective devices as required to protect building occupants, general public, workers, and adjoining property.

1.6 EXISTING SERVICES

- A. Arrange and pay for capping and plugging utility services. Disconnect and stub off. Notify affected utility company in advance and obtain approval before starting demolition.
- B. Place markers to indicate location of disconnected services.

1.7 MAINTAINING TRAFFIC

- A. Do not close or obstruct roadways without permits.
- B. Conduct operations with minimum interference to public or private roadways.

1.8 MATERIALS

- A. Materials and Equipment to be Retained by Owner:
 - 1. Embedded relics and antiques such as cornerstones, cornerstone contents, commemorative plaques and tablets.
 - 2. Horizontal Split-Case Pumps.
 - 3. All Valves and Operators, 4" size and larger.
- B. Materials and Equipment to be Re-Installed:
 - 1. Existing generator at the Celina Road Pump Station (as shown on the drawings) is to be relocated to the Public Works building located at the address noted on the drawings.
- C. Contractor shall furnish all materials, tools, equipment, devices, appurtenances, facilities, and services required for performing selective demolition work on:
 - 1. Decommissioned Downtown pump station building
 - 2. Decommissioned Downtown ground storage tank and associated piping and valves
- D. Erect weatherproof closures for exterior openings. Maintain exit requirements.
- E. Erect and maintain dustproof partitions as required to prevent spread of dust, fumes and smoke to other parts of building. On completion, remove partitions and repair damaged surfaces to match adjacent surfaces.
- F. Protect interior of building from rain and water damage.
- G. Provide and maintain protective devices to prevent injury from falling objects.
- H. Post clearly visible warning signs.
- I. Cause as little inconvenience to ongoing facility operations and to adjacent occupied building areas as possible.
- J. Protect benchmarks and existing construction to remain from damage or displacement.
- K. Carefully remove designated materials and equipment to be retained by Owner or re-installed. Deliver materials and equipment when and where directed by Engineer. Store and protect materials and equipment to be re-installed.

1.9 DEMOLITION

- A. Demolish designated portions of structures and appurtenances in orderly and careful manner.

- B. Assume possession of demolished materials, unless specified otherwise. Remove demolished materials from site at least weekly.
- C. Prevent airborne dust. Use water or dust palliative when necessary. Provide and maintain hoses and connections to water main or hydrant.
- D. Do not burn materials on site.
- E. Remove tanks and service piping from site.
- F. Immediately upon discovery, remove, and dispose of contaminated, vermin infested, or dangerous materials by safe means so as not to endanger health of workers and public.
- G. Remove trees and shrubs within marked areas, clear undergrowth and dead plant material as specified in Division 02.
- H. Backfill open pits and holes caused by demolition as specified in Division 02. Contractor acknowledges with his bid that contractor will procure and import material as required to complete appropriate backfilling of the open pits and holes caused by demolition.
- I. Rough grade areas affected by demolition.
- J. Remove demolished materials, tools, and equipment upon completion of demolition.
- K. Plug and or cap all disconnected, remaining piping that is not designated to be demolished completely.
- L. Plug and or cap all disconnected remaining conduit that is not designated to be demolished completely,

1.10 SPECIFIC DEMOLITION

- A. The demolition efforts will include but not be limited to the following:
 1. Existing Downtown pump station building and SCADA room.
 2. Existing Downtown Ground Storage Tank and associated piping.
- B. Contractor shall coordinate with Owner to have Owner's staff to remove all treatment chemicals including chlorine canisters prior to initiating demolition activities in associated areas.
- C. Supplementary Condition 5.03.A.2 details the prior design documents that the Owner is making available for the Contractor's reference in detailing the demolition scope for the project's demolition elements. The Owner does not certify the accuracy of these design documents in detailing the actual conditions at the facility site. The Contractor agrees that with his bid the Contractor's site visits and the Contractor's investigations have carefully and completely documented the details and required scope for all demolition activities. With his bid, the Contractor agrees that his investigations have coordinated the actual site conditions as compared to the available prior design documents.

1.11 REPAIR

- A. Repair damage caused by demolition. The Contractor shall take appropriate precautions to protect existing facilities, structures, piping, mechanical equipment, and electrical equipment, which are to remain in service during the course of construction. In the event of damage, the Contractor shall make the necessary repairs to place the facilities back in service at no increase in the contract price. Such repairs shall be made to the satisfaction of the Owner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 75 60 - TESTING, TRAINING, AND FACILITY START-UP

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Requirements for equipment and system testing and facility start up, including the following:
 - 1. Start-Up Plan.
 - 2. Performance Testing.
 - 3. General Start-Up and Testing Procedures.
 - 4. Functional Testing.
 - 5. Operational Testing.
 - 6. Certificate of Proper Installation.
 - 7. Services of manufacturer's representatives.
 - 8. Training of Owner's personnel.
 - 9. Final testing requirements for the complete facility.
- B. Related sections, include but not limited to:
 - 1. Section 23 05 93 – HVAC Systems Testing, Adjusting and Balancing
 - 2. Section 26 05 00 – Common Work Results for Electrical
 - 3. Section 44 42 56.43 – Horizontal End Suction Centrifugal Pumps
 - 4. Section 44 42 57 – Vertical Split Case Centrifugal Pumps

1.2 GENERAL TESTING, TRAINING, AND START-UP REQUIREMENTS

- A. Contract Requirements: Testing, training, and start-up are requisite to the satisfactory completion of the Contract.
- B. Complete testing, training, and start-up within the Contract Times.
- C. Allow realistic durations in the Progress Schedule for testing, training, and start-up activities.
- D. Furnish labor, power, chemicals, tools, equipment, instruments, and services required for and incidental to completing functional testing, performance testing, and operational testing.
- E. Provide competent, experienced technical representatives of equipment manufacturers for assembly, installation and testing guidance, and operator training.

1.3 START-UP PLAN

- A. Submit start-up plan for each piece of equipment and each system not less than 3 weeks prior to planned initial start-up of equipment or system.
- B. Provide detailed sub-network of Progress Schedule with the following activities identified:
 - 1. Manufacturer's services.
 - 2. Installation certifications.
 - 3. Operator training.
 - 4. Submission of Operation and Maintenance Manual.
 - 5. Functional testing.
 - 6. Performance testing.
 - 7. Operational testing.

- C. Provide testing plan with test logs for each item of equipment and each system when specified. Include testing of alarms, control circuits, capacities, speeds, flows, pressures, vibrations, sound levels, and other parameters.
- D. Provide summary of shutdown requirements for existing systems which are necessary to complete start-up of new equipment and systems.
- E. Revise and update start-up plan based upon review comments, actual progress, or to accommodate changes in the sequence of activities.

1.4 PERFORMANCE TESTING

- A. Test equipment for proper performance at point of manufacture or assembly when specified.
- B. When Source Quality Control Testing is Specified:
 - 1. Demonstrate equipment meets specified performance requirements.
 - 2. Provide certified copies of test results.
 - 3. Do not ship equipment until certified copies have received written acceptance from Engineer. Written acceptance does not constitute final acceptance.
 - 4. Perform testing as specified in the equipment specification sections.

1.5 GENERAL START-UP AND TESTING PROCEDURES

- A. Mechanical Systems: As specified in the individual equipment specification sections:
 - 1. Remove rust preventatives and oils applied to protect equipment during construction.
 - 2. Flush lubrication systems and dispose of flushing oils. Recharge lubrication system with lubricant recommended by manufacturer.
 - 3. Flush fuel system and provide fuel for testing and start-up.
 - 4. Install and adjust packing, mechanical seals, O-rings, and other seals. Replace defective seals.
 - 5. Remove temporary supports, bracing, or other foreign objects installed to prevent damage during shipment, storage, and erection.
 - 6. Check rotating machinery for correct direction of rotation and for freedom of moving parts before connecting driver.
 - 7. Perform cold alignment and hot alignment to manufacturer's tolerances.
 - 8. Adjust V-belt tension and variable pitch sheaves.
 - 9. Inspect hand and motorized valves for proper adjustment. Tighten packing glands to insure no leakage, but permit valve stems to rotate without galling. Verify valve seats are positioned for proper flow direction.
 - 10. Tighten leaking flanges or replace flange gasket. Inspect screwed joints for leakage.
 - 11. Install gratings, safety chains, handrails, shaft guards, and sidewalks prior to operational testing.
- B. Electrical Systems: As specified in Division 26 and the individual equipment specification sections:
 - 1. Perform insulation resistance tests on wiring except 120 volt lighting, wiring, and control wiring inside electrical panels.
 - 2. Perform continuity tests on grounding systems.
 - 3. Test and set switchgear and circuit breaker relays for proper operation.
 - 4. Perform direct current high potential tests on all cables that will operate at more than 2,000 volts. Obtain services of independent testing lab to perform tests.
 - 5. Check motors for actual full load amperage draw. Compare to nameplate value.
- C. Instrumentation Systems: As specified in Division 26 and the individual equipment specification sections:

1. Bench or field calibrate instruments and make required adjustments and control point settings.
2. Leak test pneumatic controls and instrument air piping.
3. Energize transmitting and control signal systems, verify proper operation, ranges and settings.

1.6 FUNCTIONAL TESTING

- A. Perform checkout and performance testing as specified in the individual equipment specification sections.
- B. Functionally test mechanical and electrical equipment, and instrumentation and controls systems for proper operation after general start-up and testing tasks have been completed.
- C. Demonstrate proper rotation, alignment, speed, flow, pressure, vibration, sound level, adjustments, and calibration. Perform initial checks in the presence of and with the assistance of the manufacturer's representative.
- D. Demonstrate proper operation of each instrument loop function including alarms, local and remote controls, instrumentation and other equipment functions. Generate signals with test equipment to simulate operating conditions in each control mode.
- E. Conduct continuous 8-hour test under full load conditions. Replace parts which operate improperly.

1.7 OPERATIONAL TESTING

- A. After completion of operator training, conduct operational test of the entire facility. Demonstrate satisfactory operation of equipment and systems in actual operation.
- B. Conduct operational test for continuous 7-day period.
- C. Owner will provide operations personnel, power, fuel, and other consumables for duration of each specified test.
- D. Immediately correct defects in material, workmanship, or equipment which became evident during operational test.
- E. Repeat operational test when malfunctions or deficiencies cause shutdown or partial operation of the facility or results in performance that is less than specified.

1.8 CERTIFICATE OF PROPER INSTALLATION

- A. At completion of Functional Testing, furnish written report prepared and signed by manufacturer's authorized representative, certifying equipment:
 1. Has been properly installed, adjusted, aligned, and lubricated.
 2. Is free of any stresses imposed by connecting piping or anchor bolts.
 3. Is suitable for satisfactory full-time operation under full load conditions.
 4. Operates within the allowable limits for vibration.
 5. Controls, protective devices, instrumentation, and control panels furnished as part of the equipment package are properly installed, calibrated, and functioning.
 6. Control logic for start-up, shutdown, sequencing, interlocks, and emergency shutdown have been tested and are properly functioning.

- B. Furnish written report prepared and signed by the electrical and/or instrumentation subcontractor certifying:
 1. Motor control logic that resides in motor control centers, control panels, and circuit boards furnished by the electrical and/or instrumentation subcontractor has been calibrated and tested and is properly operating.
 2. Control logic for equipment start-up, shutdown, sequencing, interlocks and emergency shutdown has been tested and is properly operating.
 3. Co-sign the reports along with the manufacturer's representative and subcontractors.

1.9 TRAINING OF OWNER'S PERSONNEL

- A. Provide operations and maintenance training for items of mechanical, electrical and instrumentation equipment. Utilize manufacturer's representatives to conduct training sessions.
- B. Coordinate training sessions to prevent overlapping sessions. Arrange sessions so that individual operators and maintenance technicians do not attend more than 2 sessions per week.
- C. Provide Operation and Maintenance Manual for specific pieces of equipment or systems 1 month prior to training session for that piece of equipment or system.
- D. Satisfactorily complete functional testing before beginning operator training.
- E. Training Sessions: Provide training sessions for equipment as specified in the individual equipment specification sections.
- F. The Contractor shall videotape all training sessions and provide a copy for the Owner.
- G. The Contractor shall designate and provide one or more persons to be responsible for coordinating and expediting his/her training duties. The person or persons so designated shall be present at all training coordination meetings with the Owner.
- H. The Contractor's coordinator shall coordinate the training periods with Owner personnel and manufacturer's representatives, and shall submit a training schedule for each piece of equipment or system for which training is to be provided. Such training schedule shall be submitted not less than 21 calendar days prior to the time that the associated training is to be provided and shall be based on the current plan of operation.

1.10 RECORD KEEPING

- A. Maintain and submit following records generated during start-up and testing phase of Project:
 1. Daily logs of equipment testing identifying all tests conducted and outcome.
 2. Logs of time spent by manufacturer's representatives performing services on the job site.
 3. Equipment lubrication records.
 4. Electrical phase, voltage, and amperage measurements.
 5. Insulation resistance measurements.
 6. Data sheets of control loop testing including testing and calibration of instrumentation devices and setpoints.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of the required closeout procedures for the project:
 - 1. Providing and delivering informational submittals.
 - 2. Preparing, maintaining, providing and delivering Record Documents.
 - 3. Furnishing Releases from Agreements.
 - 4. Furnishing Evidence of Compliance with Requirements of Governing Authorities.
 - 5. Providing Warranties and Bonds.
 - 6. Providing Certificate of Final Completion.
- B. Related sections:
 - 1. 01 29 00 – Payment Procedures.
 - 2. 01 78 23 – Operation and Maintenance Data.
 - 3. 01 79 00 – Demonstration and Training.

1.2 SUBMITTALS

- A. Informational Submittals:
 - 1. Submit Prior to Application for Final Payment.
 - a. Record Documents: As required in General Conditions.
 - b. Approved Shop Drawings and Samples: As required in the General Conditions.
 - c. Operations and Maintenance Manuals: In accordance with Section 01 78 23, and as required in individual Specification sections.
 - d. Certificates of Testing and Inspection: As required in the General Conditions, these General Requirements sections, and the individual Specifications sections.
 - e. Training Sessions: In accordance with Section 01 79 00, and individual Specifications sections.
 - f. Certificate of Substantial Completion.
 - g. Special bonds, Special Guarantees, and Service Agreements.
 - 2. Form of Submittal:
 - a. Bind in commercial quality 8-1/2" by 11" three ring, side binders with hardback, cleanable, plastic covers.
 - 1). Label cover of each binder with typed or printed title Warranties and Bonds, with title of Project; name; address, and telephone number of Contractor and equipment Supplier, and name of responsible principal.
 - 2). Table of Contents: Neatly typed, in the sequence of the of the Project Manual, with each item identified with the number and title of the Specification section in which specified, and the name of the product or Work item.
 - 3). Separate each warranty or Bond with index tab sheets keyed to the Table of Contents. Provide full information, using separate typed sheets as necessary. List Subcontractor, Supplier, and Manufacturer, with name, address, and telephone number of responsible contact for service and warranty issues.
 - 3. Preparation of Submittal:
 - a. Obtain notarized warranties and Bonds, executed in duplicate by responsible Subcontractor, Supplier, and Manufacturer, within 10 days after completion of the applicable item or Work, except for items put into use with Owner's permission, leave date of beginning of time warranty until date of Substantial Completion is determined.
 - 4. Time of Submission: Submit within 10 days after the date of Date of Substantial Completion and prior to submission of Final Application of Payment.
 - a. Spare parts and special tools as required by individual Specification sections.
 - b. Consent of Surety to Final Payment: As required in General Conditions.

- c. Releases or Waivers of Liens and Claims: As required in General Conditions.
- d. Releases from Agreements.
- e. Final Application for Payment: Submit in accordance with procedures and requirements stated in Section 01 29 00.
- f. Extra Materials: As required by individual Specification sections.

1.3 RECORD DOCUMENTS

- A. Quality Assurance:
 - 1. Furnish qualified and experienced person, whose duty and responsibility shall be to maintain record documents.
 - 2. Accuracy of Records:
 - 3. Coordinate changes within record documents, making legible and accurate entries on each sheet of Drawings and other documents where such entry is required to show change.
 - 4. Purpose of Project record documents is to document factual information regarding aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive Site measurement, investigation, and examination.
 - 5. Make entries within 24 hours after receipt of information that a change in the Work has occurred.
 - 6. Prior to submitting each request for progress payment, request Engineer's review and approval of current status of record documents. Failure to properly maintain, update, and submit record documents may result in a deferral by Engineer to recommend whole or any part of Contractor's Application for Payment, either partial or final.
 - 7. Maintain at Project site, available to Owner and Engineer, one (1) copy of the Contract Documents, shop drawings and other submittals, in good order.

1.4 RELEASES FROM AGREEMENTS

- A. Furnish Owner written releases from property owners or public agencies where side agreements or special easements have been made, or where Contractor's operations have not been kept within the Owner's construction right-of-way.
- B. In the Event Contractor is Unable to Secure Written Releases:
 - 1. Inform Owner of the reasons.
 - 2. Owner or its representatives will examine the Site, and Owner will direct Contractor to complete the Work that may be necessary to satisfy terms of the side agreement or special easement.
 - 3. Should Contractor refuse to perform this Work, Owner reserves right to have it done by separate contract and deduct cost of same from Contract Price, or require Contractor to furnish a satisfactory bond in a sum to cover legal Claims for damages.
 - 4. When Owner is satisfied that the Work has been completed in agreement with Contract Documents and terms of side agreement or special easement, right is reserved to waive requirement for written release if:
 - 5. Contractor's failure to obtain such statement is due to grantor's refusal to sign, and this refusal is not based upon any legitimate Claims that Contractor has failed to fulfill terms of side agreement or special easement, or
 - 6. Contractor is unable to contact or has had undue hardship in contacting grantor.

1.5 EVIDENCE OF COMPLIANCE WITH REQUIREMENTS OF GOVERNING AUTHORITIES

- A. Submit the Following:
 - 1. Certificate of Occupancy.
 - 2. Certificates of Inspection:
 - a. Mechanical.
 - b. Electrical.

1.6 WARRANTIES AND BONDS

- A. Provide executed Warranty or Guaranty Form if required by Contract Documents.
- B. Provide specified additional warranties, guarantees, and bonds from manufacturers and suppliers.

1.7 CERTIFICATE OF FINAL COMPLETION

- A. When 7-day operational test has been successfully completed, Engineer will certify that new facilities are operationally complete. Engineer will submit a list of known items (punch list) still to be completed or corrected prior to contract completion.
- B. List of items to be completed or corrected will be amended as items are resolved by Contractor.
- C. When all items have been completed or corrected, submit written certification that the entire work is complete in accordance with the Contract Documents and request final inspection.
- D. Upon completion of final inspection, Engineer will either prepare a written acceptance of the entire work or advise Contractor of work not complete. If necessary, inspection procedures will be repeated.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 MAINTENANCE OF RECORD DOCUMENTS

- A. General:
 - 1. Promptly following commencement of Contract Times, secure from Engineer at no cost to Contractor, one complete set of Contract Documents. Drawings will be full size.
 - 2. Label or stamp each record document with title, "RECORD DOCUMENTS," in neat large printed letters.
 - 3. Record information concurrently with construction progress and within 24 hours after receipt of information that change has occurred. Do not cover or conceal Work until required information is recorded.
- B. Preservation:
 - 1. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
 - 2. Make documents and Samples available at all times for observation by Engineer.
- C. Making Entries on Drawings:
 - 1. Use an erasable colored pencil (not ink or indelible pencil), clearly describe change by graphic line and note as required.
 - a. Make annotations with erasable colored pencil conforming to the following color code:

Additions:	Red
Deletions:	Green
Comments	Blue
Dimensions:	Graphite
 - 2. Date entries.
 - 3. Call attention to entry by "cloud" drawn around area or areas affected.

4. Legibly mark to record actual changes made during construction.
5. Depths of various elements of foundation in relation to finished first floor data if not shown or where depth differs from that shown.
6. Horizontal and vertical locations of existing and new underground facilities and appurtenances, and other underground structures, equipment, or Work, and Reference to at least two measurements to permanent surface improvements.
7. Location of internal utilities and appurtenances concealed in the construction referenced to visible and accessible features of the structure.
8. Locate existing facilities, piping, equipment, and items critical to the interface between existing physical conditions or construction and new construction.
9. Changes made by Addenda and Field Orders, Work Change Directive, Change Order, and Engineer's written interpretation and clarification using consistent symbols for each and showing appropriate document tracking number.
10. Dimensions on Schematic Layouts: Show on record drawings, by dimension, the centerline of each run of items that are described in previous subparagraph above.
11. Clearly identify the item by accurate note such as "cast iron drain," "galv. water," and the like.
12. Show, by symbol or note, vertical location of item ("under slab," "in ceiling plenum," "exposed," and the like).
13. Make identification so descriptive that it may be related reliably to Specifications.
14. Mark and record field changes and detailed information contained in submittals and change orders.
15. Record actual depths, horizontal and vertical location of underground pipes, duct banks and other buried utilities. Reference dimensions to permanent surface features.
16. Identify specific details of pipe connections, location of existing buried features located during excavation, and the final locations of piping, equipment, electrical conduits, manholes, and pull boxes.
17. Identify location of spare conduits including beginning, ending and routing through pull boxes, and manholes. Record spare conductors, including number and size, within spare conduits, and filled conduits.
18. Provide schedules, lists, layout drawings, and wiring diagrams.

D. Maintain Documents Separate From Those Used for Construction:

1. Label documents "RECORD DOCUMENTS."

E. Keep Documents Current:

1. Record required information at the time the material and equipment is installed and before permanently concealing.

F. Deliver record documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor.

G. During progress meetings, record documents will be reviewed to ascertain that changes have been recorded.

3.2 FINAL CLEANING

A. At completion of the Work or of a part thereof and immediately prior to Contractor's request for certificate of Substantial Completion; or if no certificate is issued, immediately prior to Contractor's notice of completion, clean entire Site or parts thereof, as applicable.

1. Leave the Work and adjacent areas affected in a cleaned condition satisfactory to Owner.
2. Remove grease, dirt, dust, paint or plaster splatter, stains, labels, fingerprints, and other foreign materials from exposed surfaces.
3. Repair, patch, and touch up marred surfaces to specified finish and match adjacent surfaces.
4. Clean all windows.

5. Clean and wax wood, vinyl, or painted floors.
6. Broom clean exterior paved driveways and parking areas.
7. Hose clean sidewalks, loading areas, and others contiguous with principal structures.
8. Rake and clean all other surfaces.
9. Remove snow and ice from access to buildings.
10. Replace air-handling filters and clean ducts, blowers, and coils of ventilation units operated during construction.
11. Leave water courses, gutters, and ditches open and clean.
12. Perform final cleaning prior to inspections for Final Acceptance.
13. Employ skilled workers who are experienced in cleaning operations.
14. Use cleaning materials which are recommended by manufacturers of surfaces to be cleaned.
15. Prevent scratching, discoloring, and otherwise damaging surfaces being cleaned.
16. Clean roofs, gutters, downspouts, and drainage systems.
17. Broom clean exterior paved surfaces and rake clean other surfaces of site work:
 - a. Police yards and grounds to keep clean.
18. Remove dust, cobwebs, and traces of insects and dirt.
19. Clean grease, mastic, adhesives, dust, dirt, stains, fingerprints, paint, blemishes, sealants, plaster, concrete, and other foreign materials from sight-exposed surfaces, and fixtures and equipment.
20. Remove non-permanent protection and labels.
21. Polish waxed woodwork and finish hardware.
22. Wash tile.
23. Wax and buff hard floors, as applicable.
24. Wash and polish glass, inside and outside.
25. Wash and shine mirrors.
26. Polish glossy surfaces to clear shine.
27. Vacuum carpeted and soft surfaces.
28. Clean permanent filters and replace disposable filters when heating, ventilation, and air conditioning units were operated during construction.
29. Clean ducts, blowers and coils when units were operated without filters during construction.
30. Clean light fixtures and replace burned-out or dim lamps.

- B. Use only cleaning materials recommended by Manufacturer of surfaces to be cleaned.

3.3 WASTE DISPOSAL

- A. Arrange for and dispose of surplus materials, waste products, and debris off-site:
 1. Prior to making disposal on private property, obtain written permission from OWNER of such property.
- B. Do not fill ditches, washes, or drainage ways which may create drainage problems.
- C. Do not create unsightly or unsanitary nuisances during disposal operations.
- D. Maintain disposal site in safe condition and good appearance.
- E. Complete leveling and cleanup prior to Final Acceptance of the Work.

3.4 TOUCH-UP AND REPAIR

- A. Touch-up or repair finished surfaces on structures, equipment, fixtures, and installations that have been damaged prior to inspection for Final Acceptance.
- B. Refinish or replace entire surfaces which cannot be touched-up or repaired satisfactorily.

3.5 FINAL CLEANING AND DISINFECTION OF SYSTEMS OF PUMP STATION FACILITIES

- A. Clean pipes and tanks before running of 7-day test, or before facility goes on stream when 7-day test is not required.
- B. Disinfect piping intended to carry potable water as follows or in accordance with American Water Works Association Standards.
- C. Provide ample sampling outlets in pipe for testing.
- D. Fill pipe with chlorine solution of sufficient strength to retain residual of not less than 10 parts per million at end of 24 hours.
- E. After disinfection, rinse entire potable water system with potable water sufficient to reduce chlorine residual to not more than 0.6 parts per million throughout system before system is put into service.

3.6 FINAL CLEANING AND DISINFECTION OF SYSTEMS OF POTABLE WATER MAINS

- A. Clean interior of pipe and fittings.
- B. When pipe contains dirt that cannot be removed by flushing, swab pipe interiors with solution containing not less than 500 parts per million of chlorine until clean.
- C. Flush 12 inch in diameter and smaller pipe as thoroughly as available water sources will permit.
- D. Fill pipe with chlorine solution of sufficient strength to provide 10 parts per million chlorine residual at end of 24 hours.
- E. Flush pipes with potable water until chlorine residual is less than 0.6 parts per million before pipe are put into service.

3.7 CLOSEOUT DOCUMENTS

- A. Submit following Closeout Submittals upon completion of the Work and at least 7 days prior to submitting Application for Final Payment:
 - 1. Evidence of Compliance with Requirements of Governing Authorities.
 - 2. Project Record Documents.
 - 3. Operation and Maintenance Manuals.
 - 4. Warranties and Bonds.
 - 5. Keys and Keying Schedule.
 - 6. Evidence of Payment and Release of Stop Payment Notices as outlined in Conditions of the Contract.
 - 7. Release of claims as outlined in Conditions of the Contract.
 - 8. Survey Record Documents.
 - 9. Certificate of Final Completion.

END OF SECTION

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Summary includes: detailed information for the preparation, submission, and Engineer's review of Operations and Maintenance (O&M) Data, as required by individual Specification sections.
- B. Related sections:
 - 1. Section 01 77 00 – Closeout Procedures.

1.2 DEFINITIONS

- A. Preliminary Data: Initial and subsequent submissions for Engineer's review.
- B. Final Data: Engineer-accepted data, submitted as specified herein.
- C. Maintenance Operation: As used on Maintenance Summary Form is defined to mean any routine operation required to ensure satisfactory performance and longevity of equipment. Examples of typical maintenance operations are lubrication, belt tensioning, adjustment of pump packing glands, and routine adjustments.

1.3 SEQUENCING AND SCHEDULING

- A. Equipment and System Data:
 - 1. Preliminary Data:
 - a. Do not submit until Shop Drawing for equipment or system has been reviewed and approved by Engineer.
 - b. Submit prior to shipment date.
 - 2. Final Data:
 - a. Submit Instructional Manual Formatted data not less than 30 days prior to equipment or system field functional testing.
- B. Materials and Finishes Data:
 - 1. Preliminary Data: Submit at least 15 days prior to request for final inspection.
 - 2. Final Data: Submit within 10 days after final inspection.

1.4 DATA FORMAT

- A. Prepare preliminary data in the form of an instructional manual. Prepare final data in the form of an instructional manual and in electronic media format.
- B. Instructional Manual Format:
 - 1. Binder: Commercial quality, permanent, three-ring or three-post binders with durable plastic cover.
 - 2. Size: 8-1/2" x 11" minimum.
 - 3. Cover: Identify manual with typed or printed title "OPERATION AND MAINTENANCE DATA" and list:
 - a. Project title.
 - b. Designate applicable system, equipment, material, or finish.
 - c. Identity of separate structure as applicable.
 - d. Identity of general subject matter covered in manual.
 - e. Identity of equipment number and Specification section.
 - 4. Title Page:

- a. Contractor name, address, and telephone number.
 - b. Subcontractor, Supplier, installer, or maintenance contractor's name, address, and telephone number, as appropriate.
 - 1). Identify area of responsibility of each.
 - 2). Provide name and telephone number of local source of supply for parts and replacement.
 - 5. Table of Contents:
 - a. Neatly typewritten and arranged in systematic order with consecutive page numbers.
 - b. Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.
 - 6. Paper: 20-pound minimum, white for typed pages.
 - 7. Text: Manufacturer's printed data, or neatly typewritten.
 - 8. Three-hole punched data for binding and composition; arrange printing so that punched holes do not obliterate data.
 - 9. Material shall be suitable for reproduction, with quality equal to original. Photocopying of material will be acceptable, except for material containing photographs.
 - 10. Copies:
 - a. Provide two (2) hard copies (one copy for each pump station) if applicable. Clearly identify the model and serial numbers for all equipment and the location where the equipment is installed (Celina Road pump station or Downtown pump station).
 - b. Also provide one (1) hard copy for each EST site if applicable. Clearly identify the model and serial numbers for all equipment and the location where the equipment is installed (Light Farms EST or Morgan Lake EST).
- C. Electronic Media Format:
- 1. Portable Document Format (PDF):
 - a. After all preliminary data has been found to be acceptable to Engineer, submit Operation and Maintenance data in PDF format on CD.
 - b. Files to be exact duplicates of Engineer-accepted preliminary data. Arrange by specification number and name.
 - c. Files to be fully functional and viewable in most recent version of Adobe Acrobat.
- 1.5 SUBMITTALS
- A. Procedures of Submittal
- 1. Contractor shall:
 - a. Submit all submittals electronically using the **Info Exchange** project website to facilitate the transfer of submittals and related files.
 - b. Submit all required final hard copies and required electronic copies as specified herein.
- B. Informational:
- 1. Data Outline: Submit one electronic copy via the **Info Exchange** website of a detailed outline of proposed organization and contents of Final Data prior to preparation of Preliminary Data.
 - 2. Preliminary Data:
 - a. Submit one electronic copy for Engineer's review.
 - b. If data meets conditions of the Contract:
 - 1). One electronic copy will be returned to Contractor.
 - 1). One electronic copy will be forwarded to Resident Project Representative.
 - 2). One electronic copy will be retained in Engineer's file
 - c. If data does not meet conditions of the Contract:

- 3). One electronic copy will be returned to Contractor with Engineer's comments (on separate document) for revision.
 - 4). Engineer's comments will be retained in Engineer's file.
 - 5). One electronic copy will be retained in Engineer's file.
 - 6). Re-submit one electronic copy revised in accordance with Engineer's comments.
3. Final Data: Submit two hard copies and one electronic copy in each format specified herein.

1.6 DATA FOR EQUIPMENT AND SYSTEMS

A. Content for Each Unit (or Common Units) and System:

1. Product Data:
 - a. Include only those sheets that are pertinent to specific product.
 - b. Clearly annotate each sheet to:
 - 1). Identify specific product or part installed.
 - 2). Identify data applicable to installation.
 - 3). Delete references to inapplicable information.
 - c. Function, normal operating characteristics, and limiting conditions.
 - d. Performance curves, engineering data, nameplate data, and tests.
 - e. Complete nomenclature and commercial number of replaceable parts.
 - f. Original Manufacturer's parts list, illustrations, detailed assembly drawings showing each part with part numbers and sequentially numbered parts list, and diagrams required for maintenance.
 - g. Spare parts ordering instructions.
 - h. Where applicable, identify installed spares and other provisions for future work (e.g., reserved panel space, unused components, wiring, and terminals).
2. As-installed, color-coded piping diagrams.
3. Charts of valve tag numbers, with the location and function of each valve.
4. Drawings: Supplement product data with Drawings as necessary to clearly illustrate:
 - a. Format:
 - 1). Provide reinforced, punched, binder tab; bind in with text.
 - 2). Reduced to 8-1/2" x 11", or 11" x 17" folded to 8-1/2" x 11".
 - 3). Where reduction is impractical, fold and place in 8-1/2" x 11" envelopes bound in text.
 - 4). Identify Specification section and product on Drawings and envelopes.
 - b. Relations of component parts of equipment and systems.
 - c. Control and flow diagrams.
 - d. Coordinate drawings with Project record documents to assure correct illustration of completed installation.
5. Instructions and Procedures: Within text, as required to supplement product data.
 - a. Format:
 - 1). Organize in consistent format under separate heading for each different procedure.
 - 2). Provide logical sequence of instructions for each procedure.
 - 3). Provide information sheet for Owner's personnel, including:
 - a). Proper procedures in event of failure.
 - b). Instances that might affect validity of guarantee or Bond.
 - b. Installation Instructions: Including alignment, adjusting, calibrating, and checking.
 - c. Operating Procedures:

- 1). Startup, break-in, routine, and normal operating instructions.
- 2). Test procedures and results of factory tests where required.
- 3). Regulation, control, stopping, and emergency instructions.
- 4). Description of operation sequence by control Manufacturer.
- 5). Shutdown instructions for both short and extended duration.
- 6). Summer and winter operating instructions, as applicable.
- 7). Safety precautions.
- 8). Special operating instructions.
- d. Maintenance and Overhaul Procedures:
 - 1). Routine maintenance.
 - 2). Guide to troubleshooting.
 - 3). Disassembly, removal, repair, reinstallation, and re-assembly.
6. Guarantee, Bond, and Service Agreement: In accordance with Section 01 77 00, CLOSEOUT PROCEDURES.

B. Content for Each Electric or Electronic Item or System:

1. Description of Unit and Component Parts:
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data, nameplate data, and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
 - d. Interconnection wiring diagrams, including control and lighting systems.
2. Circuit Directories of Panelboards:
 - a. Electrical service.
 - b. Controls.
 - c. Communications.
3. List of electrical relay settings, and control and alarm contact settings.
4. Electrical interconnection wiring diagram, including control and lighting systems.
5. As-installed control diagrams by control Manufacturer.
6. Operating Procedures:
 - a. Routine and normal operating instructions.
 - b. Sequences required.
 - c. Safety precautions.
 - d. Special operating instructions.
7. Maintenance Procedures:
 - a. Routine maintenance.
 - b. Guide to troubleshooting.
 - c. Adjustment and checking.
 - d. List of relay settings, control and alarm contact settings.
8. Manufacturer's printed operating and maintenance instructions.
9. List of original Manufacturer's spare parts, Manufacturer's current prices, and recommended quantities to be maintained in storage.

C. Maintenance Summary:

1. Compile individual Maintenance Summary for each applicable equipment item, respective unit or system, and for components or sub-units.
2. Format: Use only 8-1/2" x 11" size paper.
3. Include detailed lubrication instructions and diagrams showing points to be greased or oiled; recommend type, grade, and temperature range of lubricants and frequency of lubrication.
4. Recommended Spare Parts:
 - a. Data to be consistent with Manufacturer's Bill of Materials/Parts List furnished in O&M manuals.
 - b. "Unit" is the unit of measure for ordering the part.
 - c. "Quantity" is the number of units recommended.
 - d. "Unit Cost" is the current purchase price.

1.7 DATA FOR MATERIALS AND FINISHES

- A. Content for Architectural Products, Applied Materials, and Finishes:
 - 1. Manufacturer's data, giving full information on products:
 - a. Catalog number, size, and composition.
 - b. Color and texture designations.
 - c. Information required for reordering special-manufactured products.
 - 2. Instructions for Care and Maintenance:
 - a. Manufacturer's recommendation for types of cleaning agents and methods.
 - b. Cautions against cleaning agents and methods that are detrimental to product.
 - c. Recommended schedule for cleaning and maintenance.
 - 3. Content for Moisture Protection and Weather Exposed Products:
 - 4. Manufacturer's data, giving full information on products:
 - a. Applicable standards.
 - b. Chemical composition.
 - c. Details of installation.
 - 5. Instructions for inspection, maintenance, and repair.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of the required demonstration and training for the project:
 - 1. Providing and delivering informational submittals.
 - 2. Submitting required qualifications of Manufacturer's Representative.
 - 3. Preparing, maintaining, providing and delivering Manufacturer's Certificate of Compliance and Manufacturer's Certificate of Proper Installation.
 - 4. Furnishing required Training.
 - 5. Furnishing required Equipment Testing, Unit Process and Facility Performance Demonstration.
- B. Related Sections
 - 1. Section 01 31 19 – Project Meetings.
 - 2. Section 01 78 23 – Operation and Maintenance Data.

1.2 DEFINITIONS

- A. Person-Day: One person for 8 hours within regular Contractor working hours.
- B. Facility: Entire Project, or an agreed-upon portion including all unit processes.
- C. Functional Test: Test or tests in presence of Engineer and Owner to demonstrate that installed equipment meets Manufacturer's installation, calibration, and adjustment requirements and other requirements as specified.
- D. Performance Test: Test or tests performed after any required functional test in presence of Engineer and Owner to demonstrate and confirm individual equipment meets performance requirements specified in individual sections.
- E. Unit Process: As used in this Section, a unit process is a portion of the facility that performs a specific process function.
- F. Facility Performance Demonstration:
 - 1. A demonstration, conducted by Contractor, with assistance of Owner, to demonstrate and document the performance of the entire operating facility, manually and automatically (if required), based on criteria developed in conjunction with Owner and as accepted by Engineer.
 - 2. Such demonstration is for the purposes of:
 - a. Verifying to Owner entire facility performs as a whole, and
 - b. Documenting performance characteristics of completed facility for Owner's records. Neither the demonstration nor the evaluation is intended in any way to make performance of a unit process or entire facility the responsibility of Contractor, unless such performance is otherwise specified.

1.3 SUBMITTALS

- A. Informational Submittals:
 - 1. Training Schedule: Submit not less than 21 days prior to start of equipment installation and revise as necessary for acceptance.

2. Lesson Plan: Submit proposed lesson plan not less than 21 days prior to scheduled training and revise as necessary for acceptance.
3. Training Session Tapes: Furnish Owner with two complete sets of DVDs fully indexed and cataloged with printed label stating session and date taped.
4. Facility Startup and Performance Demonstration Plan.
5. Functional and performance test results.
6. Completed Unit Process Startup Form for each unit process.
7. Completed Facility Performance Demonstration/Certification Form.

1.4 QUALIFICATION OF MANUFACTURER'S REPRESENTATIVE

- A. Authorized representative of the Manufacturer, factory trained, and experienced in the technical applications, installation, operation, and maintenance of respective equipment, subsystem, or system, with full authority by the equipment Manufacturer to issue the certifications required of the Manufacturer. Additional qualifications may be specified elsewhere.
- B. Representative subject to acceptance by Owner and Engineer. No substitute representatives will be allowed unless prior written approval by such has been given.

1.5 FACILITY STARTUP AND PERFORMANCE DEMONSTRATION PLAN

- A. Develop a written plan, in conjunction with Owner's operations personnel; to include the following:
 1. Step-by-step instructions for startup of each unit process and the complete facility.
 2. Unit Process Startup Form (sample attached), to minimally include the following:
 - a. Description of the unit process, including equipment numbers/nomenclature of each item of equipment and all included devices.
 - b. Detailed procedure for startup of the unit process, including valves to be opened/closed, order of equipment startup, etc.
 - c. Startup requirements for each unit process, including water, power, chemicals, etc.
 - d. Space for evaluation comments.
 3. Facility Performance Demonstration/Certification Form (sample attached), to minimally include the following:
 - a. Description of unit processes included in the facility startup.
 - b. Sequence of unit process startup to achieve facility startup.
 - c. Description of computerized operations, if any, included in the facility.
 - d. Contractor certification facility is capable of performing its intended function(s), including fully automatic operation.
 - e. Signature spaces for Contractor and Engineer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

- A. Furnish Manufacturers' services when required by an individual specification section, to meet the requirements of this Section.
- B. Where time is necessary in excess of that stated in the Specifications for Manufacturer's services, or when a minimum time is not specified, the time required to perform the specified services shall be considered incidental.
- C. Schedule Manufacturer's services to avoid conflict with other onsite testing or other Manufacturer's onsite services.

- D. Determine, before scheduling services, that all conditions necessary to allow successful testing have been met.
 - E. Only those days of service approved by Engineer will be credited to fulfill the specified minimum services.
 - F. When specified in individual specification sections, Manufacturer's onsite services shall include:
 - 1. Assistance during product (system, subsystem, or component) installation to include observation, guidance, instruction of Contractor's assembly, erection, installation or application procedures.
 - 2. Inspection, checking, and adjustment as required for product (system, subsystem, or component) to function as warranted by Manufacturer and necessary to furnish Manufacturer's Certificate of Proper Installation.
 - 3. Providing, on a daily basis, copies of all Manufacturer's representatives' field notes and data to Engineer.
 - 4. Revisiting the Site as required to correct problems and until installation and operation are acceptable to Engineer.
 - 5. Resolution of assembly or installation problems attributable to or associated with, respective Manufacturer's products and systems.
 - 6. Assistance during functional and performance testing, and facility startup and evaluation.
 - 7. Training of Owner's personnel in the operation and maintenance of respective product as required.
 - 8. Additional requirements may be specified elsewhere.
 - G. Facility Startup Meetings: Schedule, in accordance with requirements of Section 01 31 19, PROJECT MEETINGS, to discuss test schedule, test methods, materials, chemicals and liquids required, facilities operations interface, and Owner involvement.
 - H. Contractor's Testing and Startup Representative:
 - 1. Designate and furnish one or more personnel to coordinate and expedite testing and facility startup.
 - 2. Representative(s) shall be present during startup meetings and shall be available at all times during testing and startup.
 - I. Provide temporary valves, gauges, piping, test equipment and other materials and equipment required for testing and startup.
 - J. Provide Subcontractor and equipment Manufacturer's with adequate staff to prevent delays. Schedule ongoing work so as not to interfere with or delay testing and startup.
 - K. Owner will:
 - 1. Provide water, power, chemicals, and other items as required for startup, unless otherwise indicated.
 - 2. Operate process units and facility with support of Contractor.
 - 3. Provide labor and materials as required for laboratory analyses.
- 3.2 MANUFACTURER'S CERTIFICATE OF COMPLIANCE
- A. When specified in individual Specification section, submit prior to shipment of product or material.
 - B. Engineer may permit use of certain materials or assemblies prior to sampling and testing if accompanied by accepted certification of compliance.

- C. Signed by product Manufacturer certifying that product or material specified conforms to or exceeds specified. Attach supporting reference data, affidavits, and certifications as appropriate.
- D. May reflect recent or previous test results on material or product, if acceptable to Engineer.

3.3 MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

- A. When so specified, a Manufacturer's Certificate of Proper Installation form, a copy of which is attached to this Section, shall be completed and signed by the equipment Manufacturer's representative.
- B. Such form shall certify that the signing party is a duly authorized representative of the Manufacturer, is empowered by the Manufacturer to inspect, approve, and operate their equipment and is authorized to make recommendations required to assure that the equipment is complete and operational.

3.4 TRAINING

- A. General:
 - 1. Furnish Manufacturer's representatives for detailed classroom and hands-on training to Owner's personnel on operation and maintenance of specified product (system, subsystem, component) and as may be required in applicable Specifications.
 - 2. Furnish trained, articulate personnel to coordinate and expedite training, to be present during training coordination meetings with Owner, and familiar with operation and maintenance manual information specified in Section 01 78 23, OPERATION AND MAINTENANCE DATA.
 - 3. Manufacturer's representative shall be familiar with facility operation and maintenance requirements as well as with specified equipment.
 - 4. Furnish complete training materials, to include operation and maintenance data, to be retained by each trainee.
- B. Training Schedule:
 - 1. List specified equipment and systems that require training services and show:
 - a. Respective Manufacturer.
 - b. Estimated dates for installation completion.
 - c. Estimated training dates.
 - 2. Allow for multiple sessions when several shifts are involved.
 - 3. Adjust schedule to ensure training of appropriate personnel as deemed necessary by Owner, and to allow full participation by Manufacturer's representatives. Adjust schedule for interruptions in operability of equipment.
- C. Lesson Plan: When Manufacturer or vendor training of Owner personnel is specified, prepare for each required course, containing the following minimum information:
 - 1. Title and objectives.
 - 2. Recommended types of attendees (e.g., managers, engineers, operators, maintenance).
 - 3. Course description and outline of course content.
 - 4. Format (e.g., lecture, self-study, demonstration, hands-on).
 - 5. Instruction materials and equipment requirements.
 - 6. Resumes of instructors providing the training.
- D. Pre-startup Training:
 - 1. Coordinate training sessions with Owner's operating personnel and Manufacturer's representatives, and with submission of operation and maintenance manuals in accordance with Section 01 78 23, OPERATIONS AND MAINTENANCE DATA.

2. Complete at least 14 days prior to beginning of facility startup.
- E. Post-startup Training: If required in Specifications furnish and coordinate training of Owner's operating personnel by respective Manufacturer's representatives.
- F. Taping of Training Sessions:
 1. Furnish audio and color video taping of all instruction sessions, including Manufacturer's representatives, hands-on equipment instruction and classroom sessions.
 2. Video training DVDs shall be produced by a qualified, professional video specialist approved by Owner.
 3. Use DVD format, suitable for playback on standard equipment available commercially in the United States.

3.5 EQUIPMENT TESTING

- A. Preparation:
 1. Complete installation before testing.
 2. Furnish qualified Manufacturer's representatives, when required by individual Specification sections.
 3. Obtain and submit from equipment Manufacturer's representative Manufacturer's Certificate of Proper Installation Form when required by individual Specification sections.
 4. Equipment Test Report Form: Provide written test report for each item of equipment to be tested, to include the minimum information:
 - a. Owner/Project Name.
 - b. Equipment or item tested.
 - c. Date and time of test.
 - d. Type of test performed (Functional or Performance).
 - e. Test method.
 - f. Test conditions.
 - g. Test results.
 - h. Signature spaces for Contractor and Engineer as witness.
 5. Cleaning and Checking: Prior to beginning functional testing:
 - a. Calibrate testing equipment in accordance with Manufacturer's instructions.
 - b. Inspect and clean equipment, devices, connected piping, and structures to ensure they are free of foreign material.
 - c. Lubricate equipment in accordance with Manufacturer's instructions.
 - d. Turn rotating equipment by hand when possible to confirm that equipment is not bound.
 - e. Open and close valves by hand and operate other devices to check for binding, interference, or improper functioning.
 - f. Check power supply to electric-powered equipment for correct voltage.
 - g. Adjust clearances and torque.
 - h. Test piping for leaks.
 6. Ready-to-test determination will be by Engineer-based at least on the following:
 - a. Acceptable Operation and Maintenance Data.
 - b. Notification by Contractor of equipment readiness for testing.
 - c. Receipt of Manufacturer's Certificate of Proper Installation, if so specified.
 - d. Adequate completion of work adjacent to, or interfacing with, equipment to be tested.
 - e. Availability and acceptability of Manufacturer's representative, when specified, to assist in testing of respective equipment.
 - f. Satisfactory fulfillment of other specified Manufacturer's responsibilities.
 - g. Equipment and electrical tagging complete.
 - h. Delivery of all spare parts and special tools.
- B. Functional Testing:

1. Conduct as specified in individual Specification sections.
2. Notify Owner and Engineer in writing at least 10 days prior to scheduled date of testing.
3. Prepare Equipment Test Report summarizing test method and results.
4. When in Engineer's opinion, equipment meets functional requirements specified such equipment will be accepted for purposes of advancing to performance testing phase, if so required by individual Specification sections. Such acceptance will be evidenced by Engineer/Owner's signature as witness on Equipment Test Report.

C. Performance Testing:

1. Conduct as specified in individual Specification sections.
2. Notify Engineer and Owner in writing at least 10 days prior to scheduled date of test.
3. Performance testing shall not commence until equipment has been accepted by Engineer as having satisfied functional test requirements specified.
4. Type of fluid, gas, or solid for testing shall be as specified.
5. Unless otherwise indicated, furnish labor, materials, and supplies for conducting the test and taking samples and performance measurements.
6. Prepare Equipment Test Report summarizing test method and results.
7. When, in Engineer's opinion, equipment meets performance requirements specified, such equipment will be accepted as to conforming to Contract requirements. Such acceptance will be evidenced by Engineer's signature on Equipment Test Report.

3.6 STARTUP OF UNIT PROCESSES

- A. Prior to unit process startup, equipment within unit process shall be accepted by Engineer as having met functional and performance testing requirements specified.
- B. Startup sequencing of unit processes shall be as chosen by Contractor to meet schedule requirements.
- C. Make adjustments, repairs, and corrections necessary to complete unit process startup.
- D. Startup shall be considered complete when, in opinion of Engineer, unit process as operated in manner intended for 7 continuous days without significant interruption. This period is in addition to functional or performance test periods specified elsewhere.
- E. Significant Interruption: May include any of the following events:
 1. Failure of Contractor to provide and maintain qualified onsite startup personnel as scheduled.
 2. Failure to meet specified functional operation for more than 2 consecutive hours.
 3. Failure of any critical equipment or unit process that is not satisfactorily corrected within 5 hours after failure.
 4. Failure of any non-critical equipment or unit process that is not satisfactorily corrected within 8 hours after failure.
 5. As determined by Engineer.
- F. A significant interruption will require startup then in progress to be stopped. After corrections are made; start up test period and start from beginning again.

3.7 FACILITY PERFORMANCE DEMONSTRATION

- A. When, in the opinion of Engineer, startup of all unit processes has been achieved, sequence each unit process to the point that facility is operational.
- B. Demonstrate proper operation of required interfaces within and between individual unit processes.

- C. After facility is operating, complete performance testing of equipment and systems not previously tested.
- D. Document, as defined in Facility Startup and Performance Demonstration Plan, the performance of the facility.
- E. Certify, on the Facility Performance Demonstration/Certification Form, that facility is capable of performing its intended function(s), including fully automatic operation.

3.8 SUPPLEMENTS

- A. Supplements listed below, following "End of Section", are a part of this Specification:
 - 1. Manufacturer's Certificate of Proper Installation Form.
 - 2. Unit Process Startup Form.
 - 3. Facility Performance Demonstration/Certification Form.

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

OWNER: City of Celina EQUIP. SERIAL NO: _____

EQUIP. TAG NO: _____ EQUIP. SYSTEM: _____

PROJECT NO: 18088190 SPEC. SECTION: _____

I hereby certify that the above referenced equipment/system has been:

(Check Applicable)

☐	Installed in accordance with Manufacturer's recommendations.
☐	
☐	Inspected, checked, and adjusted.
☐	
☐	Serviced with proper initial lubricants.
☐	
☐	Electrical and mechanical connections meet quality and safety standards.
☐	
☐	All applicable safety equipment has been properly installed.
☐	
☐	Functional tests.
☐	
☐	System has been performance tested, and meets or exceeds specified performance requirements. (When complete system of one manufacturer)

Note: Attach any performance test documentation from manufacturer.

Comments:

I, the undersigned Manufacturer's Representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate its equipment, and (iii) authorized to make recommendations required to assure that the equipment furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: _____, 20____.

Manufacturer: _____

By Manufacturer's Authorized Representative: _____
(Authorized Signature)

UNIT PROCESS STARTUP FORMOWNER: City of Celina PROJECT: Celina Pump Stations Phase 2 Improvements

Unit Process Description: (Include description and equipment number of all equipment and devices):

Startup Procedure: (Describe procedure for sequential startup and evaluation, including valves to be opened/closed, order of equipment startup, etc.):

Startup Requirements (Water, power, chemicals, etc.):

Evaluation Comments:

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

FACILITY PERFORMANCE DEMONSTRATION/CERTIFICATION FORM

OWNER: City of Celina PROJECT: Celina Pump Stations Phase 2 Improvements

Unit Process Description: (List unit processes involved in facility startup):

Unit Processes Startup Sequence: (Describe sequence for startup, including computerized operations if any):

Contractor Certification that Facility is capable of performing its intended function(s), including fully automatic operation:

Contractor: _____ Date: _____, 20 ____

Engineer: _____ Date: _____, 20 ____

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 79 01 - SPARE PARTS AND MAINTENANCE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of the required Spare Parts and Maintenance for the project.
- B. Ninety (90) days after approval of the Shop Drawings of the equipment specified in the individual Sections, the CONTRACTOR shall furnish spare parts data and maintenance material for equipment. The data shall include a complete list of parts and supplies, with current unit prices and source or sources of supply.
- C. Spare parts and materials required to be supplied in the Contract Documents shall be furnished in manufacturer's unopened cartons, boxes, crates, or other protective covering suitable for preventing corrosion or deterioration for the maximum length of storage which may be normally anticipated. They shall be clearly marked and identified as to the name of manufacturer or supplier, applicable equipment, part number, description and location in the equipment. All parts shall be protected and packaged for a shelf life of at least 10 years.
- D. During construction, store parts in buildings or trailers with floor, roof and closed sides and in accordance with manufacturers' recommendations. Protect from weather, condensation, and humidity.
- E. Parts and materials shall be delivered to the OWNER upon Substantial Completion of the Work or start-up. CONTRACTOR shall then place them in permanent storage rooms or areas approved by the OWNER. The turnover procedures shall be developed by the ENGINEER.
- F. Provide a letter of transmittal and spare parts receiver form including the following:
 - 1. Date of letter and transfer of parts and material.
 - 2. Contract title and number.
 - 3. CONTRACTOR's name and address.
 - 4. Transmittal should list applicable specification sections for each set of spare parts supplied.
 - 5. Spare Parts Receiver Form.
- G. CONTRACTOR shall be fully responsible for loss or damage to parts and materials until they are transmitted to the OWNER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SPARE PART RECEIVER
City of Celina
Celina Pump Stations Phase 2 Improvements

Project No. 18088190

SPECIFICATION SECTION 01 79 01

CONTRACTOR PLEASE FILL OUT:

MANUFACTURER:

ITEM DESCRIPTION:

COST:

MANUFACTURER PART NUMBER:

SUPPLIER:

CROSS REFERENCE NUMBER:

VENDOR INFORMATION:

VENDOR ORDER PART NUMBER:

PART TO BE USED ON
WHAT EQUIPMENT:

EQUIPMENT NUMBER:

SPECIFICATION SECTION:

CITY PERSONNEL FILL IN:

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

BIN NUMBER:

AIMS NUMBER:

LOCATION IN STORES:

RECEIVED BY:

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 81 02 - SEISMIC DESIGN CRITERIA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Seismic design criteria for the following:
 1. Anchorage of mechanical and electrical equipment.
 2. Seismic design and design of anchorage for small tanks fabricated off site and shipped to the Project site.
 3. Other structures or items as specified or indicated on the Drawings.
- B. Related sections:
 1. Section 01 41 00 – Regulatory Requirements.

1.2 REFERENCES

- A. American Society of Civil Engineers (ASCE):
 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures

1.3 SYSTEM DESCRIPTION

- A. Design requirements:
 1. Design in accordance with the requirements of the building code as specified in Section 01 41 00:
 - a. Soil Site Class: D
 - b. Design spectral acceleration at short period, S_{DS} : 0.176g.
 - c. Design spectral acceleration at short period, S_{D1} : 0.117g.
 - d. Seismic Design Category: B
 - e. Importance Factor, I : 1.25
 - f. Component amplification factor, a_p : In accordance with ASCE 7-10, Tables 13.5-1 and 13.6-1.
 - g. Component response modification factor, R_p : In accordance with ASCE 7 10, Tables 13.5-1 and 13.6-1.
 - h. Component importance factor, I_p : 1.50.
 2. Do not use friction to resist sliding due to seismic forces.
 3. Do not use more than 60 percent of the weight of the mechanical and electrical equipment for designing anchors for resisting overturning due to seismic forces.
 4. Do not use more than 60 percent of the weight of the tank for resisting overturning due to seismic forces.
 5. Use anchor bolts, bolts, or welded studs for anchors for resisting seismic forces. Anchor bolts used to resist seismic forces shall have a standard hex bolt head embedded in the concrete. Do not use anchor bolts fabricated from rod stock with an L or J shape.
 6. Do not use chemical anchors, concrete anchors, flush shells, powder actuated fasteners, sleeve anchors, or other types of anchors unless indicated on the Drawings or accepted in writing by the ENGINEER.
 7. Seismic forces must be resisted by direct bearing on the fasteners used to resist seismic forces. Do not use connections that use friction to resist seismic forces.

1.4 SUBMITTALS

- A. Shop drawings and calculations: Complete shop drawings and seismic calculations.
- B. Calculations shall be signed and stamped by a civil or structural engineer licensed in the state where the Project is located.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 01 81 04 - WIND DESIGN CRITERIA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Wind design criteria.
- B. Related sections:
 - 1. Section 01 41 00 – Regulatory Requirements.

1.2 SYSTEM DESCRIPTION

- A. Design requirements:
 - 1. Building code criteria: Design for wind in accordance with building code as specified in Section 01 41 00:
 - a. Occupancy category: III.
 - b. Basic wind speed: 90 miles per hour.
 - c. Exposure category: C.
 - d. Topographic factor, K_{zt} : 1.0.
 - 2. Use anchor bolts, bolts, or welded studs for anchors for resisting wind forces. Anchor bolts used to resist wind forces shall have a standard hex bolt head embedded in the concrete. Do not use anchor bolts fabricated from rod stock with an L or J shape:
 - a. Do not use concrete anchors, sleeve anchors, flush shells, chemical anchors, powder actuated fasteners, or other types of anchor unless indicated on the Drawings or accepted in writing by the Engineer.
 - b. Wind forces must be resisted by direct bearing on the anchors used to resist wind forces. Do not use connections which use friction to resist wind forces.

1.3 SUBMITTALS

- A. Shop drawings and calculations: Complete shop drawings and seismic calculations.
- B. Calculations shall be signed and stamped by a civil or structural engineer licensed in the state where the Project is located.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

DIVISION 2

EXISTING CONDITIONS

SECTION 02 41 00 - DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 1. Portions of buildings and other areas, equipment and materials selective demolition, and partial demolition work are as shown on Drawings and specified herein.
 2. Equipment and materials to be removed for construction and reinstalled for reuse or continued operation are as shown on the drawings and specified herein.

1.2 SUBMITTALS

- A. Shop Drawings: Plans showing all equipment and materials to be removed and reinstalled for reuse on continued operation including interim storage plans for each item.
- B. Quality Control Submittals:
 1. Schedule of demolition, as part of and consistent with the progress schedule.
 2. Methods of demolition and equipment proposed to demolish each structure.
 3. Copies of any authorizations and permits required to perform Work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Utilities:
 1. Notify Owner and appropriate utilities 72 hours prior to turning off affected services before starting demolition or alterations.
 2. Remove utility lines exposed by demolition excavation.
- B. Removal and Storage of Equipment for Reuse:
 1. Do not remove equipment and materials without approval of Engineer.
 2. Properly store and maintain equipment and materials in same condition as when removed.
 3. Engineer will determine condition of equipment and materials prior to removal.

3.2 DEMOLITION

- A. Drawings define minimum portion of equipment to be removed and structures to be modified. Unless otherwise shown, rough cuts or breaks may be made exceeding limits of demolition shown.
- B. Provide all demolition, removal, temporary storage, and reinstallation of existing equipment as required for implementation of the work.
- C. Core drill floor slabs, catch basins, and other concrete improvements to remain in place below ground, or break holes at structure's lowest point to allow water to freely migrate through.
- D. Remove piping from areas to be backfilled. Pipe, valves, and fittings adjacent to those to be removed may also be removed as salvage.
- E. Remove all materials associated with existing equipment that is to be removed or relocated.

- F. Cut off concealed or embedded conduit, boxes, or other materials a minimum of 3/4 inch below final finished surface.
- G. Cut off drilled piers a minimum of 6 inches below bottom of new foundations.
- H. Demolish existing concrete structure to 18" below grade.

3.3 DISPOSAL

- A. Dispose of debris and other non-salvaged materials offsite in licensed landfills.
- B. Refer to Specification 09 96 33 for disposal of hazardous material.

3.4 BACKFILLING

- A. Demolished Areas: Backfill to existing ground level, elevations shown, or foundation level of new construction.
- B. Backfill Material and Compaction:
 - 1. For fill in structures, use sand conforming to Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges for Backfill for Structures
 - 2. Do not use demolition debris as backfill material.

3.5 SALVAGE

- A. Equipment and materials not reused or reinstalled, including all metals and piping within the limits of demolition, unless otherwise specified, shall be delivered to the Owner for scrap.

END OF SECTION

DIVISION 3 CONCRETE

SECTION 03 01 00 - CONCRETE SURFACE REPAIR SYSTEMS

PART 1 - GENERAL

1.1 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. American Association of State Highway and Transportation Officials (AASHTO): T277, Standard Method of Test for Rapid Determination of the Chloride Permeability of Concrete.
 2. ASTM International (ASTM):
 - a. C 78, Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading).
 - b. A 82, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
 - c. C 109, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
 - d. A 185, Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
 - e. C 309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - f. C 348, Standard Test Method for Flexural Strength of Hydraulic Cement Mortars.
 - g. C 469, Standard Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression.
 - h. C 496, Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens.
 - i. C 596, Standard Test Method for Drying Shrinkage of Mortar Containing Portland Cement.
 - j. C 666, Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
 - k. C 672, Standard Test Method for Scaling Resistance for Concrete Surfaces Exposed to Deicing Chemicals.
 - l. C 779, Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
 - m. C 882, Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear.
 - n. C 928, Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repair.
 - o. C 1012, Standard Test Method for Length Change of Hydraulic Cement Mortars Exposed to a Sulfate Solution.
 - p. C 1202, Standard Test Method for Electrical Induction of Concrete's Ability to Resist Chloride Ion Penetration.
 - q. E 699, Criteria for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating Building Components in Accordance with Test Methods Promulgated by ASTM Committee.

1.2 DEFINITIONS

- A. Low Pressure Spray Mortar: Mortar designated by "S" before the product number, applied by low pressure spraying, or in small areas by hand troweling.
- B. Surface Repair Areas: Areas that are deemed to be defective and not meeting the density or surface specified in Section 03 30 00, CAST-IN-PLACE CONCRETE, regardless of depth of the defective area.

1.3 SUBMITTALS

- A. Information Submittals:

1. Mortar System:
 - a. Manufacturer's installation bulletin.
 - b. Manufacturer's recommended fabric size for mesh reinforcement.
2. Written description of equipment proposed for hydro-demolition surface preparation.
3. Certificates:
 - a. Certificate of Compliance that proposed product systems meet or exceed specified performance criteria when tested in accordance with Article FIELD QUALITY CONTROL.
 - b. Mortar system Manufacturer's Certificate of Proper Installation.
4. Statements of Qualification:
 - a. Independent testing laboratory.
 - b. Mortar system Manufacturer's representative.
5. Mortar system Manufacturer's proposed modified test procedures for ASTM C 109 and ASTM C 882 test methods.
6. Independent testing laboratory test report.

1.4 QUALITY ASSURANCE

- A. Qualifications:
 1. Independent Testing Laboratory: Based on evaluation of laboratory submitted criteria in accordance with ASTM E 699.
 2. Mortar System Applicator: For low pressure spray mortar system in lieu of endorsement, complete mortar system manufacturer's demonstration in accordance with Article MANUFACTURER'S SERVICES.

PART 2 - PRODUCTS

2.1 LOW PRESSURE SPRAY MORTAR SYSTEM (FOR VERTICAL AND OVERHEAD REPAIRS)

- A. Mortar:
 1. One component, rheoplastic, cement based, fiber reinforced, shrinkage compensated, gray in color, with a minimum 30-minute working time.
 2. Cured materials mixed to a flow of 70%, at five drops shall conform to the following criteria:
 - a. Minimum Slant Shear Bond Strength: 3,000 psi in 28 days in accordance with "modified" ASTM C 882 test method.
 - b. Minimum Compressive Strength: 11,000 psi at 28 days in accordance with ASTM C 109.
 - c. Minimum Direct Shear Bond Strength: 650 psi in 28 days in accordance with Michigan DOT.
 - d. Minimum Tensile Bond Strength (MBT In-House Test): 300 psi. in 28 days.
 - e. Minimum Flexural Properties: 1,250 psi in 28 days in accordance with ASTM C 348.
 - f. Modulus of Elasticity: 4.1 to 4.5 by 106 psi in accordance with ASTM C 469.
 - g. Maximum Permeability: 1,000 coulombs in accordance with AASHTO T 277.
 - h. System shall not produce a vapor barrier.
- B. Sprayable, extremely low permeability, sulfate resistant, easy to use and requiring only the addition of water.
- C. Free of chlorides and other chemicals causing corrosion.
- D. Manufacturer and Product:
 1. Master Builders Technologies Co., Cleveland, OH; EMACO S88CA with Concreive liquid (LPL) bonding agent for hand applied areas.
 2. Sika Corp., Lyndhurst, NJ; SikaRepair 224.

2.2 POLYMER-MODIFIED REPAIR MORTAR (HORIZONTAL SURFACE REPAIR)

- A. Mortar: One component, polymer-modified, cementitious based, chloride resistant, flowable, gray in color, working time of 20 minutes minimum, surface renovation mortar conforming to the following properties:
 - 1. Bond strength in accordance with ASTM C 1042 Test Method at 7 days: Minimum 1,750 psi.
 - 2. Modules of Elasticity: ASTM C469, minimum 2.0 by 10⁶ psi.
 - 3. Compressive Strength:
 - a. ASTM C 109 at 1 day: minimum 2,500 psi.
 - b. ASTM C 109 at 28 days: minimum 7,500 psi.
 - 4. Flexural Properties, ASTM C 348 at 28 days: minimum 1,200 psi.
 - 5. Permeability, AASHTO T 277: 800 coulombs maximum.
 - 6. Splitting Tensile Strength: ASTM C 496 at 7 days, minimum 450 psi.
 - 7. Drying Shrinkage, ASTM C 596 at 28 days: -0.090%.
 - 8. Freeze Thaw Resistance, ASTM C 666, at 300 cycles: 95% RDF.
 - 9. Abrasion Resistance: ASTM C 799, 60 minutes, 0.0165".
- B. Manufacturers and Products:
 - 1. Master Builders Technologies Co., Cleveland, OH; EMACO R 310
 - 2. Or approved equal.

2.3 WATER

- A. Clean and free from oil, acid, alkali, organic matter, or other deleterious substances, meeting federal drinking water standards.

2.4 ACCESSORIES

- A. Finishing Aid Manufacturer and Product: Master Builders Inc., Cleveland, OH; CONFILM.
- B. Flexible Cementitious Rebar Coating Manufacturer and Product: Master Builders Inc., Cleveland, OH; EMACO P22.

PART 3 - EXECUTION

3.1 GENERAL

- A. Where required because of deficiencies, concrete surface repair system shall be low pressure spray mortar for structural repairs.

3.2 PREPARATION

- A. Remove unsound and deteriorated concrete from Work by high pressure water blasting machines capable of scoring concrete surfaces to minimum amplitude roughness of 3/16" or as shown. Remove to provide for maximum thickness specified for mortar.
- B. High pressure water blasting machines with 16,000 to 20,000 psi minimum.
- C. Collect and dispose of water from removal operations in manner and location acceptable to Owner.
- D. Do not use power-driven jackhammers and chipping hammers, unless water blasting is prohibited due to potential damage to installed equipment.

- E. Remove concrete minimum of 1" clearance around rebar for application and bonding of new mortar to entire periphery of exposed rebar if the following surface conditions exist:
 - 1. 50% or more of periphery around rebar is exposed during removal of concrete.
 - 2. 25% or more of periphery around rebar is exposed during removal of concrete and corrosion has eventuated to the extent that loss of section has occurred.
 - 3. Bond between existing concrete and reinforcement has deteriorated.
- F. Clean exposed reinforcing bars of rust and concrete, and coat with flexible cementitious rebar coating.
- G. Maintain surface areas free of slurry where concrete has been removed. Remove slurry from prepared areas before new mortar is applied.
- H. Clean surface areas to be filled with new mortar of laitance and contamination by high pressure water blasting not more than 24 hours before applying bonding agent, Saturated Surface Dry (SSD) existing concrete at time of application of mortar.

3.3 LOW PRESSURE SPRAY MORTAR APPLICATION

- A. Mix mortar in mortar-concrete mixer attached to pump-spray equipment for spray application. Mix with a slow speed drill and jiffler type paddle or small mortar type mixer for hand trowel application.
- B. Apply mortar by low pressure spraying with a machine such as Moynotype, MEYCO DEQUANA Model 20.
- C. Finish mortar with a hand float application to smooth even surface matching adjacent concrete. Provide finishing aid at full strength.
- D. Bonding Agent:
 - 1. Hand apply bonding agent within 20 minutes of troweling on mortar. Prevent bonding agent from drying by reapplying bonding agent to maintain surface tackiness of coat.
 - 2. Work mortar firmly and quickly into area and compact with firm trowel stroke. Finish smooth with finishing aid at full strength.

3.4 POLYMER-MODIFIED REPAIR MORTAR APPLICATION FOR REPAIR OF HORIZONTAL SURFACES

- A. Mix mortar in mortar-concrete mixer.
- B. Hand Troweling: Apply (scrub in) a bond coat slurry of the repair mortar to the SSD prepared substrate before application of the mortar. Do not apply more of the bond coat than can be covered with mortar before the bond coat dries. Do not re-temper this bond coat.
- C. Place mortar into prepared area from one side to the other.
- D. Work material firmly into the side and bottom of patch to assure a good bond. Level repair mortar and screed to elevation of existing concrete.
- E. Finish to same texture as existing concrete around patch.
- F. Use self-leveling mixture where appropriate to obtain uniform or plane surface.

3.5 CURING

- A. Water fog nozzle all of the mortar systems prior to curing in accordance with mortar system Manufacturer's instructions.
- B. Commence water curing after mortar system application and when curing will not cause erosion of mortar.
- C. Continuously cure mortar system for a period of 7 days.
- D. Do not membrane cure, unless method is part of mortar system Manufacturer's instructions and approval has been obtained.
- E. Cure intermediate layers of mortar in accordance with manufacturer's instructions.

3.6 FIELD QUALITY CONTROL

- A. Independent testing laboratory shall perform the following:
 - 1. Secure production samples of mixed materials during construction and test for compliance with the Specifications.
 - 2. Obtain actual core samples from the completed repair Work and test.
 - 3. Perform "modified" ASTM C 109 and ASTM C 882 test methods in accordance with manufacturer's approved modifications of testing procedures.
- B. Construction Testing:
 - 1. Production Samples:
 - a. Obtain mixed mortar material from shotcrete or spray equipment and produce samples, and cure samples prior to testing.
 - b. Provide minimum of three samples each test for each 1,000 square feet or portion thereof of mortar repair to be installed.
 - 2. Core Samples of In-Place Repair:
 - a. Obtain two core samples and test samples for each 2,000 square feet or portion thereof for actual repair Work:
 - b. Cores shall be either 2-1/2" or 3" in diameter and shall be cored through cured mortar repair and into base concrete to total depth equal to at least 2.5 times repair mortar thickness.
 - c. Sawcut the cores after removal to trim base concrete thickness to same thickness as mortar so that bond line is at center of repaired sample.
 - d. Samples shall be epoxy bonded to steel plates at each end using a bonding agent to prevent failure in bond to steel plates.
 - e. Sustain bond line without failure or movement with a minimum of 300 psi in direct tension. The tension test shall use eyebolts or threaded connectors tapped and threaded into base plate so that tension load is concentric with center of core sample.
- C. Repair and fill holes where core samples have been removed using same mortar used in repair.

3.7 MANUFACTURER'S SERVICES

- A. Provide mortar system manufacturer's representative at site for installation assistance, inspection and certification of proper installation, and training of mortar system applicators.
- B. Mortar System Manufacturer's Demonstration:
 - 1. Schedule a time for Manufacturer's demonstration of repair system proposed for the Project. Prepare mortar, to specified consistency, for testing and placement. Initiate curing

- on portions of each type of surface to be repaired to include overhead and vertical applications.
- 2. Prepare surface area in advance of demonstration and obtain manufacturer's acceptance of preparation for each type of application.
- 3. Demonstrate:
 - a. Mixing and application equipment capabilities and procedures, including the flow of material from nozzle or sprayer.
 - b. Nozzle operator and person in charge of low pressure sprayer, capabilities and ability to follow prescribed application procedures and properly operate equipment and apply surface repair materials.
- 4. Make compression test samples during demonstration and deliver to an independent testing laboratory for testing at 1, 7, and 28 days. Take a core of the demonstration placement and test for tensile bond at 1 day.

3.8 PROTECTION

- A. Protect adjacent surfaces, and equipment, from being damaged by overshooting of low pressure spray mortar.

3.9 CLEANING

- A. Remove overshot mortar and deposited rebound materials as Work proceeds. Remove from Work, waste materials, unsound material from concrete surfaces, material chipped from walls, water used in preparation of application and finishing.

END OF SECTION

SECTION 03 11 00 - CONCRETE FORMWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Concrete formwork.
- B. Related sections:
 - 1. Section 03 30 00 – Cast-In-Place Concrete.
 - 2. Section 03 60 00 – Grout.

1.2 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. American Concrete Institute (ACI):
 - a. 117, Standard Specifications for Tolerances for Concrete Construction and Materials.
 - b. 318/318R, Building Code Requirements for Reinforced Concrete.
 - c. 347, Formwork for Concrete.

1.3 DESIGN REQUIREMENTS

- A. Design, erect, shore, brace, and maintain formwork in accordance with ACI 301, ACI 347, and ACI 318 to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads. Provide concrete finishes specified in Section 03 30 00, CAST-IN-PLACE CONCRETE.
 - 1. Formwork shop drawings shall be prepared by or under the supervision of a qualified professional engineer licensed in the state of the work.
- B. When high range water reducer (superplasticizer) is used in concrete mix, forms shall be designed for full hydrostatic pressure per ACI 347.
- C. Make joints in forms watertight.
- D. Limit panel deflection to 1/360th of each component span to achieve tolerances specified.

1.4 SUBMITTALS

- A. Shop Drawings:
 - 1. Form Ties-Tapered Through-Bolts: Proposed method of sealing form tie hole; coordinate with details shown.
 - 2. All formwork erection, shoring and removal are the responsibility of the Contractor and/or the qualified professional engineer the contractor used for the formwork drawings.
 - 3. Indicate proposed schedule and sequence of stripping formwork, shoring removal, and installing and removing re-shoring.
 - 4. Manufacturer's Data for the Following Product: Form release agent.
 - 5. Formwork drawings shall be signed and sealed by the professional engineer licensed in the state of the work and responsible for their preparation.
- B. Samples: One each as follows:
 - 1. Form ties.

1.5 QUALIFICATIONS

- A. Formwork Designer: Formwork, falsework, and shoring design shall be by a Qualified Professional Engineer licensed in the state of the work.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Wall Forms and Underside of Slabs:
 - 1. Materials: Plywood, hard plastic finished plywood, overlaid waterproof particle board, or steel in "new and undamaged" condition, of sufficient strength and surface smoothness to produce specified finish.
 - 2. Circular Structures:
 - a. Conform forms to circular shape of structure.
 - b. Straight panels may be substituted for circular forms provided panels do not exceed 2' in horizontal width and angular deflection is no greater than 3-1/2° per joint.
- B. Painted Surface Forms: High density overlay plywood for flat concrete surfaces to be painted.
- C. All Other Forms: Materials as specified for wall forms.
- D. Form Release Agent:
 - 1. Material: Release agent shall not bond with, stain, or adversely affect concrete surfaces, and shall not impair subsequent treatments of concrete surfaces when applied to forms. A "ready to use" water based material formulated to reduce or eliminate surface imperfections, containing no mineral oil or organic solvents. Environmentally safe, meeting local, state, and federal regulations and can be used in potable water facilities.
 - 2. Manufacturers and Products:
 - a. Master Builders, Inc.; Rheofinish 211.
 - b. Cresset Chemical Company; Crete-Lease 20-VOC.
 - c. US Mix Products Company; US SPEC Slickote.
- E. Rustication Grooves and Beveled Edge Corner Strips: Nonabsorbent material, compatible with form surface, fully sealed on all sides prohibiting loss of paste or water between the two surfaces.
- F. Form Ties:
 - 1. Material: Steel
 - 2. Spreader Inserts:
 - a. Conical or spherical type.
 - b. Design to maintain positive contact with forming material.
 - c. Furnish units that will leave no metal closer than 1" to concrete surface when forms, inserts, and tie ends are removed.
 - 3. Wire ties not permitted.
 - 4. Flat bar ties for panel forms furnish plastic or rubber inserts with minimum 1" depth and sufficient dimensions to permit patching of tie hole.
 - 5. Water Stop Ties: For water-holding structures, basements, pipe galleries, and accessible spaces below finish grade, furnish one of the following:
 - a. Integral steel water stop 0.103" thick and 0.625" in diameter tightly and continuously welded to tie.
 - b. Neoprene water stop 3/16" thick and 15/16" diameter whose center hole is 1/2-diameter of tie, or molded plastic water stop of comparable size.
 - c. Orient water stop perpendicular to tie and symmetrical about center of tie.
 - d. Design ties to prevent rotation or disturbance of center portion of tie during removal of ends and to prevent water leaking along tie.

6. Through-Bolts: Tapered minimum 1" diameter at smallest end.
7. Elastic Vinyl Plug:
 - a. Design and size of plug to allow insertion with tool to enable plug to elongate and return to original length, and diameter upon removal forming watertight seal.
 - b. Manufacturer and Product: Dayton/Richmond Co., Miamisburg, OH; A58 Sure Plug.
 - c. Recess plug 1" minimum and grout over hole. See Section 03 60 00 GROUT.

PART 3 - EXECUTION

3.1 FORM SURFACE PREPARATION

- A. Thoroughly clean form surfaces that will be in contact with concrete or that have been in contact with previously cast concrete, dirt, and other surface contaminants prior to coating surface.
- B. Exposed Wood Forms in Contact with Concrete: Apply form release agent as recommended by the manufacturer.
- C. Steel Forms: Apply form release agent to steel forms as soon as they are cleaned to prevent discoloration of concrete from rust.

3.2 ERECTION

- A. General: Unless specified otherwise, follow applicable recommendations of ACI 347.
 1. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
 2. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
- B. Beveled Edges (Chamfer):
 1. Form 3/4" bevels (chamfers) at all exposed concrete edges, unless otherwise shown.
 2. Where beveled edges on existing adjacent structures are other than 3/4", obtain Engineer's approval of size prior to placement of beveled edge.
- C. Wall Forms:
 1. Do not reuse forms with damaged surfaces.
 2. Locate form ties and joints in an uninterrupted uniform pattern.
 3. Inspect form surfaces prior to installation to assure conformance with specified tolerances.
- D. Forms for Curbs and Sidewalks:
 1. Provide standard steel or wood forms.
 2. Set forms to true lines and grades, and securely stake in position.
- E. Form Tolerances: Provide forms in accordance with ACI 117, 347 and 318 and the following tolerances for finishes specified:
 1. Wall Tolerances:
 - a. Straight Vertical or Horizontal Wall Surface: Flat planes within tolerance specified.
 - b. Wall Type W-A:
 - 1). Plumb within 1/4" in 10' or within 1" from top to bottom for walls over 40 feet high.
 - 2). Depressions in Wall Surface: Maximum 5/16" when 10' straightedge is placed on high points in all directions.
 - c. Wall Type W-B:
 - 1). Plumb within 1/8" in 10' or within 1/2" from top to bottom for walls over 40' high.

- 2). Depressions in Wall Surface: Maximum 1/8" when 10' straightedge is placed on high points in all directions.
2. Thickness: Maximum -1/4" or +1/2" from dimension shown.
3. Form Offset: Between adjacent pieces of form work, facing material shall not exceed 1/8" where exposed to public view and 1/4" maximum for all other conditions.

3.3 ADDITIONAL REQUIREMENTS

- A. Construct forms tight enough to prevent loss of concrete mortar.
- B. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 1. Install keyways, reglets, recesses and the like for easy removal.
 2. Do not use rust-stained steel form-facing material.
 3. Use only form or form-tying methods which do not cause spalling of the concrete upon form stripping or tie removal.
- C. Set edge forms, bulkheads and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- D. Provide temporary 12 inch wide x 18 inch high openings for cleanouts and inspection ports every 7 feet at the bottom of each lift form and where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations, where possible.
- E. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds and bulkheads required in the Work.
 1. Determine sizes and locations from trades providing such items.
 2. Openings shall be of sufficient size to permit final alignment of pipes or other items without deflection or offsets of any kind. Allow space for packing where items pass through the wall to ensure watertightness. Provide openings with continuous keyways and waterstops. Provide a slight flare to facilitate grouting and the escape of entrained air during grouting. Provide formed openings with reinforcement as indicated in the typical structural details. Reinforcing shall be at least 2 inches clear from the opening surfaces and encased items.
- F. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt and other debris just before placing concrete.
- G. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- H. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions before placing reinforcement.
- I. Embedded Items.
 1. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions and directions furnished with items to be embedded.
 - a. Install anchor bolts/rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

- b. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles and other conditions.
 - c. Check special castings, channels or other metal parts that are to be embedded in the concrete prior to and again after placing the concrete.
 - d. Check nailing blocks, plugs and strips necessary for the attachment of trim, finish and similar work prior to placing the concrete.
- J. Pipes and wall spools cast in concrete.
 - 1. Install wall spools, wall flanges, and wall anchors before placing concrete. Do not weld, tie or otherwise connect the wall spools or anchors to the reinforcing steel.
 - 2. Support pipe and fabricated fittings to be encased in concrete on concrete piers or pedestals. Carry concrete supports to firm foundations so that no settlement will occur during construction.
 - 3. Pipes or spools located below operating water level shall have waterstop ring collars and shall be cast in place. Do not block out such piping and grout after the concrete section is cast. Pipes fitted with thrust rings shall be cast in place.
- K. Removing and reusing forms.
 - 1. General: Do not remove forms from concrete which has been placed with outside temperature below 50°F without first determining and verifying with Engineer if the concrete has properly set without regard for time. Do not apply loading on green concrete. Immediately after forms are removed, the surface of the concrete shall be carefully examined and any irregularities in the surface shall be repaired and finished as specified.
 - a. Leave formwork for beam soffits, joists, structural slabs, beams, girders and other structural elements that support weight of concrete in place until concrete has achieved 100 percent its 28-day design compressive strength and a minimum of 7 days.
 - b. Formwork for sides of beams, walls, columns and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50°F (10 deg C) for 48 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
 - c. Leave bracing for walls until the top or roof slab concrete reaches 100% of its 28-day design compressive strength and a minimum of 7 days.
 - d. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
 - 2. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
 - 3. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved in writing by the Engineer.
- L. Aluminum surfaces in contact with concrete.
 - 1. Aluminum surfaces in contact with concrete or grout or dissimilar metals shall be protected with a Mylar isolator, bituminous paint or other material approved by Engineer.
- M. Shores and reshores.
 - 1. Comply with ACI 318 (ACI 318M) and ACI 301 for design, installation and removal of shoring and reshoring.
 - a. Do not remove shoring or reshoring until measurement of slab tolerances is complete.
 - 2. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

3. For multi-storied structures, the shoring and reshoring diagrams and procedures shall be signed and sealed by a Registered Professional Engineer in the state where the construction is being undertaken. These diagrams and procedures shall take into account the effect of the loads on the uncured concrete and the construction load on each floor.
4. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 03 15 00 - CONCRETE ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 1. Waterstops.
 2. Joint fillers.

1.2 REFERENCES

- A. ASTM International (ASTM):
 1. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
 2. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
 3. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
 4. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.
 5. ASTM D747 - Standard Test Method for Apparent Bending Modulus of Plastics by Means of a Cantilever Beam.
 6. ASTM D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
 7. ASTM D2240 - Standard Test Method for Rubber Property – Durometer Hardness.
- B. American National Standards Institute (ANSI):
 1. ANSI A135.4 - Basic Hardboard.
- C. U. S. Army Corps of Engineers (USACE):
 1. CRD-C-572, Specification for Polyvinyl Chloride Waterstop.

1.3 SUBMITTALS

- A. Product Data:
 1. Polyvinyl chloride waterstops: Complete physical characteristics.
 2. Preformed expansion joint material: Sufficient information on each type of material for review to determine conformance of material to requirements specified.
- B. Samples:
 1. Polyvinyl chloride waterstop.
- C. Laboratory test reports: Indicating that average properties of polyvinyl chloride waterstops material and finish conform to requirements specified in this Section.
- D. Quality control submittals:
 1. Certificates of Compliance:
 - a. Written certificates that polyvinyl chloride waterstops supplied on this Project meet or exceed physical property in accordance with USACE CRD-C-572 and the requirements of this Section.
 2. Manufacturer's instructions: For materials specified in this Section that are specified to be installed with such instructions.

1.4 QUALITY ASSURANCE

- A. Mock-ups:

1. Welding demonstration:
 - a. Demonstrate ability to weld acceptable joints in polyvinyl chloride waterstops before installing waterstop in forms.
- B. Field joints:
 1. Polyvinyl chloride waterstops field joints: Shall be free of misalignment, bubbles, inadequate bond, porosity, cracks, offsets, and other defects which would reduce the potential resistance of the material to water pressure at any point. Replace defective joints. Remove faulty material from the site and disposed of by the Contractor at its own expense.
- C. Inspections:
 1. Quality of welded joints will be subject to acceptance of the Engineer.
 2. Polyvinyl chloride waterstop: The following defects that represent a partial list that will be grounds for rejection:
 - a. Offsets at joints greater than 1/16 inch or 15 percent of the material thickness, at any point, whichever is less.
 - b. Exterior crack at joint, due to incomplete bond, which is deeper than 1/16 inch or 15 percent of the material thickness, at any point, whichever is less.
 - c. Any combination of offset or crack which will result in a net reduction in the cross section of the waterstop in excess of 1/16 inch or 15 percent of the material thickness, at any point, whichever is less.
 - d. Misalignment of the joint, which will result in misalignment of the waterstop in excess of 1/2 inch in 10 feet.
 - e. Porosity in the welded joint as evidenced by visual inspection.
 - f. Bubbles or inadequate bonding.

PART 2 - PRODUCTS

2.1 WATERSTOPS

- A. Waterstops - Polyvinyl chloride (PVC):
 1. Manufacturers: One of the following or equal:
 - a. Vinylex Corporation.
 - b. Greenstreak Plastic Products Company, Inc.
 2. Type: Ribbed waterstop:
 - a. Construction joints: 6-inch wide ribbed type. Vinylex R638, Greenstreak 679, or equal.
 - b. Expansion joint for wall penetrations for concrete encased electrical duct banks: 6-inch ribbed type with hollow center bulb. Vinylex RB638H, Greenstreak 732, or equal.
 - c. Expansion joints: 9-inch wide ribbed type with hollow center bulb or tear web. Vinylex RB938H, Greenstreak 735, or equal for expansion joints 1 inch and narrower, Vinylex TWB938, Greenstreak 739 or equal for expansion joints wider than 1 inch.
 3. Dumbbell type waterstop will not be allowed unless otherwise specified or indicated on the Drawings.
 4. Provide polyvinyl chloride waterstops complying with following requirements:
 - a. Manufactured from prime virgin polyvinyl chloride plastic compound containing the plasticizers, resins, stabilizers, and other materials necessary to meet the requirements of this Section.
 - b. No scrap or reclaimed material shall be used.
 5. Properties as indicated in the following table:

Physical Characteristics	Test Method	Required Results
Specific Gravity	ASTM D 792	Not less than 1.3.
Hardness	ASTM D 2240	70 to 90 Type A15 Shore durometer.
Tensile Strength	ASTM D 638	Not less than 2,000 pounds per square inch.
Ultimate Elongation	ASTM D 638	Not less than 300 percent
Alkali Extraction	CRD-C-572	7 day weight change between minus 0.1 percent and plus 0.25 percent. Hardness change within 5 points.
Low Temperature Brittle Point	ASTM D 746	No sign of cracking or chipping at -35 degrees Fahrenheit minimum.
Water Absorption	ASTM D 570	Not more than 0.15 percent after 24 hours.
Accelerated Extraction Tensile	CRD-C-572	Not less than 1,600 pounds per square inch.
Stiffness in Flexure	ASTM D 747	Not less than 600 pounds per square inch.
Tear Resistance	ASTM D 624	Not less than 225 pounds per inch.
Thickness	—	3/8 inch
Center Bulb		
6 inch Waterstops	—	7/8 inch or 1-inch nominal outside diameter.
9 inch Waterstops	—	1-inch nominal outside diameter. For expansion joints 1 inch and narrower and 2 inches for expansion joints wider than 1 inch.
Allowable Tolerances		
Width	—	Plus or minus 3/16 inch.
Thickness	—	Plus or minus 1/32 inch.

2.2 JOINT FILLERS

- A. Hardboard: 1/8-inch minimum thickness, in accordance with ANSI A135.4 Class 2.
- B. Preformed expansion joint materials:
 - 1. General:
 - a. Use specific type in applications as indicated on the Drawings.
 - b. No scrap or recycled material shall be used.
 - 2. Bituminous fiber expansion joint material:
 - a. Manufacturers: One of The following or equal:
 - 1). Tamms Industries, a division of Euclid Chemical Company: Hornboard/fiber.
 - 2). Approved equal.
 - 3. Synthetic sponge rubber expansion joint material:
 - a. Manufacturers: One of the following or equal:
 - 1). Tamms Industries, a division of Euclid Chemical Company: Cementone.
 - 2). Approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Waterstops - General:

1. Waterstops shall be stored so as to permit free circulation of air around the waterstop material and to prevent direct exposure to sunlight.
 2. Install waterstops in concrete joints where indicated on the Drawings.
 3. Carry waterstops in walls into lower slabs and join to waterstops in slabs with appropriate types of fittings.
 4. In water-bearing structures: Provide all joints with waterstops, whether indicated on the Drawings or not.
 5. Provide waterstops that are continuous and in longest lengths practical.
 6. Set waterstops accurately to position and line as indicated on the Drawings.
 7. Hold and securely fix edges in position at intervals of not more than 24 inches so that they do not move during placing of concrete.
 8. Position the waterstop so that symmetrical halves of the waterstop are equally divided between the concrete pours. The center axis of the waterstop shall be coincident with the centerline of the joint.
 9. Do not drive nails, screws, or other fasteners through waterstops in vicinity of construction joints.
 10. Use wires at not more than 24 inches on centers near outer edge of the waterstop to tie waterstops into position.
 11. Special clips may be used in lieu of wires, at contractor's option.
 12. Terminate waterstops 3 inches from top of finish surfaces of walls and slabs unless otherwise specified or indicated on the Drawings.
 13. When any waterstop is installed in the concrete on one side of a joint, while the other half or portion of the waterstop remains exposed to the atmosphere for more than 2 days, suitable precautions shall be taken to shade and protect the exposed waterstop from direct rays of sunlight during the entire exposure and until the exposed portion is embedded in concrete.
 14. When placing concrete at waterstops in slabs, lift the edge of the waterstop while placing concrete below the waterstop. Manually force the waterstop against and into the concrete. Then cover the waterstop with fresh concrete.
- B. Polyvinyl chloride waterstops:
1. Install waterstops so that joints are watertight.
 2. Weld joints such as unions, crosses, ells, and tees, with thermostatically controlled equipment recommended by waterstop manufacturer:
 - a. The material shall not be damaged by heat sealing.
 - b. Make joints by overlapping then simultaneously cut the ends of the sections to be spliced so they will form a smooth even joint. Heat the cut ends with the splicing tool until the plastic melts. Press the 2 ends together until the plastic cools.
 - c. The continuity of the waterstop ribs and tubular center axis shall be maintained.
 - d. The splices shall have a tensile strength of not less than 60 percent of the unspliced materials tensile strength.
 3. Butt joints of the ends of 2 identical waterstop sections may be made while the material is in the forms.
 4. Joints for crosses and tees shall be factory prefabricated by the manufacturer.
- C. Joints:
1. Construct construction, and expansion joints as indicated on the Drawings.
 2. Preformed expansion joint material: Fasten expansion joint strips to concrete, masonry, or forms with adhesive. No nailing will be permitted, nor shall expansion joint strips be placed without fastening.
- D. Hardboard:
1. When indicated on the Drawings, face surface of joint filler with hardboard.
 2. Other facing materials may be used provided they furnish equivalent protection and the material is acceptable to Engineer.

3. Hold boards in place by nails, waterproof adhesive, or other means acceptable to the ENGINEER.

END OF SECTION

SECTION 03 15 14 - STRIP-TYPE WATERSTOPS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Hydrophilic rubber waterstop and non-expanding mastic waterstop.

1.2 SUBMITTALS

- A. General:
1. Submit the following items for each type, style and size of hydrophilic waterstop to be installed.
 2. Product data:
 - a. Manufacturer's product data sheets.
 - 1). Include complete physical dimensions, expansion characteristics, and laboratory test reports indicating that average material properties conform to the requirements specified.
 - 2). Provide data sheets for all materials to be included in the waterstop system.
 3. Samples:
 - a. Minimum 6-inch long samples of each type of waterstop to be used if requested by the ENGINEER.
 4. Manufacturer's installation instructions:
 - a. Installation instructions and recommended installation details for the complete waterstop system, and for each component used in that system.
- B. Where general "strip-type" waterstop is noted, provide non-expansive mastic strip waterstop.

PART 2 - PRODUCTS

2.1 HYDROPHILIC RUBBER WATERSTOP

- A. General:
1. System composed of flexible hydrophilic urethane polymer with preformed strips, adhesives, paste, fasteners, and other accessories required for a complete and watertight installation.
 - a. To ensure compatibility of materials, a single manufacturer shall provide all products and accessories for the hydrophilic waterstop system.
 - b. Products incorporating bentonite are not acceptable under this Section.
 - c. Provide waterstop and accessories resistant to degradation under cyclic wetting and drying and to chemicals typically found in wastewater treatment structures.
- B. Hydrophilic strip waterstop.
1. Pre-formed strips of flexible hydrophilic rubber designed to undergo controlled expansion when exposed to moisture.
 - a. Strips manufactured to limit expansion in directions parallel to the plane of the joint, and to direct expansion against confining material perpendicular to that plane.
 2. Provide normal or low-expansion pressure as scheduled and as indicated on the Drawings.
 3. Manufacturers. One of the following, or equal.
 - a. Hydrophilic strip.
 - 1). Adeka Ultra Seal USA: MC-2010MN.
 - 2). Greenstreak: Hydrotite CJ1020-2K.
 - b. Low expansion hydrophilic strip.
 - 1). Adeka Ultra Seal USA: KBA-1510FP.
 - 2). Greenstreak: Hydrotite CJ0725-3K.

- C. Hydrophilic paste waterstop.
 - 1. Single-component gun grade paste of hydrophilic rubber designed to undergo controlled expansion when exposed to moisture after initial curing.
 - 2. Manufacturers: One of the following, or equal.
 - a. Adeka Ultra Seal USA: P-201.
 - b. Greenstreak: Leakmaster LV-1.

2.2 MASTIC STRIP WATERSTOP

- A. General:
 - 1. System composed of flexible non-expansive hydrocarbon mastic with preformed strips, primer, and other accessories required for a complete and watertight installation.
 - 2. To ensure compatibility of materials, a single manufacturer shall provide all products and accessories for the mastic waterstop system.
 - 3. Provide waterstop and accessories resistant to degradation under cyclic wetting and drying and to chemicals typically found in wastewater treatment structures.
- B. Mastic strip waterstop.
 - 1. Pre-formed strips of flexible non-expansive hydrocarbon mastic designed to bond with cured concrete and fuse with fresh concrete during concrete curing.
 - 2. Manufacturer recommended primer adhesive as required for installation.
 - 3. Manufacturers. One of the following, or equal.
 - a. Henry Company, Sealants Division; Synko-Flex
 - b. Greenstreak; Lockstop
 - c. JP Specialities, Inc.; Earthshield Type 10.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install products in accordance with manufacturer's instructions and recommended details.
- B. Prepare concrete joint surfaces:
 - 1. Use wire brushing or scraping to expose an uncontaminated, solid surface.
 - 2. Clean prepared surface with high-pressure air or water to remove residue and debris.
 - 3. Confirm that prepared surfaces conform to manufacturer's recommendations for surface profile and moisture conditions before installing materials.
- C. Provide manufacturer's recommended lap, splice, and corner details for strip-type waterstops.
 - 1. Use hydrophilic paste at all corner joints and overlap splices of hydrophilic strips.
- D. Hydrophilic strip waterstop.
 - 1. Install primers and adhesives when recommended by the manufacturer before setting hydrophilic strips.
 - 2. Keep hydrophilic strip taut during the fastening process.
 - 3. Secure hydrophilic strip in place with concrete nails, screws, or adhesive.
 - 4. Provide installation with no gap between the hydrophilic strip and the concrete to which it is attached. At rough or irregular surfaces, set hydrophilic strip waterstop strip in a bead of hydrophilic paste.
 - a. Fill all voids and rough areas under the hydrophilic strip with hydrophilic paste.
 - b. Allow hydrophilic paste to cure in accordance with manufacturer's recommendations before encapsulating paste in fresh concrete.
- E. Mastic strip waterstop.

1. Install primers as recommended by the manufacturer before setting mastic strips. For cured concrete surfaces, use of primer is mandatory.
2. Secure mastic strip in place with concrete nails, as required.
3. Provide installation with no gap between the mastic strip and the concrete to which it is attached. At rough or irregular surfaces, press the mastic strip waterstop strip into the concrete surface to achieve continuous contact.

3.2 SCHEDULE

A. Hydrophilic waterstops.

1. Use the hydrophilic waterstop given in the table below.

Joint Type	Condition of Use	Hydrophilic Waterstop To Use
Concrete construction joints	Joint where hydrophilic strip waterstop is placed under all of the following conditions: 1. Slab or wall thickness is greater than 10 inches, and 2. Waterstop is placed between 2 rows of steel reinforcement. 3. Concrete cover from waterstop to nearest concrete face is at least 4 inches.	Hydrophilic strip waterstop set in bed of hydrophilic paste waterstop. Screw strip to concrete substrate.
	Joint where hydrophilic waterstop is placed under one of the following conditions: 1. Waterstop is placed on 1 side of a single row of steel reinforcement, or 2. Concrete cover from waterstop to nearest concrete face is less than 4 inches.	Low expansion hydrophilic strip waterstop set in bed of hydrophilic paste waterstop. Screw strip to concrete substrate.
Pipe penetrations through concrete	Pipe diameter less than 4 inches.	Not allowed.
	Pipe diameter of 4 to 24 inches.	Continuous bead of hydrophilic paste
	Pipe diameter greater than 24 inches.	Continuous hydrophilic strip waterstop around perimeter of pipe, with hydrophilic paste seal at lapped ends of strip.

END OF SECTION

SECTION 03 20 00 - CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 1. Reinforcing steel and related items required for cast-in-place concrete.
- B. Related Sections:
 1. Section 03 11 00 – Concrete Formwork.
 2. Section 03 30 00 – Cast-In-Place Concrete.

1.2 SUPERVISION

- A. Workmanship: Provide qualified supervision at all times reinforcing work is in progress. Workmen shall be experienced iron workers.
- B. Codes: Reinforcement placement and detailing shall comply with practice specified in the "Manual of Standard Practice for Detailing Reinforced Concrete Structures" publication ACI 315- latest edition of the American Concrete Institute or its latest revision, unless otherwise specified herein.

1.3 SUBMITTALS

- A. Shop drawings: Shop drawings shall be prepared for all reinforcement required by the project. Shop drawings shall be logically and legibly prepared to permit reasonable ease of sorting, selecting, placing reinforcement as well as checking drawings. Preparer and fabricator shall be identified on the drawings.
 1. Reinforcement shall not be fabricated until the shop drawings have been processed, approved and returned.
 2. Check all shop drawings to verify reinforcement dimensions required by drawings are satisfied.
 3. Provide bar sizes, bar lengths, bar material, bar grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and lap lengths, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- B. Reinforcement shop drawings:
 1. Review of reinforcement shop drawings by the Engineer will be limited to general compliance with the Contract Documents.
 2. Submit reinforcement shop drawings in a complete package for each specific structure. Partial submittals will be rejected.
- C. Changes to reinforcing steel contract drawing requirements:
 1. Indicate in separate letter submitted with shop drawings any changes of requirements indicated on the Drawings for reinforcing steel.
 2. Such changes will not be acceptable unless the Engineer has accepted such changes in writing.

1.4 PRODUCT HANDLING

- A. Protection:
 1. Use all means necessary to protect reinforcement from dirt and other foreign substances before and after placing.
 2. Store in a neat manner in logical order, bundled, tagged, off the ground, and in an area adequately isolated.

3. Re-bundle to maintain identification when placing is interrupted.
- B. Replacement: All damaged or improperly fabricated bars shall be replaced at the Contractor's expense.

PART 2 - PRODUCTS

2.1 CONCRETE REINFORCEMENT

- A. General: All reinforcement shall be free from rust, loose mill scale, and other contaminants.
- B. Wire bar supports located between reinforcing bars and face of concrete:
1. Stainless steel. Type 304 stainless steel bar supports.
 2. Support reinforcing for concrete placed on ground using bar support chairs with Type 304 stainless steel plates for resting on ground welded to the chairs.
- C. Concrete bar supports located between reinforcing bars and face of concrete:
1. Manufactured expressly for supporting reinforcing bars.
 2. Manufactured with two annealed steel wires to securely tie concrete bar support to reinforcing steel.
 3. Manufactured with minimum $f'_c = 5,000$ psi concrete.

2.2 WELDED WIRE REINFORCEMENT (WWR):

- A. In accordance with ASTM A 185.
- B. WWR may not be used in place of reinforcing bars unless accepted in writing by the Engineer.
- C. Provide WWR in flat sheet form.
- D. If WWR is used, provide WWR having cross-sectional area per linear foot of not less than cross-sectional area per linear foot of reinforcing bars indicated on the Drawings.

2.3 ACCESSORIES:

- A. General: Accessories shall be subject to Engineer's approval.
1. Tie wire - 18 gauge annealed steel wire.
 2. Number of chairs shall be adequate to prevent sag during steel and concrete placement.
 3. Wall layer spacers shall be 1/4 inch round "Z" bar.
 4. Horizontal layer spacers shall be wire bar supports or reinforcing bars bent to support top layer.
 5. Dowel bar splicer:
 - a. Dowel bar splicer shall be Richmond or approved equal, manufactured from standard specified rebar material, with NC threads and shop fabricated to specified dowel configurations.
 6. Mechanical Connectors:
 - a. Approved Manufacturers: Dayton Superior, Erico, or approved equal.
 - b. The mechanical connection shall meet the code requirements of developing in tension and compression as required by the referenced codes. Install per the manufacturer's approved procedures.

PART 3 - EXECUTION

3.1 GENERAL

- A. Reinforcing bars and welded wire fabric reinforcement: Verify that reinforcement is new stock free from rust scale, loose mill scale, excessive rust, dirt, oil, and other coatings which adversely affect bonding capacity when placed in the work.
- B. Other trades: Coordinate all work of other trades to avoid conflict with reinforcement.
- C. Shop drawings: Check all shop drawings to verify dimensions required.

3.2 FABRICATING

- A. General: Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice." Reinforcement shall be shop fabricated except where straight bars No. 5 or smaller are required.
- B. Bending: All bending shall be by using bending jigs and mandrels. All bars shall be bent cold.
- C. Cutting: Bars shall be cut by cold shearing. Torch cutting in the field may be permitted in special situations.

3.3 PREPARATION

- A. Surface Preparation:
 - 1. Reinforcing bars: Thin coating of red rust resulting from short exposure will not be considered objectionable. Thoroughly clean any bars having rust scale, loose mill scale, or thick rust coat.
 - 2. Cleaning of reinforcement materials: Remove concrete or other deleterious coatings from dowels and other projecting bars by wire brushing or sandblasting before bars are embedded in subsequent concrete placement.

3.4 PLACING

- A. General:
 - 1. Accurately place all bars to meet tolerances as outlined in ACI 318 and tie in place before placing concrete, include dowels. Tie with 18 gauge steel wire.
 - 2. Corner bars required for horizontal reinforcing. Unless otherwise noted on plans corner bars shall be same size and spacing as horizontal bar.
 - 3. No field bending of bars will be allowed.
- B. Clearance:
 - 1. Preserve clearance between bars of 1 inch minimum, not less than one bar diameter or 1-1/3 times large aggregate, whichever is larger.
 - 2. Provide following concrete coverage over reinforcing steel unless otherwise indicated on plans:
 - a. Three inches above subgrade - in excavation.
 - b. Two inches above subgrade - slab on fill.
 - c. Two inches from form - walls exposed to water or earth and for slab over water.
 - d. One and one-half inches from form - normal cover interior walls, beams, columns, etc.
 - e. Three-fourths inch on top steel - interior slabs.
 - f. One and one-half inches on top and bottom - exterior slab.
 - 3. Lap all reinforcing bars as required by ACI 318-latest edition Class B as indicated on the drawings except where otherwise required by ACI.

4. Stagger splices except where otherwise shown.
 5. Lap welded wire reinforcement a minimum of two spaces.
- C. Dowels: All dowels shall be placed and securely anchored before placing concrete
- D. Supports:
1. Provide a sufficient number to prevent sagging, to prevent shifting, and to support loads during construction; but in no case less than quantities and at locations as indicated in ACI 315.
 2. Do not use brick, broken concrete masonry units, spalls, rocks, wood or similar materials for supporting reinforcing steel.
 3. Do not use reinforcing bars that have less cover than required by the Contract Documents. Do not adjust location of reinforcement required by the Contract Documents to provide cover to these bars.
 4. Wire chairs will not be accepted to hold reinforcing clearance on walls.
- E. Tying of bar reinforcement:
1. Fasten bars securely in place with wire ties.
 2. Tie bars sufficiently often to prevent shifting.
 3. Provide at least 3 ties in each bar length.
 4. Do not apply to dowel lap splices or to bars shorter than 4 feet, unless necessary for rigidity.
 5. Tie slab bars at every intersection around periphery of slab.
 6. Tie wall bars and slab bar intersections other than around periphery at not less than every fourth intersection, but at not greater than following maximum spacings:

Bar Size	Slab Bar Spacing Inches	Wall Bar Spacing Inches
Bars Number 5 and Smaller	60	48
Bars Number 6 through Number 9	96	60
Bars Number 10 and Number 11	120	96

7. After tying wire ties, bend ends of wire ties in towards the center of the concrete section.
 - a. The cover for wire ties shall be the same as the cover requirements for reinforcing bars.
- F. Openings and obstructions:
1. Place additional reinforcing around openings as shown on the drawings and standard details.
 2. Bend reinforcing around obstructions. Place extra reinforcing where cutting is authorized. Engineer's approval required before cutting steel.
 3. Consult Engineer on special situations.
- G. Welded Wire Reinforcement:
1. Install necessary wiring, spacing chairs, or supports to keep welded wire fabric in place while concrete is being placed.
 2. Bend fabric as indicated on the Drawings or required to fit work.
 3. Unroll or otherwise straighten fabric to make flat sheet before placing in the Work.
 4. Lap splice welded wire fabric as indicated on the Drawings.
 5. If lap splice length is not indicated on the Drawings, splice fabric in accordance with ACI 318 and ACI 350.
- H. Certification: Certify material and type of deformation.

- I. Condition: All reinforcement shall be free from loose rust, dirt coating, oil, paint, or any foreign substance.

END OF SECTION

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete, including concrete materials, concrete accessories, concrete mixture designs, placement procedures, and finishes, for the following:
 - 1. Footings.
 - 2. Foundation walls.
 - 3. Slabs-on-grade.
 - 4. Suspended slabs.
 - 5. Concrete toppings.
 - 6. Building frame members.
 - 7. Building walls.
 - 8. Hydraulic (liquid containing) structures.
- B. Related Sections:
 - 1. Section 03 01 00 - Concrete Surface Repair
 - 2. Section 03 11 00 - Concrete Formwork
 - 3. Section 03 15 00 - Concrete Accessories
 - 4. Section 03 20 00 - Concrete Reinforcement
 - 5. Section 03 60 00 - Grout
 - 6. Section 03 60 01 - Basin Bottom Grout
 - 7. Section 03 64 00 - Concrete Repair Crack Injection

1.2 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 301 – Specifications for Structural Concrete
 - 2. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials
 - 3. ACI 305 - Hot Weather Concreting Standard
 - 4. ACI 306 - Cold Weather Concreting Standard
 - 5. ACI 318 - Building Code Requirements for Structural Concrete and Commentary
 - 6. ACI 350 - Code Requirements for Environmental Engineering Concrete Structures and Commentary
 - 7. ACI 211.1 – Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
 - 8. ACI 302.1R – Guide for Concrete Floor and Slab Construction
 - 9. ACI 308.1 – Standard Specification for Curing Concrete
 - 10. Manual of Concrete Practice
- B. ASTM International (ASTM):
 - 1. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 2. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
 - 3. ASTM C33 - Standard Specification for Concrete Aggregates
 - 4. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
 - 5. ASTM C40 - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete
 - 6. ASTM C42 - Standard Test Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - 7. ASTM C88 - Standard Test Method of Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
 - 8. ASTM C94 - Standard Specification for Ready-Mixed Concrete
 - 9. ASTM C114 - Standard Test Methods for Chemical Analysis of Hydraulic Cement

10. ASTM C117 - Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
11. ASTM C123 - Standard Test Method for Lightweight Particles in Aggregate
12. ASTM C131 - Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
13. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
14. ASTM C142 - Standard Test Method for Clay Lumps and Friable Particles in Aggregate
15. ASTM C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete
16. ASTM C150 - Standard Specification for Portland Cement
17. ASTM C156 - Standard Test Method for Water Loss [from a Mortar Specimen] Through Liquid Membrane-Forming Curing Compounds for Concrete
18. ASTM C157 - Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete
19. ASTM C171 - Standard Specifications for Sheet Materials for Curing Concrete
20. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete
21. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
22. ASTM C192 - Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
23. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
24. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete
25. ASTM C295 - Standard Guide for Petrographic Examination of Aggregates for Concrete
26. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
27. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete
28. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
29. ASTM C881 - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
30. ASTM C1064 - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
31. ASTM C1059 - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete
32. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
33. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete
34. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete
35. ASTM D448 - Standard Classification for Sizes of Aggregate for Road and Bridge Construction
36. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
37. ASTM D2240 - Standard Test Method for Rubber Property - Durometer Hardness
38. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection
39. ASTM E1155 - Standard Test Method for Determining F_F Floor Flatness and F_L Floor Levelness Numbers
40. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
41. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.
- B. Exposed Concrete: Concrete surface that can be seen inside or outside of structures regardless whether concrete is above water, dry at all times, or can be seen when structure is drained.
- C. Defective Areas: Surface defects that include honeycomb, rock pockets, indentations greater than 3/16", cracks 0.005" wide and larger as well as any crack that leaks for liquid containing basins and below grade habitable spaces; cracks 0.010" wide and larger in non-fluid holding structures, spalls, chips, air bubbles greater than 3/4" in diameter, pinholes, bug holes, embedded debris, lift lines, sand lines, bleed lines, leakage from form joints, fins and other projections, form pop-outs, texture irregularities, and stains and other color variations that cannot be removed by cleaning.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Concrete Mixture Designs: For each concrete mixture.
 - 1. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 2. Indicate amounts of mixing water to be withheld for later addition at Project site.
 - 3. Submit Shrinkage Test Results for design mixtures. See 3.13 FIELD QUALITY CONTROL, E. Shrinkage Tests - 3 for shrinkage test requirements and limitations. Any Mix Design submitted without a Shrinkage Test will not be reviewed and will be returned to the Contractor as "Rejected".
- C. Welding certificates.
- D. Qualification Data: For manufacturer testing agency.
- E. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Curing compounds.
 - 4. Floor and slab treatments.
 - 5. Bonding agents.
 - 6. Adhesives.
 - 7. Vapor retarders.
 - 8. Semi-rigid joint filler.
 - 9. Joint-filler strips.
- F. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.
- G. Field quality-control test and inspection reports.
- H. Course Aggregate Gradation.
- I. Fine Aggregate Gradation.
- J. One copy of each 30 consecutive strength test results and mix design used from a record of past performance or one copy of the laboratory trial mix design and results and one copy of the mix design proposed for each mixture and use under this contract. If the 30 consecutive strength tests are used, the test shall have been made within the 12 month period prior to this submittal.
- K. Material Test Reports: for the following, from a testing agency acceptable to the ENGINEER, indicating compliance with requirements:

1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- L. Ready-Mix concrete.
1. Provide delivery tickets for ready-mix concrete or weigh-masters certificate per ASTM C94 including weights of cement and each size aggregate and amount of water added at the plant and record of pours. Record the amount of water added on the job on the delivery ticket. Water added at the plant shall account for moisture in both coarse and fine aggregate. If water is added on the job the total water content shall not exceed the water content of the approved design mix.
 2. Keep record showing time and place of each pour (placement) of concrete, together with transit-mix delivery slips certifying the contents of the pour (placement).
 3. Furnish records to Engineer upon request.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm with a minimum of 5 years' experience in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
 2. The criteria hereinafter set out are solely for the purpose of establishing required mixture proportions and do not constitute a basis for confirming the adequacy of concrete strength.
 - a. Required Average Strength Above Specified Compressive Strength: Proportions, including water-cement ratio, shall be established on the basis either of laboratory trial batches or of field experience with the materials to be employed. The proportions shall be selected to produce an average strength of 28 days exceeding the specified compressive strength by the amount indicated below, when both air content and slump are the maximums permitted by the Specifications.
 - b. Determination of the required average strength shall be in accordance with ACI 318 "Building Code Requirements for Reinforced Concrete," except that if suitable data from trial batches or field experience cannot be obtained, permission will not be granted to base concrete proportions on the water-cement ratio limits set out in the above referenced code.
 - 1). Past Plant Performance: Proportions may be established on the actual field performance of the ready-mix producer. Where the concrete production facility has a record, based on at least 30 consecutive strength tests taken within the prior 12 months representing similar materials and conditions to those expected, the strength used as the basis for selecting proportions shall exceed the required f'_c by at least:
 - a). 400 psi if the standard deviation is less than 300 psi;
 - b). 500 psi if the standard deviation is 300 to 400 psi;
 - c). 700 psi if the standard deviation is 400 to 500 psi;
 - d). 900 psi if the standard deviation is 500 to 600 psi;
 - e). 1,200 psi if the standard deviation is above 600 psi or unknown.
 - 2). Strength data for determining standard deviation shall be considered to comply with the foregoing stipulations if they represent either a group of at least 30 consecutive tests or the statistical average of two groups totaling 30 or more tests. The tests used to establish standard deviation shall represent concrete produced to meet a specified strength or strengths within 1,000 psi of that specified for the proposed work. Changes in materials and proportions within the population of background tests shall not have been more closely restricted than they will be for the proposed work.

- 3). Strength data for determining standard deviation shall be considered to comply with the foregoing stipulations if they represent either a group of at least 30 consecutive tests or the statistical average of two groups totaling 30 or more tests. The tests used to establish standard deviation shall represent concrete produced to meet a specified strength or strengths within 1,000 psi of that specified for the proposed work. Changes in materials and proportions within the population of background tests shall not have been more closely restricted than they will be for the proposed work.
 - 4). Laboratory Trial Batches: When the ready-mix producer does not have a record of past performance, the combination of materials and the proportions selected shall be determined from trial mixes having proportions and consistencies suitable for the work based on ACI 211.1-77.
 - a) When laboratory trial batches are used as the basis for selecting concrete proportions, strength tests shall be made in accordance with "Method of Test for Compressive Strength of Molded Concrete Cylinders" (ASTM C39) on specimens prepared in accordance with "Method of Making and Curing Test Specimens in the Laboratory" (ASTM C192). A curve shall be established showing the relationship between water-cement ratio (or cement content) and compressive strength. The curve shall be based on at least three points representing batches which produce strengths above and below that required. Each point shall represent the average of at least three specimens tested at 28 days or the earlier age designation.
 - b) The average strength required shall exceed the specified compressive strength by 1,200 psi.
 - c) The maximum permissible water-cement ratio (or minimum cement content) for the concrete to be used in the structure shall be that shown by the curve to produce the average strength indicated, but in no case shall the water-cement ratio exceed 0.42 by weight.
- C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C1077 and ASTM E329 for testing indicated.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
1. ACI 301, "Specifications for Structural Concrete."
 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
 3. ACI 350 "Code Requirements for Environmental Engineering Concrete Structures."
 4. ACI 318 "Building Code Requirements for Reinforced Concrete."
- F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- G. Pre-installation Conference: Conduct conference at Project site.
1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.

- b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete subcontractor.
2. Review special inspection and testing and inspecting agency procedure for field quality control, concrete finishes and finishing, cold and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints and joint-filler strips, semi-rigid joint fillers, forms and form removal limitations, shoring and re-shoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures and concrete protection.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements products that may be incorporated into the work include, but are not limited to products specified.
 - 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 FORM-FACING MATERIALS

- A. See Section 03 11 00 CONCRETE FORMWORK for additional requirements.
- B. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints. Furnish on exposed surfaces and interior surfaces.
- C. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit. Permitted to furnish on below grade exterior surfaces
- D. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- E. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.
- F. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- G. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- H. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- I. Form-Release Agent: As specified in Section 03 11 00 CONCRETE FORMWORK.

2.3 REINFORCEMENT ACCESSORIES

- A. Expansion Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
 - 1. All dowels shall be placed and securely anchored before placing concrete. All dowels shall be parallel with each other and perpendicular to the joint.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports

from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic or CRSI Class 2 stainless-steel bar supports.
2. Secure all reinforcement in place using steel chairs, supports, "A" bars and any other ACI approved product. Supports shall be spaced adequately to support the steel firmly in place.
3. Chairs will not be accepted to hold reinforcing clearance on walls.

C. General:

1. Accessories shall be subject to Engineer's approval.
2. Tie wire- 18 gauge steel wire. Ends of wire shall be bent towards the interior part of the wall.
3. Support above forms with fabricated steel chairs. Number of chairs shall be adequate to prevent sag during steel and concrete placement.
4. Wall layer spacers shall be 1/4" ROUND "Z" BAR.
5. Horizontal layer spacers shall be stand.
6. Dowel Bar Splicer:
 - a. Dowel bar splicer shall be Richmond or approved equal, manufactured from standard specified rebar material with NC threads and shop fabricated to specified dowel configurations.

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
1. Portland Cement (Non-hydraulic Above Grade Structures): ASTM C150, Type I or II, or combination of Type I with fly ash.
 2. Portland Cement (Hydraulic and/or Below Grade Structures): ASTM C150 type II or combination of Type I with fly ash.
 3. Fly Ash: ASTM C618, Class F fly ash shall not exceed 15 percent of the cementitious materials, unless written approval is given by the Engineer.
- B. Normal-Weight Aggregates: ASTM C33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
1. Maximum Coarse-Aggregate Size: 1" nominal.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
 3. Fine aggregate:
 - a. Provide fine aggregate for concrete or mortar consisting of clean, natural sand or of sand prepared from crushed stone or crushed gravel.
 - b. Do not provide aggregate having deleterious substances in excess of following percentages by weight of contaminating substances.
 - c. In no case shall total exceed percent listed.

Item	Test Method	Percent
Removed by decantation (dirt, silt, etc.)	ASTM C117	3
Shale or Chert	ASTM C123	1
	ASTM C295*	1
Clay Lumps	ASTM C142	1

* Test Method C123 is used to identify particles in the sample lighter than 2.40 Specific Gravity. Test Method C295 is used to identify which of the lightweight particles are shale or chert. If the results of Test Method C123 are less than 1 percent, Test Method C295 is not required.

- d. Except as otherwise specified, grade fine aggregate from coarse to fine in accordance with ASTM C33.
4. Coarse aggregate:
- a. Provide coarse aggregate consisting of gravel or crushed stone made up of clean, hard, durable particles free from calcareous coatings, organic matter, or other foreign substances.
 - b. Not exceeding 15 percent by weight, of thin or elongated pieces having length greater than 5 times average thickness.
 - c. Deleterious substances: Not in excess of following percentages by weight, and in no case having total of all deleterious substances exceeding 2 percent.
 - d. Coarse aggregate shall be washed prior to combining in concrete mix.

Item	Test Method	Percent
Shale or chert	ASTM C123 ASTM C295**	1.25 1
Coal and lignite	ASTM C123	1/4
Clay lumps and friable particles	ASTM C142	1/4
Materials finer than Number 200 sieve	ASTM C117	1/2*
* Except when material finer than Number 200 sieve consists of crusher dust, maximum amount shall be 1 percent. ** Test Method C 123 is used to identify particles in the sample lighter than 2.40 Specific Gravity. Test Method C 295 is used to identify which of the lightweight particles are shale, chert, coal, or lignite. If the results of Test Method C 123 are less than 1.25 percent (the minimum combined percentage of shale, chert, coal and lignite), Test Method C 295 is not required.		

5. Grading:
- a. Aggregate for building elements and hydraulic structures: In accordance with ASTM C33, Size Number 57, except as otherwise specified or authorized in writing by the ENGINEER.

C. Water: ASTM C94 and potable (not recycled water).

2.5 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 2. Retarding Admixture: ASTM C494/C494M, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
 4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.

- a. Bayer Corporation.
- b. ChemMasters.
- c. Conspec Marketing & Manufacturing Co., Inc.; a Dayton Superior Company.
- d. Davis Colors.
- e. Elementis Pigments, Inc.

2.6 VAPOR RETARDERS

- A. Plastic Vapor Retarder: ASTM E1745, Class B. Include manufacturers' recommended adhesive or pressure-sensitive tape.
 - 1. Products:
 - a. Fortifiber Corporation: Moistop Ultra.
 - b. Revan Industries Inc.; Vapor Block 10.
 - c. Stego Industries, LLC; Stego Wrap, 15 mils.

2.7 FLOOR AND SLAB TREATMENTS

- A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or silicate materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces.
 - 1. Products:
 - a. Burke by Edoco; Titan Hard.
 - b. ChemMasters; Chemisil Plus.
 - c. ChemTec international; ChemTec One.
 - d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company
 - e. Curecrete Distribution Inc.; Ashford Formula.
 - f. Dayton Superior Corporation; Day-Chem sure Hard.
 - g. Euclid Chemical Company (The); Euco Diamond Hard.
 - h. Kaufman Products, Inc.; SureHard.
 - i. L&M Construction Chemicals, Inc.; Seal Hard.
 - j. Meadows, W. R., Inc.; Liqui-Hard.
 - k. Metalcrete Industries; Floorsaver.
 - l. Nox-Crete Products Group, Kinsman Corporation; Duranox.
 - m. Symons Corporation, a Dayton Superior Company; buff Hard.
 - n. US Mix Products Company; US Spec Industraseal.
 - o. Vexcon Chemicals, Inc.; Vexcon StarSeal PS.

2.8 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
 - 1. Products:
 - a. Axim Concrete Technologies; Cimfilm.
 - b. Burke by Edoco; BurkeFilm.
 - c. ChemMasters; Spray-Film.
 - d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior company; Aquafilm.
 - e. Dayton Superior Corporation; Sure Film.
 - f. Euclid Chemical Company (The); Eucobar.
 - g. Kaufman Products, Inc.; Vapor Aid.
 - h. Lambert Corporation; Lambco Skin.
 - i. L&M Construction Chemicals, Inc.; E-Con.
 - j. MBT Protection and Repair, Div., of ChemRex; Confilm.
 - k. Meadows, W. R., Inc; Sealtight Evapre.
 - l. Metalcrete Industries; Waterhold.
 - m. Nox-Crete Products Group, Kinsman Corporation; Monofilm.
 - n. Sika Corporation, Inc.; SikaFilm.

- o. Symons Corporation, a Dayton Superior Company; Finishing Aid.
 - p. Unitex; Pro-Film.
 - q. US Mix Products Company; US Spec Monofilm ER.
 - r. Vexcon Chemicals, Inc.; Certi-Vex EnvioAssist.
- B. Absorptive Cover: AASHTO M182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating.
- 1. Products
 - a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
 - b. Burke by Edoco; Aqua Resin cure.
 - c. ChemMasters; Safe-Cure Clear.
 - d. Conspec Marketing & Manufacturing co., Inc., a Dayton Superior Company; W.B. Resin cure.
 - e. Dayton Superior Corporation; Day Chem Rez cure (J-11-W).
 - f. Euclid Chemical Company (The); Kurez DR VOX.
 - g. Kaufman Products, Inc.; Thinfilm 420.
 - h. Lambert Corporation; Aqua Kure-Clear.
 - i. L&M Construction Chemicals, Inc.; L&M Cure R.
 - j. Meadows, W. R., Inc.; 100 Clear.
 - k. Nox-Crete Products Group, Kinsman Corporation; Resom Cire E/
 - l. Sykkmons Corporation, a Dayton Superior Company; Resi-Chem Clear Cure.
 - m. Tamms Industries, Inc.; Horncure WB 30.
 - n. Unitex; Hydro cure 309.
 - o. US Mix Products Company; US Spec Maxcure Resin Clear.
 - p. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.
- F. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C1315, Type 1, Class A. Compatible with penetrating liquid floor treatment for surfaces specified to receive penetrating liquid floor treatment.
- 1. Products:
 - a. Burke by Edoco; Cureseal 1315 WB.
 - b. ChemMasters; Polyseal WB.
 - c. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Sealcure 1315 WB
 - d. Euclid Chemical Company (The); Super Diamond Clear VOX.
 - e. Kaufman Products, Inc.; Sure Cure 25 Emulsion.
 - f. Lambert Corporation; UV Safe Seal.
 - g. L&M Construction Chemicals, Inc.; Lumiseal WB Plus.
 - h. Meadows, W. R., Inc.; Vocomp-30.
 - i. Metalcrete Industries; Metcure 30.
 - j. Symons Corporation, a Dayton Superior Company; Cure 7 Seal 31 Percent E.
 - k. Tamms Industries, Inc.; LusterSeal WB 300.
 - l. Unitex; Hydro Seal 25.
 - m. US Mix Products Company; US Spec Radiance UV-25.
 - n. Vexcon Chemicals, Inc.; Vexcon Starseal 1315.

2.9 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber.
- B. Semi-rigid Joint Filler: Two-component, semi-rigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D2240.

- C. Bonding Agent: ASTM C1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- D. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
 - 1. Types IV and V, load bearing for bonding hardened or freshly mixed concrete to hardened concrete.

2.10 REPAIR MATERIALS

- A. See Sections 03 01 00, CONCRETE SURFACE REPAIR SYSTEMS and 03 64 00, CONCRETE REPAIR CRACK INJECTION.

2.11 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage by weight of cementitious materials other than Portland cement in concrete as follows:
 - 1. Fly Ash: ASTM C 618 Class F; 15 percent of cementitious materials maximum, unless written approval is given by the Engineer.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement for non-hydraulic structures and 0.10 percent by weight of cement for hydraulic structures.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing or high-range water-reducing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.12 CONCRETE MIXTURES

- A. Proportion normal-weight concrete mixture as follows for all structural elements:
 - 1. Minimum Compressive Strength: 4,500 psi at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.42.
 - 3. Minimum Cementitious Materials Content: 535 lb. /cu yd.
 - 4. Slump Limit: 8-inches Max for concrete with verified slump of 2 to 4-inches before adding high range water-reducing admixture or plasticizing admixture per ACI 301.
 - 5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery.
 - a. Concrete for interior, above grade, non-hydraulic slabs does not require air entrainment.
- B. Proportion normal-weight concrete mixture as follows for all non-structural elements except mud slabs:
 - 1. Minimum Compressive Strength: 3,000 psi at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 - 3. Slump Limit: 8 inch for concrete with verified slump of 2" to 4": before adding high-range water-reducing admixture or plasticizing admixture per ACI 301.
 - 4. Air content: 5 1/2%, $\pm 1.5\%$ at point of delivery.
- C. Proportion normal-weight concrete mixture as follows for all mud slabs:
 - 1. Minimum Compressive Strength: 2,500 psi at 28 days.

2. Maximum Water-Cementitious Materials Ratio: 0.62.
3. Slump Limit: 8 inch for concrete with verified slump of 3" to 6" before adding high-range water-reducing admixture or plasticizing admixture per ACI 301.

2.13 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M and ASTM C1116, and furnish batch ticket information.
 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.
 1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK: See Section 03 11 00, CONCRETE FORMWORK.

3.2 VAPOR RETARDERS

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E1643 and manufacturer's written instructions.
 1. Lap joints 6 inches and seal with manufacturers' recommended tape.

3.3 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer/Owner
 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
 6. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one fourth of concrete thickness as follows:
 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.
 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.4 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by the Engineer.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 2. Maintain reinforcement in position on chairs during concrete placement.
 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 2. All embedded items such as wall pipes, embed frames, steel guide rails, channels, etc. (not including conduit and reinforcing) shall be considered "massive embeddings" and are required to be kept above 32 deg F during placement and for the first 48 hours after placement. Contractor shall take the necessary measures; including insulated blankets, heated blankets, and heaters; to insure items are kept above 32 deg F. All other methods shall be submitted to the Engineer for approval.
 3. Do not use frozen materials or materials containing ice or snow.
 4. Do not place concrete on frozen subgrade or on subgrade containing frozen materials. Top 12-inches of subgrade shall be thawed prior to concrete placement. Contractor is responsible for verifying that the temperature for the top 12-inches of subgrade is above 32 deg F.
 5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- G. Hot-Weather Placement: Comply with ACI 305.1 and as follows:
1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is included in total amount of mixing water. Using liquid nitrogen to cool concrete is contractor's option, but liquid nitrogen should not replace water.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
 3. All other methods shall be submitted to the Engineer for approval.

3.5 CONCRETE WALL FINISHES

- A. Type W-1 (Ordinary Wall Finish or Coating):
1. Patch tie holes.
 2. Knock off projections.
 3. Patch defective areas.
- B. Type W-2 (Smooth Wall Finish):
1. Patch tie holes.
 2. Grind off projections, fins, and rough spots.
 3. Patch defective areas and repair rough spots resulting from form release agent failure or other reasons to provide smooth uniform appearance.
- C. Type W-5 (Finish for Painting):
1. Patch tie holes.
 2. Grind off projections, fins, and rough spots.
 3. Patch and repair defective areas as specified for Type W-2.
 4. Apply paint or coating system as specified in Section 09 90 00 Painting and Protective Coatings.

3.6 CONCRETE SLAB FINISHES

- A. General:
1. Finish slab concrete per the requirements of ACI 302.1R
 2. Use manual screeds, vibrating screeds, or roller compacting screeds to place concrete level and smooth.
 3. Do not use "Jitterbugs" or other special tools designed for the purpose of forcing coarse aggregate away from the surface and allowing a layer of mortar, which will be weak and cause surface cracks or de-lamination, to accumulate.
 4. Do not dust surface with dry materials.
 5. Use evaporation retardant.

6. Round off edges of slabs with a steel edging tool, except where a cove finish is shown. Steel edging tool radius shall be 1/4" for slabs subject to wheeled traffic.
- B. Type S-1 (Steel Troweled Finish):
1. Finish by screeding and floating with straightedges to bring surfaces to required finish elevation, use evaporation retardant.
 2. While concrete is still green, but sufficiently hardened to bear a person's weight without deep imprint, wood float to true, even plane with no coarse aggregate visible.
 3. Use sufficient pressure on wood floats to bring moisture to surface.
 4. After surface moisture has disappeared, hand trowel concrete to produce smooth, impervious surface, free from trowel marks.
 5. Burnish surface with an additional troweling. Final troweling shall produce a ringing sound from trowel.
 6. Do not use dry cement or additional water during troweling, nor will excessive troweling be permitted.
 7. Power Finishing:
 - a. An approved power machine may be used in lieu of hand finishing in accordance with directions of machine manufacturer.
 - b. Do not use power machine when concrete has not attained the necessary set to allow finishing without introducing high and low spots in slab.
 - c. Do first steel troweling for slab S-1 finish by hand.
- C. Type S-2 (Wood Float Finish):
1. Finish slabs to receive fill and mortar setting beds by screeding with straight edges to bring surface to required finish plane.
 2. Wood float finish to compact and seal surface.
 3. Remove laitance and leave surface clean.
 4. Coordinate with other finish procedures.
- D. Type S-3 (Underside Elevated Slab Finish): When forming is removed, grind off projections on underside of slab and patch defective areas, including small shallow air pockets where schedule of concrete finishes requires painting or protective coating.
- E. Type S-5 (Broomed Finish):
1. Finish as specified for Type S-1 floor finish, except omit final troweling and finish surface by drawing a fine-hair broom lightly across the surface.
 2. Broom in same direction and parallel to expansion joints, or, in the case of inclined slabs, perpendicular to slope, except for round roof slab, broom surface in radial direction.
- F. Type S-6 (Sidewalk Finish):
1. Slope walks down 1/4" per foot away from structures, unless otherwise shown.
 2. Strike off surface by means of strike board and float with wood or cork float to a true plane, then flat steel trowel before brooming.
 3. Broom surface at right angles to direction of traffic or as shown.
 4. Lay out sidewalk surfaces in blocks, as shown or as directed by Engineer, with a grooving tool.
- G. Type S-7: The top surfaces of basins in which raking mechanisms are to be installed
1. Slabs shall be finished by sweeping in cement grout with the mechanism. The cement grout to be used shall be composed of one part Portland cement and two parts sand.
 2. The sweeping-in process shall be performed under the supervision of a factory representative of the equipment manufacturer.
 3. The slab upon which the grout is to be applied shall receive a Type S-5 finish except that after leveling and floating, it shall be raked in such a manner as to provide a good bond for the grout. Raking shall develop a pattern with a depth of 1/4" every 2". Before grout is deposited on the slab, it shall be thoroughly cleaned, wet down with clean water and lightly dusted with neat cement immediately prior to placement of the grout.

3.7 SCHEDULE OF CONCRETE FINISHES

A. Form Tolerances: As specified in Section 03 11 00, CONCRETE FORMWORK.

B. Provide concrete finishes as scheduled:

Area	Type of Finish	Required Form Tolerances
EXTERIOR WALL SURFACES		
Above grade/exposed (above a point 12" below finish grade)	W-2	W-B
Backfilled (below a point 12" below final grade)	W-1	W-A

INTERIOR WALL SURFACES		
Buildings, pipe galleries, and other dry areas	W-5	W-B
EXTERIOR SLABS		
Exposed Roof slab or Slab-on-grade for non-hydraulic structures	S-5	
Stairs and landings	S-5	
Sidewalks	S-6	
Other exterior slabs/pads	S-1	
INTERIOR SLABS		
Non-Hydraulic areas such as pipe galleries and slabs-on-grade	S-1	
Slabs to receive fill and mortar setting beds	S-2	

3.8 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.
- D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.

3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.
 - 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.10 LIQUID FLOOR TREATMENTS

- A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.
 - 1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
 - 2. Do not apply to concrete that is less than 28 days' old.
 - 3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.
- B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.

3.11 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semi-rigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.12 REPAIRING CONCRETE

- A. General:
 1. Any areas deemed as having excessive defects or considered to have a negative effect on the structural performance of the structure shall be removed to the extents approved by the Engineer. The Engineer has the option of calling for the removal of the entire section if the damage is such that a repair will not be a suitable option. All work required to correct the defect will be the responsibility of the Contractor and will be paid for by the Contractor.
 2. Inject cracks as defined in 1.3.D Defective Areas with crack repair epoxy as specified in Section 03 64 00, CONCRETE REPAIR CRACK INJECTION.
 3. Repair concrete surfaces defects as defined in 1.3.D Defective Areas using one of the materials specified in Section 03 01 00, CONCRETE SURFACE REPAIR SYSTEMS. Select system, submit for review, and obtain approval from Engineer prior to use.
 4. Prior to starting the repair work, obtain quantities of color-matched repair material and manufacturer's detailed instructions for use to provide a structural repair with finish to match adjacent surface.
 5. Develop repair techniques with material manufacturer.
 6. Dress surface of repair that will remain exposed to view to match color and texture of adjacent surfaces. Repair of concrete shall provide a structurally sound surface finish, uniform in appearance or upgrade finish by other means until acceptable to Engineer.
- B. Tie Holes:
 1. Fill with nonshrink grout as specified in Section 03 60 00, GROUT.
 2. Match color of adjacent concrete.
 3. Compact grout using steel hammer and steel tool to drive grout to high density. Cure grout with water.
- C. Alternate Form Ties-Through-Bolts:
 1. Seal through-bolt hole by sandblasting or mechanically cleaning and roughening entire interior surface of hole, coating roughened surface with bonding agent and driving elastic vinyl plug and then dry packing entire hole on each side of plug with nonshrink grout, as specified in Section 03 60 00, GROUT. Use only enough water to dry pack grout. Dry pack while bonding agent is still tacky or remove bonding agent by mechanical means and reapply new bonding agent.
 2. Compact grout using steel hammer and steel tool to drive grout to high density. Cure grout with water.
- D. Exposed Metal Objects:
 1. Metal objects not intended to be exposed in as-built condition of structure including wire, nails, and bolts, shall be removed by chipping back concrete to depth of 1 inch and then cutting or removing metal object.
 2. Repair areas of chipped-out concrete per requirements of Section 03 01 00 CONCRETE SURFACE REPAIR SYSTEMS.
- E. Blockouts at Pipes or Other Penetrations:
 1. Meet details shown or submit proposed blockouts for review.
 2. Use nonshrink, nonmetallic grout, Category I or II as specified in Section 03 60 00, GROUT.

3.13 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. Payment of the testing and inspection agency shall be by the Contractor from the contract allowance for independent testing in accordance with Section 01 29 00, PAYMENT PROCEDURES.
- B. Inspections:
 - 1. Steel reinforcement placement.
 - 2. Headed bolts and studs.
 - 3. Verification of use of required design mixture.
 - 4. Concrete placement, including conveying and depositing.
 - 5. Curing procedures and maintenance of curing temperature.
 - 6. Verification of concrete strength before removal of shores and forms from beams and slabs.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C172 shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd. plus one set for each additional 50 cu. yd. or fraction thereof.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 - 2. Slump: ASTM C143/C143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 - 3. Air Content: ASTM C231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - 4. Concrete Temperature: ASTM C1064/C1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
 - 5. Compression Test Specimens: ASTM C31/C31M.
 - a. Cast and laboratory cure two sets of three standard cylinder specimens for each composite sample.
 - b. Cast and field cure two sets of three standard cylinder specimens for each composite sample.
 - 6. Compressive-Strength Tests: ASTM C39/C39M; test one set of three laboratory-cured specimens at 7 days and one set of three specimens at 28 days.
 - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days. The third cylinder will be retained for subsequent testing if required by the Engineer.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 - 7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
 - 8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
 - 9. Test results shall be reported in writing to Engineer, Owner, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive

- strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.
 11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by the Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Engineer.
 12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 13. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- D. Measure floor and slab flatness and levelness according to ASTM E 1155 48 hours after finishing. Specified overall values of flatness $F(f)=25$; and levelness $F(L)=20$; with minimum local values, $F(f)=17$ and $F(L)=15$.
1. $F(L)$ value only applies to elevated slabs after shoring has been removed.
- E. Shrinkage Tests
1. Drying shrinkage tests shall be performed for the trial batch indicated in Paragraph CONCRETE MIXTURES FOR HYDRAULIC ELEMENTS for the first placement of each class of concrete for all structures noted in paragraph CONCRETE MIXTURES FOR HYDRAULIC ELEMENTS, and during construction to insure continued compliance with these Specifications. Number of field test to be determined by Engineer or Engineer's Field Representative.
 2. Drying shrinkage specimens shall be 4" by 4" by 11" prisms with an effective gauge length of 10"; fabricated, cured, dried, and measured in accordance with ASTM C157 modified as follows: specimens shall be removed from molds at an age of 23 ± 1 hours after trial batching, shall be placed immediately in water at $70 \text{ }^{\circ}\text{F} \pm 3 \text{ }^{\circ}\text{F}$ for at least 30 minutes, and shall be measured within 30 minutes thereafter to determine original length and then submerged in saturated lime water at $73 \text{ }^{\circ}\text{F} \pm 3 \text{ }^{\circ}\text{F}$. Measurement to determine expansion expressed as a percentage of original length shall be made at age 7 days. This length at age 7 days shall be the base length for drying shrinkage calculations ("0" days drying age). Specimens then shall be stored immediately in a humidity control room maintained at $73 \text{ }^{\circ}\text{F} \pm 3 \text{ }^{\circ}\text{F}$ and $50\% \pm 4\%$ relative humidity for the remainder of the test. Measurements to determine shrinkage expressed as percentage of base length shall be made and reported separately for 7, 14, 21, and 28 days of drying after 7 days of moist curing.
 3. The drying shrinkage deformation of each specimen shall be computed as the difference between the base length (at "0" days drying age) and the length after drying at each test age. The average drying shrinkage deformation of the specimens shall be computed to the nearest 0.0001" at each test age. If the drying shrinkage of any specimen departs from the average of that test age by more than 0.0004", the results obtained from that specimen shall be discarded. Results of the shrinkage test shall be reported in graphical form Length Change (in) vs. Age (days) and Length Change (%) vs. Age (days) to the nearest 0.001% of shrinkage. Compression test specimens shall be taken in each case from the same concrete used for preparing drying shrinkage specimens. These tests shall be considered a part of the normal compression tests for the project. Allowable shrinkage limitations shall be as indicated below.
 - a. Shrinkage Limitation: The maximum concrete shrinkage for specimens cast in the laboratory from the trial batch, as measured at 21-day drying age or at 28-day drying age shall be 0.036% or 0.042%, respectively. The Contractor shall only use a mix design for construction that has first met the trial batch shrinkage requirements.

- b. The maximum concrete shrinkage for specimens cast in the field shall not exceed the trial batch maximum shrinkage requirement by more than 25%.
- c. If the required shrinkage limitation is not met during construction, the Contractor shall immediately stop concrete placement and take any or all of the following actions at no additional cost to the Owner, for securing the specified shrinkage requirements. These actions may include changing the source of aggregates, cement and/or admixtures; reducing water content; washing of aggregate to reduce fines; increasing the number of construction joints; modifying the curing requirements; or other actions designed to minimize shrinkage or the effects of shrinkage. Concrete placement shall not resume until the shrinkage limitation has been met.

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 03 41 00 – PRECAST CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 1. Precast concrete required for this Project.
 2. Reinforcing.
 3. Accessories.
- B. Related Sections:
 1. Section 03 11 00 – Concrete Formwork
 2. Section 03 20 00 – Concrete Reinforcement
 3. Section 03 30 00 – Cast-In-Place Concrete

1.2 QUALITY ASSURANCE

- A. Qualifications of workmen:
 1. Provide at least one person who shall be present at all times during execution of this portion of the work and who shall be thoroughly trained and experienced in placing and erecting the type of concrete described herein and who shall direct all work performed under this Section.
 2. Precast subcontractor shall be experienced in constructing the type of precast material required for the project. Submit data for approval.
 3. For finishing of exposed surfaces of the concrete, use only thoroughly trained and experienced journeyman concrete finishers.
 4. Approval required in advance in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.
- B. Codes and Standards:
 1. Comply with all pertinent codes and regulations and publication ACI 301 of the American Concrete Institute, latest edition.
 2. Where provisions of pertinent codes and standards conflict with this Specification, the more stringent provisions shall govern.

1.3 SUBMITTALS

- A. Materials list: Before any precast concrete is delivered to the construction site, submit to the Engineer in accordance with Section 01 33 00 SUBMITTAL PROCEDURES a complete list of all materials proposed to be furnished and installed under this portion of the work, showing manufacturer's name and catalog number for all items such as bond breaker, inserts, chairs, and conduits.

1.4 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

1.5 DESIGN

- A. All design of pre-stressed members shall be done in strict accordance with procedures set forth in the current edition of ACI 318 "Building Code Requirements for Reinforced Concrete."
- B. All precast structural concrete members shall be designed to meet requirements of the Building Code.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Concrete:
 1. Cement shall be Portland Cement conforming to ASTM C150, Portland Cement.
 2. Aggregates shall conform in quality to ASTM C33 for heavyweight aggregate.
 3. Heavyweight aggregates shall be graded crushed stone with a resulting unit weight of concrete of up to 155 pounds per cubic foot.
 4. Water shall be clean and free of injurious and deleterious substances.
 5. Concrete strength shall be minimum 5,000 psi at 28 days.
- B. Steel:
 1. Pre-stressing steel shall be high tensile strength uncoated seven wire strand which is low-relaxation strand or has been stress-relieved as a unit after the wires have been formed into a strand. It shall be manufactured and tested in accordance with ASTM A416. Either 250K or 270K strand may be used.
 2. All reinforcing bars shall conform to the requirements of ASTM A615, Grade 60 as required.
 3. Welded wire fabric shall conform to the requirements of ASTM A185.
 4. Cast in plates shall conform to the requirement of ASTM A36, or A440 as required.

2.2 OTHER MATERIALS

- A. All other materials not specifically described but required for a complete and proper installation of the work of this Section, shall be as selected by the Contractor subject to the approval of the Engineer.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Inspections:
 1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
 2. Verify that the work of this Section may be performed in strict accordance with all pertinent codes and regulations, the original design, and the manufacturer's recommendations for the items being installed.
- B. Discrepancies:
 1. In the event of discrepancy, immediately notify the Engineer.
 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 QUALITY

- A. Manufacturer of precast concrete shall be adequately equipped to form, place, and cure the required precast concrete, and shall have experience to produce precast concrete of required strength and water resistance.

3.3 PLACEMENT OF REINFORCEMENT

- A. Place all reinforcement in strict accordance with the drawings and with the provisions of Section 03 20 00, CONCRETE REINFORCEMENT of these Specifications.

3.4 PLACEMENT OF CONCRETE

- A. General:
 - 1. Concrete shall be placed and compacted by tamping or vibrating to produce a dense waterproof product.
 - 2. Finish all concrete surfaces in smooth finish to the tolerances described in Section 03 30 00, CAST-IN-PLACE CONCRETE of these Specifications.
- B. Curing:
 - 1. Cure all concrete of this Section in strict accordance with the methods specified in Section 03 30 00, CAST-IN-PLACE CONCRETE or approved alternative.

3.5 OPENINGS

- A. Locations and sizes of all openings 3 inches wide or larger to be cast into the members, if not shown on the contract drawings, must be supplied when shop drawings are submitted for approval. All other openings not so located shall be job cut by the various trades requiring them. All holes less than 3 inches in dimension through precast members are to be made by drilling or cutting in the field, by the various trades requiring them. However, field holes or cuts may not be made in the precast members without prior approval of the manufacturer.

3.6 ERECTION

- A. Responsibility:
 - 1. The entire method and sequence of erection shall be the responsibility of the Contractor.
- B. Alignment:
 - 1. Set all units in true alignment in all directions.
- C. All precast concrete items with cracks or other flaws that will detract from the appearance, shall be replaced.
- D. Grind to remove sharp edges.

END OF SECTION

SECTION 03 60 00 - GROUT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Non-shrink grout.
 - 2. Topping grout.
 - 3. Concrete Fill.
 - 4. Cement grout for pipe invert fill.
 - 5. Construction joint mortar.
- B. Related Sections:
 - 1. Section 03 11 00 – Concrete Formwork.
 - 2. Section 03 30 00 – Cast-In-Place Concrete.

1.2 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. ASTM International (ASTM):
 - a. C 230, Standard Specification for Flow Table for Use in Tests of Hydraulic Cement.
 - b. C 1107, Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
- B. Cement Grout (Non-shrink).
 - 1. Corps of Engineers (COE):
 - a. CRD-C 611, Flow of Grout for Prep laced Aggregate Concrete.
 - b. CRD-C 621, Specification for Non-shrink Grout

1.3 SUBMITTALS

- A. Product data for each type of product indicated.
- B. Certified test results verifying compliance with compressive strength, shrinkage and expansion requirements and manufacturer's literature containing instructions and recommendations on the mixing, handling, placement and appropriate uses for each type of non-shrink and epoxy grout.
- C. Fine aggregate gradation.
- D. One copy of each 30 consecutive strength test results and mix design used from a record of past performance, or one copy of laboratory trial mix and design and results, and one copy of the mix design proposed for each cementitious mixture and use under this contract.
- E. Qualification for testing agency.
- F. Material test reports: For the following from a qualified testing agency, indicating compliance with requirements:
 - 1. Aggregates, Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
 - 2. Non-shrink grout.
 - 3. Epoxy grout.
- G. Material certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.

2. Non-shrink grout.
 3. Epoxy grout.
- H. Field quality-control tests and observation reports.
- I. Ready mix concrete (Cement Grout)
1. Provide delivery tickets for ready-mix concrete (cement grout) or weigh master's certificate per ASTM C 94, include weights of cement and each size aggregate and amount of water added at the plant and a record of placements. Record the amount of water added at the job site on the delivery ticket. Water added at the plant shall account for the moisture in aggregate. If water is added at the job site, then the total water content shall not exceed the water content of the approved design mix.
 2. Keep records showing time and place of each placement of concrete, joint mortar bed material or cement grout, together with transit delivery slips certifying the contents of the placement. Furnish records to Engineer.
- J. Joint Mortar Bed: Provide material analysis and certification for each placement.
- K. Shop Drawings:
1. Product data of grouts.
 2. Curing method for grout.
 3. Mix design of cement-sand grout mixture for pipe invert/structure fill.
 4. Mix design of Joint Mortar Bed.
- L. Information Submittals:
1. Manufacturer's written instructions for mixing of grout.
 2. Manufacturer's Certificate of Compliance: Grout free from chlorides and other corrosion-causing chemicals.
 3. Manufacturer's Certificate of Proper Installation.
 4. Statements of Qualification: Non-shrink grout manufacturer's representative.
 5. Test Reports: Test report for 24-hour evaluation of non-shrink grout.
- 1.4 QUALIFICATIONS
- A. Manufacturer's qualifications for cement grout and joint mortar bed: A firm experienced in manufacturing ready-mixed concrete products and a firm that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.
 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician – Grade I, Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician – Grade II.
- C. Source limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source and obtain admixtures through one source from a single manufacturer.
- D. Non-shrink Grout Manufacturer's Representative: Authorized and trained representative of grout manufacturer, with minimum of 1 year experience that has resulted in successful installation of grouts similar to those for this Project.

- E. For grout suppliers not listed herein, provide completed 24-hour Evaluation of Non-shrink Grout Test Form, attached at the end of this section. Independent testing laboratory to certify that testing was conducted within last 18 months.

1.5 GUARANTEE

- A. Manufacturer's guarantee shall not contain disclaimer on the product data sheet, grout bag, or container limiting responsibility to only the purchase price of products and materials furnished.
- B. Manufacturer guarantees participation with Contractor in replacing or repairing grout found defective due to faulty materials, as determined by industry standard test methods.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand and source throughout project:
1. Portland Cement: ASTM C 150, Type I or II or combination of Type I with fly ash.
 2. Fly Ash: ASTM C 618.
- B. Fine aggregates: ASTM C 33, Class 4S or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials. Aggregates shall be free of materials with deleterious reactivity to alkali in cement. Aggregates for cement grout and/or mortar bed shall be provided from the same source as aggregate for the cast-in-place concrete.
- C. Water: ASTM C 94 and potable.

2.2 ADMIXTURES

- A. Comply with Section 03 30 00 Cast-In-Place Concrete.

2.3 NONSHRINK GROUT SCHEDULE

- A. Furnish non-shrink grout for applications in grout category in the following schedule:

Application	Temperature Range	Max. Placing Time	
	40 to 100 °F	20 min	Greater than 20 min
Filling tie hole	I	I	I
Machine bases 25 hp or less	II	II	II
Through-bolt openings	II	II	II
Patching Concrete Walls	II	II	II
Machine bases 26 hp and up	III	III	III
Base plates and/or soleplates with vibration, thermal movement, etc.	III	III	III
Other applications not listed	II	II	II

2.4 NONSHRINK GROUT

- A. Category I:
1. Nonmetallic and non gas-liberating.

2. Prepackaged natural aggregate grout requiring only the addition of water.
3. Test in accordance with ASTM C1107:
 - a. Flowable consistency 140%, five drops in 30 seconds, in accordance with ASTM C 230.
 - b. Flowable for 15 minutes.
4. Grout shall not bleed at maximum allowed water.
5. Minimum strength of flowable grout, 3,000 psi at 3 days, 5,000 psi at 7 days, and 7,000 psi at 28 days.
6. Manufacturers and Products:
 - a. Chemrex, Inc., Shakopee, MN; Set Grout.
 - b. Euclid Chemical Co., Cleveland, OH; NS Grout.
 - c. Dayton Superior Corp., Miamisburg, OH; 1107 Advantage Grout.
 - d. US MIX Products, Denver, CO; US Spec Multi-Purpose Grout.
 - e. L & M Construction Chemicals, Inc., Omaha, NE; Duragrout.
 - f. Master Builders.

B. Category II:

1. Nonmetallic, non gas-liberating.
2. Prepackaged natural aggregate grout requiring only the addition of water.
3. Aggregate shall show no segregation or settlement at fluid consistency - at specified times or temperatures.
4. Test in accordance with COE CRD-C 621 and ASTM C 1107, Grade B:
 - a. Fluid consistency 20 to 30 seconds in accordance with COE CRD-C 611.
 - b. Temperatures of 40, 80, and 100 °F.
5. 1 hour after mixing, pass fluid grout through flow cone with continuous flow.
6. Minimum strength of fluid grout, 3,500 psi at 1 day, 4,500 psi at 3 days, and 7,500 psi at 28 days.
7. Maintain fluid consistency when mixed in 1 to 9 yard loads in ready- mix truck.
8. Manufacturers and Products:
 - a. Chemrex, Inc., Shakopee, MN; Master Flow 928.
 - b. Five Star Products Inc., Fairfield, CT; Five Star 100.
 - c. Euclid Chemical Co., Cleveland, OH; Hi Flow Grout.
 - d. Dayton Superior Corp., Miamisburg, OH; Sure Grip High Performance Grout.
 - e. L & M Construction Chemicals, Inc., Omaha, NE; Crystex.
 - f. Master Builders.

C. Category III

1. Metallic and nongas-liberating flowable fluid.
2. Prepackaged aggregate grout requiring only the addition of water.
3. Aggregate shall show no segregation or settlement at fluid consistency at specified times or temperatures.
4. Test in accordance with CRD-C 621 and ASTM C 1107, Grade B:
 - a. Fluid consistency 20 to 30 seconds in accordance with CRD-C 611.
 - b. Temperatures of 40 and 100 °F.
5. 1 hour after mixing, pass fluid grout through flow cone with continuous flow.
6. Minimum strength of grout, 4,000 psi at 1 day, 5,000 psi at 3 days, and 9,000 psi at 28 days.
7. Maintain fluid consistency when mixed in 1 to 9 yard loads in ready-mix truck.
8. Manufacturers and Products: Chemrex, Inc., Shakopee, MN; EMBECO 885.

2.5 TOPPING GROUT AND CONCRETE/GROUT FILL

- A. Where fill is thicker than 3-inches, structural concrete 03 30 00, CAST-IN-PLACE CONCRETE, may be used when accepted by the Engineer.

- B. Grout for topping of slabs and concrete/grout fill for built-up surfaces of tank, channel and basin bottoms shall be composed of cement, fine aggregate, coarse aggregate, water and admixtures proportioned and be mixed as indicated. Bonding Agent shall be used to enhance adhesion to basin concrete. Materials and procedures indicated for normal concrete in Section 03 30 00, CAST-IN-PLACE CONCRETE, shall apply unless indicated otherwise.
- C. Topping grout and concrete/grout fill shall contain a minimum of 564 pounds of cement per cubic yard with a maximum water cement ratio of 0.45.
- D. Aggregate shall be graded as follows:

U.S. STANDARD SIEVE SIZE	PERCENT BY WEIGHT PASSING
1/2 inch	100
3/8 inch	90-100
No. 4	20-55
No. 8	5-30
No. 16	0-10
No. 30	0

- E. Final mix design shall be as determined by trial mix design as indicated in Section 03 30 00, except that drying shrinkage tests are not required.
- F. Topping grout and concrete grout/fill shall contain air-entraining agent per Section 03 30 00.
- G. Strength: Minimum compressive strength of topping grout and concrete/grout fill at 28 days shall be 4,000 psi.
- H. Topping grout used in clarifiers shall contain fiber reinforcing. Fiber shall be 100 percent virgin polypropylene fibrillated fibers specifically manufactured in a blended gradation for use as concrete secondary reinforcement. Fibers shall be added at a rate of 1.5 pounds per cubic yard of concrete. Fibers shall conform to ASTM C 1116 – Fiber Reinforced Concrete and Shotcrete. Type III.

2.6 NON-SHRINK EPOXY GROUT

- A. Manufacturers: One of the following or equal:
- Five Star Products, Inc., Fairfield, CT, Five Star Epoxy Grout.
 - BASF Construction Chemicals, Shakopee, MN, Masterflow 648 CP Plus.
 - L&M Construction Chemicals, Inc., EPOGROUT.
- B. Non-shrink epoxy grout shall be a 100 percent solid, premeasured, prepackaged system containing a 2-component thermosetting epoxy resin and inert aggregate.
- C. Maintain a flowable consistency for at least 45 minutes at 70 degrees Fahrenheit.
- D. Shrinkage or expansion (less than 0.0006 inches/inch) when tested in accordance with ASTM C 531.
- E. Minimum compressive strength: 10,000 pounds per square inch at 24 hours and 14,000 pounds per square inch at 7 days when tested in accordance with ASTM C 579, Method B.
- F. Compressive creep: Not exceed 0.0027 inches/inch when tested under a 400 pounds per square inch constant load at 140 degrees Fahrenheit in accordance with ASTM C 1181.

- G. Coefficient of thermal expansion: Not exceed 0.000018 inches per inch per degree Fahrenheit when tested in accordance with ASTM C 531, Method B.

2.7 CEMENT-GROUT (CEMENT-SAND GROUT) MIXTURE FOR PIPE INVERT/STRUCTURE FILL

- A. Prepare design mixture proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301. Submit proposed mixture design to Engineer for review. Comply with Section 03 30 00 Cast-In-Place Concrete and as follows.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based upon laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in concrete and cement grout as follows:
 - 1. Fly Ash: 15 percent maximum unless approved in writing by the Engineer.
- C. Admixtures: All materials other than Portland cement, water and aggregates that are added to the concrete or cement grout, shall be subject to the approval of the Engineer. If so approved, use admixtures according to manufacturer's written instructions.
 - 1. Use water reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
- D. Minimum compressive strength: 2,000 psi at 28 days.
- E. Air content: ASTM C 94, 5 percent, plus or minus 1.0 percent at point of delivery.
- F. Aggregate shall be sand, three parts sand to one part cementitious material by volume. The sand gradation shall be such that 100% shall pass the No. 16 sieve and not more than 30% shall be retained on a No. 30 sieve.
- G. Water – cementitious material ratio. The Contractor shall submit a proposed mix design to the Engineer for review. The amount of water shall be the minimum amount of water necessary to make a workable mixture.
- H. Slump: Maximum of 4 inches.

2.8 JOINT MORTAR BED

- A. Joint Mortar Bed: Mortar placed on horizontal construction joints shall be a mixture of cement, sand and water in the same proportions used in the approved 4,500 psi cast-in-place concrete mix design and/but with the coarse aggregate omitted.

PART 3 - EXECUTION

3.1 NONSHRINK GROUT

- A. General: Mix, place, and cure non-shrink grout in accordance with grout Manufacturer's representative's training instructions.
- B. Form Tie or Through-Bolt Holes: Provide non-shrink grout, Category I and II, fill space with dry pack dense grout hammered in with steel tool and hammer. Through-bolt holes; coordinate dry

pack dense grout application with vinyl plug in Section 03 11 00, CONCRETE FORMWORK, and bonding agent in Section 03 30 00, CAST-IN-PLACE CONCRETE.

C. Grouting Machinery Foundations:

1. Block out original concrete or finish off at distance shown below bottom of machinery base with grout. Prepare concrete surface by sandblasting, chipping, or by mechanical means to remove any soft material.
2. Set machinery in position and wedge to elevation with steel wedges, or use cast-in leveling bolts.
3. Form with watertight forms at least 2" higher than bottom of plate.
4. Fill space between bottom of machinery base and original concrete in accordance with Manufacturer's representative's training instructions.

3.2 CEMENT GROUT

- A. Place cement grout topping over concrete slabs where indicated on the drawings. Place in accordance with the procedures of this section and the manufacturer's or suppliers of equipment recommendations. The finish surface of the grout topping shall be similar to a steel trowel finish and which will facilitate the proper operation of the mechanical equipment. The finish of the structural slab below the cement grout topping shall be a heavy broom finish.
- B. Where cement grout is to be placed without mechanical equipment, the fresh surface of the cement grout shall be a smooth trowel finish. Placement procedure of cement grout at areas with mechanical equipment includes:
1. Notify Project Representative or Engineer a minimum of 48 hours in advance of placement.
 2. Make a trial cement grout batch of not less than 1/2 cubic yard to allow time for adjustment in mix design if required.
 3. Clean the exposed structural slab by sandblasting and washing clean.
 4. Thoroughly broom a neat cement paste containing an epoxy binder into the concrete slab surface immediately ahead of placing the cement grout topping.
 5. Where applicable, install level and trial operate mechanical screed equipment over the floor slab to provide a minimum thickness of 2 inches +/- 1/4 inch. In areas where the distance between the mechanical screed and the structural slab is less than the above clearances, grind surface as directed by Engineer to provide such clearance. The mechanical screed shall operate at a speed acceptable to the cement grout topping placement procedures. Screeding procedures shall account for the effects of differential temperatures on the mechanical screed equipment.
 6. Place cement grout topping in a continuous operation. If grouting operations are interrupted, clean the edge of the previously placed topping by water jetting and add a coat of cement paste to provide a bond to the fresh topping.
 7. Temporarily equip the mechanical screed mechanism on at least two arms with a 2-inch by 10 inch continuous wood plate with light gauge metal angles and surface plates or channels. The bottom of the screed plates or steel plates shall be adjustable and set to elevations which allow the proper operation of equipment and as recommended by the equipment manufacturer or supplier.
 8. Screed the topping immediately after consolidation with vibrators or tampers and provide a steel trowel finish.
 9. Cure cement grout topping with water and cover with PVC sheeting to prevent damage from foot traffic for seven days. When/If the cement grout topping is found not to be acceptable, remove and replace. Cement grout topping not acceptable shall include, but is not limited to, poor bonding with the concrete slab, low strength, excessive cracking and unevenness in finish or elevation.

3.3 JOINT MORTAR BED

- A. Joint Mortar Bed: Immediately prior to placement of fresh concrete at horizontal joints, or as indicated, place joint mortar bed to cover horizontal joint and protect water stop as applicable. Spread uniformly and work into all irregularities of the surface. The water cement ratio of the joint mortar bed shall not exceed that of the concrete being placed and the consistency of the mortar shall be suitable for placing and working. The fresh concrete shall then be immediately placed in a time and manner so that the joint mortar bed and the fresh concrete mix to form a homogenous concrete meeting all requirements.

3.4 NON-SHRINK GROUT

- A. Non-Shrink grout:
 1. Used for repair of holes and defects and at locations indicated where epoxy grout is not indicated. Execution shall follow manufacturer's recommendations.
 2. Base plates and equipment where indicated. Execution shall follow manufacturer's recommendations.

3.5 EPOXY GROUT

- A. Epoxy Grout: Used to embed all anchor bolts and reinforcing steel set in grout, specific machinery base plates as indicated and at other locations where indicated. Execution shall follow manufacturer's recommendations.

3.6 FIELD QUALITY CONTROL

- A. Evaluation and Acceptance of Non-shrink Grout:
 1. Consistency: As specified in Article NON-SHRINK GROUT. Grout with consistencies outside range requirements shall be rejected.
 2. Segregation: As specified in Article NON-SHRINK GROUT. Grout when aggregate separates shall be rejected.

3.7 MANUFACTURER'S SERVICES

- A. General: Coordinate demonstrations, training sessions, and applicable site visits with grout manufacturer's representative.

3.8 SUPPLEMENTS

- A. The supplement listed below, following "END OF SECTION," is part of this Specification.
 1. 24-hour Evaluation of Non-shrink Grout Test Form and Grout Testing Procedures.

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SUPPLEMENT 1_____
(Test Lab Name)_____
(Address)_____
(Phone No.)**24-HOUR EVALUATION OF NONSHRINK GROUT TEST FORM**

OBJECTIVE: Define standard set of test procedures for an independent testing laboratory to perform and complete within a 24-hour period.

SCOPE: Utilize test procedures providing 24-hour results to duplicate field grouting demands. Intent of evaluation is to establish grout manufacturer's qualifications.

PRIOR TO TEST: Obtain five bags of each type of grout.

1. From intended grout supplier for Project.
2. Five bags of grout shall be of same lot number.

ANSWER THE FOLLOWING QUESTIONS FOR GROUT BEING TESTED FROM LITERATURE, DATA, AND PRINTING ON BAG:

- | | | |
|----|---|------------------|
| A. | Product data and warranty information contained in company literature and data? | Yes_____ No_____ |
| B. | Literature and bag information meet specified requirements? | Yes_____ No_____ |
| C. | Manufacturer guarantees grout as specified in Article GUARANTEE? | Yes_____ No_____ |
| D. | Guarantee extends beyond grout replacement value and allows participation with CONTRACTOR in replacing and repairing defective areas? | Yes_____ No_____ |
| E. | Water demands and limits printed on bag? | Yes_____ No_____ |
| F. | Mixing information printed on the bag? | Yes_____ No_____ |
| G. | Temperature restrictions printed on bag? | Yes_____ No_____ |

*Rejection of a grout will occur if one or more answers are noted NO.

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

GROUT TESTING PROCEDURES

A. Bagged Material:

1. List lot numbers. _____
2. List expiration date. _____
3. Weigh bags and record weight. _____

ENGINEER will disqualify grout if bag weights have misstated measure plus or minus 2 pounds by more than one out of five bags. (Accuracy of weights is required to regulate amount of water used in mixing since this will affect properties.)

B. Mixing and Consistency Determination:

1. Mix full bag of grout in 10 gallon pail.
2. Use electric drill with a paddle device to mix grout (jiffy or jiffler type paddle).
3. Use maximum water allowed per water requirements listed in bag instructions.
4. Mix grout to maximum time listed on bag instructions.
5. In accordance with COE CRD-C611 (flow cone) determine time of mixed grout through the flow cone. _____ seconds
6. Add water to attain 20 to 30 second flow in accordance with COE CRD-C611.
7. Record time of grout through cone at new water demand. _____ seconds
8. Record total water needed to attain 20 to 30 second flow. _____ pounds
9. Record percent of water. _____ percent

C. When fluid grout is specified and additional water is required beyond grout manufacturer's listed maximum water, COE CRD-C621 will be run at new water per grout ratio to determine whether grout passes using actual water requirements to be fluid. Use new water per grout ratio on remaining tests.

D. Bleed Test:

1. Fill two gallon cans half full of freshly mixed grout at ambient temperatures for each category and at required consistency for each.
2. Place one can of grout in tub of ice water and leave one can at ambient temperature.
3. Cover top of both cans with glass or plastic plate preventing evaporation.
4. Maintain 38 to 42 degrees F temperature with grout placed in ice and maintain ambient temperature for second container for 1 hour.
5. Visually check for bleeding of water at 15-minute intervals for 2 hours.
6. Perform final observation at 24 hours.
7. If grout bleeds a small amount at temperatures specified, grout will be rejected.

E. Extended Flow Time and Segregation Test (for Category II and III):

1. Divide the remaining grout into two 3 gallon cans. Place the cans into the 40 °F and 100 °F containers and leave for 20, 40, and 60 minutes. Every 20 minutes remove and check for segregation or settlement of aggregate. Use a gloved hand to reach to the bottom of the can, if more than 1/4-inch of aggregate has settled to the bottom or aggregate has segregated into clumps reject the grout.

2. Right after the settlement test mix the grout with the drill mixer for 10 seconds. Take a COE CRD-C611 flow cone test of grout and record flow time. Maintain this process for 1 hour at ambient temperatures of 40 and 100 degrees F.

- a. 20 min _____, sec. @ 40 degrees F.
- b. 40 min _____, sec. @ 40 degrees F.
- c. 60 min _____, sec. @ 40 degrees F.
- d. 20 min _____, sec. @ 100 degrees F.
- e. 40 min _____, sec. @ 100 degrees F.
- f. 60 min _____, sec. @ 100 degrees F.

All Category II and III grout that will not go through the flow cone with continuous flow after 60 minutes will be disqualified.

Qualified

Disqualified

F. 24-hour Strength Test:

- 1. Using grout left in mixing cans in accordance with COE CRD-C621 for mixing and consistency determination test and for extended time flow test, make minimum of nine cube samples.
- 2. Store cubes at 70 degrees F for 24 hours.
- 3. Record average compressive strength of nine cubes at 24 hours.

Grout will be disqualified if 24-hour compressive strengths are under 2,500 psi for grouts claiming fluid placement capabilities.

Grouts that have not been disqualified after these tests are qualified for use on the Project for the application indicated in Nonshrink Grout Schedule.

Signature of Independent Testing Laboratory

Date Test Conducted

SECTION 03 64 00 - CONCRETE REPAIR CRACK INJECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Epoxy injection system.
- B. Related Sections:
 - 1. Section 03 30 00 – Cast-In-Place Concrete.

1.2 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. American Association of State Highway and Transportation Officials (AASHTO): T 237, Standard Method for Testing Epoxy Resin Adhesive.
 - 2. ASTM International (ASTM):
 - a. D 638, Standard Test Method for Tensile Properties of Plastics.
 - b. D 648, Standard Test Method for Deflection of Plastics Under Flexural Load.
 - c. D 695, Standard Test Method for Compressive Properties of Rigid Plastics.
 - d. D 790, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

1.3 DEFINITIONS

- A. Large Cracks: Wider than 0.015".
- B. Small Cracks: Width equal to 0.015" or less.

1.4 SUBMITTALS

- A. Shop Drawings:
 - 1. Physical and chemical properties for epoxy adhesives.
 - 2. Technical data for metering, mixing, and injection equipment.
- B. Information Submittals:
 - 1. Manufacturer's recommended surface preparation procedures and application instructions for epoxy adhesives.
 - 2. Installation instructions for repairing core holes with epoxy grout.
 - 3. Manufacturer's Certificate of Compliance: Certified test results for each batch of epoxy adhesive.
 - 4. Statements of Qualification for Epoxy Adhesive:
 - a. Manufacturer's site representative.
 - b. Injection applicator.
 - c. Injection pump operating technician.
 - 5. Epoxy adhesive two component ratio and injection pressure test records for concrete crack repair work.

1.5 QUALITY ASSURANCE

- A. Qualifications for Epoxy Injection Staff:
 - 1. Manufacturer's Site Representative:
 - a. Capable of instructing successful methods for restoring concrete structures utilizing epoxy injection process.

- b. Understands and is capable of explaining technical aspects of correct material selection and use.
 - c. Experienced in the operation, maintenance, and troubleshooting of application equipment.
2. Injection crew and job foreman shall provide written and verifiable evidence showing compliance with the following requirements:
- a. Licensed and certified by epoxy Manufacturer.
 - b. Minimum 3 years experience in successful epoxy injection for at least 10,000 linear feet of successful crack injection including 2,000 linear feet of wet crack injection to stop water leakage.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Package adhesive material in new sealed containers and label with following information:
- 1. Manufacturer's name.
 - 2. Product name and lot number.
 - 3. ANSI Hazard Classification (formerly SPI Classification).
 - 4. ANSI recommended precautions for handling.
 - 5. Mix ratio by volume.
- B. Storage and Protection: Store adhesive containers at ambient temperatures below 120 °F and above 32 °F.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Epoxy Manufacturers and Products:
- 1. Sika Corp., Lyndhurst, NJ; Sikadur 35 Hi-Mod LVPL.
 - 2. Euclid Chemical Co., Cleveland, OH; Eucopoxy injection resin.

2.2 EPOXY ADHESIVE

- A. Two-component A and B structural epoxy adhesive for injection into cracks or other voids in concrete structures for bonding or grouting.
- B. Adhesive Properties: When cured for 7 days at 77, ± 3 °F and conditioned at test temperature 12 hours prior to test, unless otherwise specified.

	Test Method	Large Cracks	Small Cracks
Ultimate Tensile Strength, psi	ASTM D638	8,000 min.	5,000 min.
Tensile Elongation @ Break, percent	ASTM D638	3.7 max.	3.7 max.
Flexural Strength, psi	ASTM D790	10,000 min.	10,000 min.
Flexural Modulus, psi	ASTM D790	5.5 x10 ⁵ min.	4.5 x10 ⁵ min.
Compressive Yield Strength, psi	ASTM D695*	15,000 min.	12,000 min.
Compressive Modulus, psi	ASTM D695*	3.8 x10 ⁵ min.	3.8 x10 ⁵ min.
Heat Deflection Temperature	ASTM D648*	130 °F min.	140 °F min.
Slant Shear Strength: (5,000 psi Compressive Strength Conc.)	AASHTO T 237**		
Cured 3 days @ 40 °F-Wet Concrete			3,500 psi min

	Test Method	Large Cracks	Small Cracks
Cured 1 day @ 77 °F-Dry Concrete			5,000 psi min.
Cured 3 days @ 77 °F ±3 °F			5,000 psi min.
* Cure test specimens so that peak exothermic temperature of adhesive does not exceed 100 °F			
**See referenced specifications for preparation method of test specimens			

2.3 SURFACE SEAL

- A. Sufficient strength and adhesion for holding injection fittings firmly in-place, and to resist pressures preventing leakage during injection.
- B. Capable of removal after injection adhesive has cured.

PART 3 - EXECUTION

3.1 GENERAL

- A. Structurally repair cracks in structures as specified in Section 03 30 00, CAST-IN-PLACE CONCRETE.
- B. Cracks: Repair by injection of epoxy adhesive.

3.2 PREPARATION

- A. Free cracks from loose matter, dirt, laitance, oil, grease, salt, and other contaminants.
- B. Clean cracks in accordance with epoxy adhesive manufacturer's instructions.
- C. Clean surfaces adjacent to cracks from dirt, dust, grease, oil, efflorescence, and other foreign matter detrimental to bond of surface seal system.
- D. Do not use acids and corrosives for cleaning, unless neutralized prior to injecting epoxy.

3.3 APPLICATION

- A. Sealing: Apply surface seal in accordance with Manufacturer's instructions to designated crack face prior to injection. Seal surface of crack to prevent escape of injection epoxy.
- B. Entry Ports:
 - 1. Establish openings for epoxy entry in surface seal along crack.
 - 2. Determine space between entry ports equal to thickness of concrete member to allow epoxy to penetrate to the full thickness of the wall.
 - 3. Provide a means to prevent concrete dusts and fines from contaminating the crack or ports when drilling.
 - 4. Space entry ports close together to allow adjustment of injection pressure to obtain minimum loss of epoxy to soil at locations where:
 - a. Cracks extend entirely through wall.
 - b. Backfill of walls on one side.
 - c. Difficult to excavate behind wall to seal both crack surfaces.
 - 5. Core drill to verify epoxy depth where only one side of wall is exposed.
- C. Epoxy Injection:
 - 1. Store epoxy at minimum of 70 °F.
 - 2. Start injection into each crack at lowest elevation entry port.

3. Continue injection at first port until adhesive begins to flow out of port at next highest elevation.
4. Plug first port and start injection at second port until adhesive flows from next port.
5. Inject entire crack with same sequence.

D. Finishing:

1. Cure epoxy adhesive after cracks have been completely filled to allow surface seal removal without draining or runback of epoxy material from cracks.
2. Remove surface seal from cured injection adhesive.
3. Finish crack face flush with adjacent concrete.
4. Indentations or protrusions caused by placement of entry ports are not acceptable.
5. Remove surface seal material and injection adhesive runs and spills from concrete surfaces.

3.4 EQUIPMENT

- A. Portable, positive displacement type pumps with in-line metering to meter and mix two adhesive components, and inject mixture into crack.
- B. Discharge Pressure: Automatic pressure controls capable of discharging mixed adhesive at pressures up to 200 psi, $\pm 5\%$, and able to maintain pressure.
- C. Automatic Shutoff Control: Provide sensors on both Component A and B reservoirs for stopping machine automatically when only one component is being pumped to mixing head.
- D. Proportioning Ratio Tolerance: Maintain epoxy adhesive Manufacturer's prescribed mix ratio within a tolerance of $\pm 5\%$ by volume at discharge pressure p to 160 psi.
- E. Ratio/Pressure Check Device:
 1. Two independent valved nozzles capable of controlling flow rate and pressure by opening or closing valve to restrict material flow.
 2. Pressure gauge capable of sensing pressure behind each valve.

3.5 FIELD QUALITY CONTROL

- A. Epoxy Adhesive Two Component Ratio Tests:
 1. Disconnect mixing head and pump two adhesive components simultaneously through ratio check device.
 2. Adjust discharge pressure to 160 psi for both adhesive components.
 3. Simultaneously discharge both adhesive components into separate calibrated containers.
 4. Compare amounts simultaneously discharged into calibrated containers during same time period to determine mix ratio.
 5. Complete test at 160 psi discharge pressure and repeat procedure for 0 psi discharge pressure.
 6. Run ratio test for each injection unit at beginning and end of each injection work day, and when injection work has stopped for more than 1-hour.
 7. Document and maintain complete accurate records of ratios and pressure checks.
- B. Injection Pressure Test:
 1. Disconnect mixing head of injection equipment and connect two adhesive component delivery lines to pressure check device.
 2. Pressure Check Device:
 - a. Two independent valved nozzles capable of controlling flow rate and pressure by opening or closing of valve.

- b. Pressure gauge capable of sensing pressure buildup behind each valve.
 - 3. Close valves on pressure check device and operate equipment until gauge pressure on each line reads 160 psi.
 - 4. Stop pumps and observe pressure; do not allow pressure gauge to drop below 150 psi within 3 minutes.
 - 5. Run pressure test for each injection equipment unit:
 - a. Beginning and end of each injection work day.
 - b. When injection work has stopped for more than 45 minutes.
 - 6. Check tolerance to verify equipment capable of meeting specified ratio tolerance.
- C. Crack Injection Tests:
- 1. Initial Cores:
 - a. 4" diameter for full crack depth taken from Engineer selected locations.
 - b. Take three cores in first 100 lineal feet of crack repaired and one core sample for each 500 lineal feet thereafter.
 - 2. Provide suitable containers for storage, curing, and transportation of test specimens.
 - 3. Methods of Testing Cores:
 - a. Penetration: Visual examination.
 - b. Bond Strength/Compression Test: Concrete failure prior to adhesive failure.
 - 4. Test Requirements:
 - a. Penetration: Minimum of 90% of crack shall be full of epoxy adhesive.
 - b. Bond Strength/Compression Test: Concrete failure before adhesive failure, or 6,500 psi with no failure of either concrete or adhesive.
 - 5. Evaluation and Acceptance of Tests:
 - a. If initial cores pass tests as specified, epoxy adhesive injection Work at area represented by cores will be accepted.
 - b. If initial cores fail either by lack of penetration or bond strength, crack repair Work shall not proceed further until areas represented by cores are re-injected or repaired and retested for acceptance.
 - c. Obtain verifying core samples, number and location as selected by Engineer, after rework of areas represented by failed initial core is complete.
 - 6. Core Hole Repair:
 - a. Correct Work as result of testing upon notification from Engineer.
 - b. Refill initial and verifying core holes with an epoxy grout tamped and rodded in-place to form a dense fill.
 - c. Finish surface to blend with adjacent concrete.

END OF SECTION

SECTION 03 64 25 – HYDROPHOBIC POLYURETHANE FOAM RESIN INJECTION SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Polyurethane Foam injection system.
- B. Related Sections:
 - 1. Section 03 30 00 – Cast-In-Place Concrete.

1.2 SUBMITTALS

- A. Shop Drawings:
 - 1. Physical and chemical properties for polyurethane foam.
 - 2. Technical data for metering, mixing, and injection equipment.
- B. Information Submittals:
 - 1. Manufacturer's recommended surface preparation procedures and application instructions for polyurethane foam.
 - 2. Manufacturer's Certificate of Compliance: Certified test results for each batch of polyurethane foam.
 - 3. Statements of Qualification for polyurethane foam:
 - a. Manufacturer's site representative.
 - b. Injection applicator.
 - c. Injection pump operating technician.
 - 4. Polyurethane foam two component ratio and injection pressure test records for concrete crack repair work.

1.3 QUALITY ASSURANCE

- A. Qualifications for Polyurethane Foam Injection Staff:
 - 1. Manufacturer's Site Representative:
 - a. Capable of instructing successful methods for sealing concrete cracks utilizing polyurethane foam injection process.
 - b. Understands and is capable of explaining technical aspects of correct material selection and use.
 - c. Experienced in the operation, maintenance, and troubleshooting of application equipment.
 - 2. Injection crew and job foreman shall provide written and verifiable evidence showing compliance with the following requirements:
 - a. Licensed and certified by polyurethane foam manufacturer.
 - b. Minimum 3 years' experience in successful polyurethane foam injection for at least 10,000 linear feet of successful crack injection including 5,000 linear feet of wet crack injection to stop water leakage.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Package adhesive material in new sealed containers and label with following information:
 - 1. Manufacturer's name.
 - 2. Product name and lot number.
 - 3. ANSI Hazard Classification (formerly SPI Classification).
 - 4. ANSI recommended precautions for handling.

5. Mix ratio by volume.

- B. Storage and Protection: Store adhesive containers at ambient temperatures below 120 °F and above 32 °F.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Polyurethane Foam Manufacturers and Products:
1. Sika Corp., Lyndhurst, NJ; SikaFix HH+.
 2. Grace Construction Products, Cambridge, MA; DeNeef Aqua-Tite.
 3. Sauereisen, Pittsburgh, PA; Hydroactive Polyurethane Grout No. F-370

2.2 HYDROPHOBIC POLYURETHANE FOAM

- A. Two-component A and B hydrophobic polyurethane foam for injection into cracks or other voids in concrete structures for sealing and prevention of water intrusion.
- B. Properties: When cured for 7 days at 77, ± 3 °F and conditioned at test temperature 12 hours prior to test, unless otherwise specified.

	Test Method	Property
Density	ASTM D1622	2.0 pcf
Viscosity	ASTM D1638	700 cps at 74°F
Specific Gravity		>1.1
Tensile Strength	ASTM D638	15 psi
Shear Strength	ASTM C273	14 psi
Elongation	ASTM D1623	9%
Shrinkage		<1%
Solids		100%
Expansion		6 times original volume.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install in accordance with recommendations from polyurethane foam manufacturer.
- B. Cracks: Seal by injection of polyurethane foam.

3.2 PREPARATION

- A. Drill holes alongside of crack at a 45° angle. Drill holes to intersect crack midway through concrete slab thickness.
- B. Spacing of holes will depend on crack size and manufacturer recommendations.

3.3 APPLICATION

- A. Install injection packers in holes and tighten.
- B. Flush the drilled holes with water to remove debris and drill dust from the holes and the crack.
- C. Beginning at the lowest injection packer, inject polyurethane foam grout. Continue to inject grout until grout appears at the adjacent packer hole.
- D. Stop pumping and install injection packer at next adjacent hole. Inject polyurethane foam grout until grout appears at the next adjacent hole.
- E. Repeat process until 3 or 4 holes have been injected. Return to original packer and inject all holes a second time. Some holes may take additional grout.
- F. Continue process until length of crack has been injected.
- G. When entire crack has been injected, reinject each packer with water to activate grout left in drill hole.
- H. Polyurethane foam that has foamed from the cracks will be removed by scraping before it has cured to a solid. If foam has cured to a solid, remove with wire brush or hand held grinder.
- I. Allow polyurethane foam to cure fully before removing packers. Cut packers and injection holes flush with concrete surface.

3.4 EQUIPMENT

- A. Portable, positive displacement type pumps with in-line metering to meter and mix two polyurethane foam components, and inject mixture into crack.
- B. Discharge Pressure: Automatic pressure controls capable of discharging mixed polyurethane at pressures up to 2500 psi, $\pm 5\%$, and able to maintain pressure.
- C. Automatic Shutoff Control: Provide sensors on both Component A and B reservoirs for stopping machine automatically when only one component is being pumped to mixing head.
- D. Proportioning Ratio Tolerance: Maintain polyurethane foam manufacturer's prescribed mix ratio within a tolerance of $\pm 5\%$ by volume at discharge pressure up to 2500 psi.
- E. Ratio/Pressure Check Device:
 1. Two independent valved nozzles capable of controlling flow rate and pressure by opening or closing valve to restrict material flow.
 2. Pressure gauge capable of sensing pressure behind each valve.

3.5 FIELD QUALITY CONTROL

- A. Polyurethane Foam Two-Component Ratio Tests:
 1. Disconnect mixing head and pump two adhesive components simultaneously through ratio check device.
 2. Adjust discharge pressure to 500 psi for both adhesive components.
 3. Simultaneously discharge both adhesive components into separate calibrated containers.
 4. Compare amounts simultaneously discharged into calibrated containers during same time period to determine mix ratio.

5. Complete test at 500 psi discharge pressure and repeat procedure for 1500 psi discharge pressure.
 6. Run ratio test for each injection unit at beginning and end of each injection work day, and when injection work has stopped for more than 1 hour.
 7. Document and maintain complete accurate records of ratios and pressure checks.
- B. Injection Pressure Test:
1. Disconnect mixing head of injection equipment and connect two polyurethane foam component delivery lines to pressure check device.
 2. Pressure Check Device:
 - a. Two independent valved nozzles capable of controlling flow rate and pressure by opening or closing of valve.
 - b. Pressure gauge capable of sensing pressure buildup behind each valve.
 3. Close valves on pressure check device and operate equipment until gauge pressure on each line reads 2000 psi.
 4. Stop pumps and observe pressure; do not allow pressure gauge to drop below 1875 psi within 3 minutes.
 5. Run pressure test for each injection equipment unit:
 - a. Beginning and end of each injection work day.
 - b. When injection work has stopped for more than 45 minutes.
 6. Check tolerance to verify equipment capable of meeting specified ratio tolerance.
- C. Crack Injection Tests:
1. When required by the Engineer.
 2. Initial Cores:
 - a. 4" diameter for full crack depth taken from Engineer selected locations.
 - b. Take three cores in first 100 lineal feet of crack repaired and one core sample for each 500 lineal feet thereafter.
 3. Provide suitable containers for storage, curing, and transportation of test specimens.
 4. Methods of Testing Cores:
 - a. Penetration: Visual examination.
 5. Test Requirements:
 - a. Penetration: Minimum of 90% of crack shall be full of epoxy adhesive.
 6. Evaluation and Acceptance of Tests:
 - a. If initial cores pass tests as specified, polyurethane foam injection Work at area represented by cores will be accepted.
 - b. If initial cores fail either by lack of penetration, crack repair Work shall not proceed further until areas represented by cores are re-injected or repaired and retested for acceptance.
 - c. Obtain verifying core samples, number and location as selected by Engineer, after rework of areas represented by failed initial core is complete.
 7. Core Hole Repair:
 - a. Correct Work as result of testing upon notification from Engineer.
 - b. Refill initial and verifying core holes with an epoxy grout tamped and rodded in-place to form a dense fill.
 - c. Finish surface to blend with adjacent concrete.

END OF SECTION

DIVISION 7

THERMAL AND MOISTURE PROTECTION

SECTION 07 72 33 – ALUMINUM ROOF HATCHES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Aluminum hatches.

1. Aluminum hatches shall be supplied as shown on the Drawings.
 - a. The aluminum hatches specified herein shall be double-leaf hatches (60"x 60") as indicated on the Drawings.
 - b. All aluminum hatches shall be provided with a manufacturer's roof curb as indicated by the Drawings.
2. Aluminum hatch opening sizes, number and swing direction of leaves, and locations, shall be as indicated on the Drawings.
3. Furnish all equipment as shown on the Drawings and as specified herein.
4. All items furnished by the equipment supplier under this Section are for installation by the Contractor.

B. Related Sections:

1. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.
2. It is the Contractor's responsibility for scheduling and coordinating the Work of subcontractors, suppliers, and other individuals or entities performing or furnishing any of Contractor's Work.
3. The following Sections are related to the Work described in this Section. This list of Related Sections is provided for convenience only and is not intended to excuse or otherwise diminish the duty of the Contractor to see that the completed Work complies accurately with the Contract Documents.
 - a. Section 01 33 00 – Submittal Procedures.

1.2 QUALITY ASSURANCE

- A. All aluminum hatches furnished under this Section shall be of a design and manufacture that has been used in similar applications and it shall be demonstrated to the satisfaction of the Owner that the quality is equal to equipment made by that manufacturer specifically named herein.
- B. Unit Responsibility: Aluminum hatches, complete with frame and all other specified accessories and appurtenances, shall be furnished by the aluminum hatch manufacturer to ensure compatibility and integrity of the individual components and provide the specified warranty for all components.
- C. The aluminum hatches specified in this Section, complete with frame, roof curb and all other specified accessories and appurtenances, shall be furnished by and be the product of one manufacturer.

1.3 SUBMITTALS

- A. Submit information to establish compliance with the Specifications in accordance with the provisions of Section 01 33 00 SUBMITTAL PROCEDURES.
- B. Submit aluminum roof hatch location, identification number and specification number.
- C. Submit drawing plan and cross sections of equipment.

- D. Materials and manufacturing specifications.
- E. Equipment booklet including:
 - 1. Descriptive literature and bulletins.
 - 2. Customer contact list with telephone numbers (minimum of 10 contacts from similar size facility)
- F. Detailed list of any exceptions taken to these Specifications. Include specification reference and proposed alternative with reason stated for exception.

1.4 ALUMINUM ROOF HATCH DESIGN

- A. Aluminum roof hatches specified in this Section shall be designed to support a minimum live load of 40 psf with a maximum deflection of 1/150th of the span or 20 psf wind uplift.
- B. Aluminum roof hatches specified a gutter-type shall be designed to be watertight when a 6-inches head of water is present over the base of the roof curb.
- C. Aluminum roof hatches shall be designed to open a minimum of 90 degrees.
- D. Aluminum roof hatches shall be designed for easy opening from both inside and outside.
- E. Unless otherwise indicated, hinges shall be located on the longer dimension side.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Experience in design and manufacture of aluminum hatches is required for this project. Submit references for a minimum of ten installations of similar design as specified, having yielded successful performance for a period of not less than five years. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Bilco, Type D (60"x60")
 - 2. Syracuse Castings (60"x60")
 - 3. Thompson Fabricating (60"x60")
 - 4. Halliday (60"x60")

2.2 MATERIALS

- A. Cover Leafs shall be fabricated from aluminum 6061-T6, unless otherwise indicated. Aluminum hatch hardware shall be Type 316 stainless steel, unless otherwise indicated. Cover leafs shall be 11 gauge aluminum with a 3" beaded flange with formed reinforcing members. Covers shall have a heavy extruded EPDM rubber gasket that is bonded to the cover interior to assure a continuous seal when compressed to the top surface of the curb.
- B. Hardware: Roof cover shall be equipped with the following features: Gas spring assist, heavy-duty hinges, tamperproof attaching hardware, automatic hold-open arm with latch.
 - 1. Gas Spring Assist: Type 316 stainless steel.
 - 2. Hold-Open Arm with Aluminum Release Handle: Type 316 stainless steel. Shall automatically lock in the open 90° position. Hold-Open arm shall be fastened to the frame with a 1/2" 316 stainless steel bolt.

3. Heavy-Duty Hinges: Type 316 stainless steel. Each hinge shall have a grade 316 stainless steel 3/8" diameter hinge pin. Hinge shall be fastened to angle and diamond plate with 316 stainless steel bolts and lock nuts.
 4. All fasteners which penetrate into the dry area of the hatch shall be sealed with "O" ring seals to prevent incidental leakage.
- C. The gutter-type frame shall be 1/4 inch aluminum channel with continuous anchor flange and shall incorporate a neoprene gasket between the frame and the cover leaf when in the closed position. The gutter-type frame shall be provided with a 1 1/2 inches threaded drainage coupling located on the Drawings.
 - D. Frame Coating: The portion of the frame in contact with concrete shall receive a protective bituminous coating.
 - E. Locking system: Type 316 stainless steel slam lock with one "T" wrench provided per unit.
 - F. Built-in neoprene gasket shall reduce air leakage to less than 1 cfm per linear foot of frame when the interior of the hatch is subjected to a 2 inch water column vacuum.
 - G. All double-leaf roof hatches shall have two interconnected slam locks which latch at both ends of the plate and can be unlatched from a single point.
 - H. Units shall be supplied with hinged safety grates to provide protection against fall through and to control access to the confined space.
 - J. Each roof hatch shall be equipped with an aluminum lift handle. The lift handle shall be flush with the top of the 1/4" diamond plate.
 - K. Roof Curb: Shall be 12" in height and of 11 gauge aluminum. The curb shall be formed with a 3-1/2" flange with 7/16" holes provided for securing to the roof deck. The curb shall be equipped with an integral metal cap-flashing of the same gauge and material as the curb, fully welded at the corners, that features the clip flashing system, including stamped tabs, 6" on center, to be bent inward to hold roofing membrane securely in place.
 - L. Cover insulation: Insulation shall be fiberglass of 1" (25mm) thickness, fully covered and protected by a metal liner of 18 gauge aluminum.

PART 3 - EXECUTION

3.1 INSTALLATION PROCEDURE

- A. Follow equipment manufacturer's recommendations for equipment installation and as follows.
- B. Fasteners and Anchors to Concrete
 1. Expansion and wedge anchors shall not be allowed.
 2. All fasteners and anchors which are not integrally cast within the concrete shall be adhesive anchor systems.
 3. Adhesive Anchor System: A hybrid adhesive mortar used in conjunction with threaded steel rods or deformed steel reinforcement bars. The adhesive shall be a manufactured product combining urethane methacrylate resin, hardener, Portland cement and water.
Design Requirements: Adhesive anchors shall be designed based upon the More stringent of the manufacturer's recommendation or the International Council of Building Officials Evaluation Service Report, as applicable.
 - a. Available Products

- 1). Hilti HIT HY-150 by Hilti Corporation for concrete and grout filled CMU.
 - 2). Or approved equal.
4. Material for Anchor Rods/Bolts: Alloy Group 2 (A4) (316) stainless steel bolts complying with ASTM F 593 and nuts complying with ASTM F 594. Alloy Group 2 (A4) (316) flat washers, as required.
- C. All threads on stainless steel rods/bolts shall be protected with an anti-seize lubricant suitable for submerged stainless bolts and complying with Federal Specification MILI-A-907E.

3.2 WARRANTY

- A. Warrant all parts to be free from defects in materials and workmanship for a period of five years after Substantial Completion.
- B. Furnish replacement parts to the Owner for any items found to be defective within the five-year warranty period.

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 07 92 00 – JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 1. Silicone joint sealants.
 2. Urethane joint sealants.
 3. Preformed joint sealants.

1.2 PRECONSTRUCTION TESTING

- A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
 1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
 2. Submit not fewer than three pieces of each kind of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
 3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
 5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

1.3 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2 inch-wide joints formed between two 6 inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
 1. Joint-sealant application, joint location, and designation.
 2. Joint-sealant manufacturer and product name.
 3. Joint-sealant formulation.
 4. Joint-sealant color.
- E. Qualification Data: For qualified Installer and testing agency.
- F. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.
- H. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

I. Warranties: Sample of special warranties.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.
- C. Product Testing: Test joint sealants using a qualified testing agency.
 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
 2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.
- D. Pre-installation Conference: Conduct conference at Project site.

1.5 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 2. When joint substrates are wet.
 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.6 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: Two years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
 1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.

4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
 1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is de-ionized water, unless otherwise indicated.
- C. Colors of Exposed Joint Sealants: As indicated by manufacturer's designations

2.2 SILICONE JOINT SEALANTS

- A. One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25.
 1. 795 Silicone Structural Glazing, Glazing, and Weatherproofing Sealant, by Dow Corning. (colors only)
 2. Construction 1200 Sealant, General Electric Company.
 3. 999-A, Dow Corning.
 4. 864 Architectural Silicone, by Pecora Corporation. (colors only)

2.3 URETHANE JOINT SEALANTS

- A. Two-Part Urethane: Self-Leveling, ASTM C920, Type M, Grade P, Class 25.
 1. Chem-Calk CC-550, by Bostik.
 2. Vulkem 245, by Mameco.
 3. Vulkem 255, Wide-Joint, by Mameco.
 4. NR-200 Urexpan, by Pecora Corporation.
 5. Sikaflex-2c NS/SL, by Sika Corporation.
- B. Two-Part Urethane: Non-Sag, ASTM C920, Type M, Grade NS, Class 25.
 1. Chem-Calk 500, by Bostik.
 2. Vulkem 227, by Mameco.
 3. Dynatrol II, by Pecora Corporation.
 4. Sikaflex-2c NS/SL, by Sika Corporation.
 5. Sonolastic NP 2, by Sonneborn Building Products, ChemRex Inc.
- C. One-Part Urethane: Self-Leveling, ASTM C920, Type S, Grade P, Class 25.
 1. Vulkem 45, by Mameco.
 2. Urexpan NR-201, by Pecora Corporation.
 3. Sonolastic SL1, by Sonneborn Building Products, ChemRex Inc.
 4. Sikaflex 1C-SL by Sika.
- D. One-Part Urethane: Non-Sag, ASTM C920, Type S, Grade NS, Class 25.
 1. Chem-Calk 900, by Bostik.
 2. Vulkem 116, by Mameco.

3. Sonolastic NP I, by Sonneborn Building Products, ChemRex Inc.
4. Sikaflex 1A by Sika.

2.4 PREFORMED JOINT SEALANTS

- A. Preformed Silicone Joint Sealants: Manufacturer's standard sealant consisting of precured low-modulus silicone extrusion, in sizes to fit joint widths indicated, combined with a neutral-curing silicone sealant for bonding extrusions to substrates.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 123 Silicone Seal.
 - b. GE Advanced Materials - Silicones; UltraSpan US1100.
 - c. Pecora Corporation; Sil-Span.

2.5 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) OR Type O (open-cell material), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

2.6 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning

operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

- a. Concrete.
3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 1. Remove excess sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
 4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.
 5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.
- G. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:
 1. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a

bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.

2. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.
3. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.

3.4 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
 1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
 - b. Perform 1 test for each 1000 feet of joint length thereafter or 1 test per each floor per elevation.
 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
 4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
 5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage

or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

DIVISION 9 FINISHES

SECTION 09 90 00 – PAINTING AND PROTECTIVE COATINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Exposed, buried, and submerged metal, exposed PVC and CPVC, exposed FRP, and aluminum and dissimilar metals, to be protective painted, whether specifically mentioned or not, except as specified otherwise. Prime coat structural steel surfaces. Exterior concrete surfaces will not be protective painted unless specifically indicated. Interior concrete surfaces will be protective painted as specified herein.

1.2 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. ASTM International (ASTM):
 - a. D 16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.
 - b. D 4541 - Standard Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers.
 2. NACE International (NACE):
 - a. SP0178 - Design, Fabrication, and Surface Finish Practices for Tanks and Vessels to Be Lined for Immersion Service.
 - b. SP0188-06 - Discontinuity (Holiday) Testing of Protective Coatings.
 3. National Association of Pipe Fabricators (NAPF):
 - a. 500-03 - Surface Preparation Standard for Ductile Iron Pipe and Fittings Receiving Special External Coatings and/or Special Internal Linings.
 4. NSF International (NSF):
 - a. 61 - Drinking Water System Components - Health Effects.
 5. Society for Protective Coatings (SSPC):
 - a. QP1, Standard Procedure for Evaluating Qualifications of Painting Contractors.
 - b. QP2, Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint.
 - c. SP COM - Surface Preparation Commentary for Steel and Concrete Substrates.
 - d. SP-1 - Solvent Cleaning.
 - e. SP-2 - Hand Tool Cleaning.
 - f. SP-3 - Power Tool Cleaning.
 - g. SP-5 - White Metal Blast Cleaning.
 - h. SP-6 - Commercial Blast Cleaning.
 - i. SP-7 – Brush-Off Blast Cleaning.
 - j. SP 8, Pickling.
 - k. SP-10 – Near-White Blast Cleaning.
 - l. SP 11-T, Power Tool Cleaning to Bare Metal.
 - m. SP 13, Surface Preparation of Concrete.
 - n. Guide No. 3, PA, Guide to Safety in Painting Applications.
 6. U.S. Environment Protection Agency (EPA):
 - a. Method 24 - Surface Coatings.
 7. NACE International (NACE):
 - a. SP0178 - Design, Fabrication, and Surface Finish Practices for Tanks and Vessels to Be Lined for Immersion Service.
 - b. SP0188-06 - Discontinuity (Holiday) Testing of Protective Coatings.
 8. National Association of Pipe Fabricators (NAPF):
 - a. 500-03 - Surface Preparation Standard for Ductile Iron Pipe and Fittings Receiving Special External Coatings and/or Special Internal Linings.
 9. NSF International (NSF):
 - a. 61 - Drinking Water System Components - Health Effects.

10. Society for Protective Coatings (SSPC):
 - a. QP1, Standard Procedure for Evaluating Qualifications of Painting Contractors.
 - b. QP2, Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint.
 - c. SP COM - Surface Preparation Commentary for Steel and Concrete Substrates.
 - d. SP-1 - Solvent Cleaning.
 - e. SP-2 - Hand Tool Cleaning.
 - f. SP-3 - Power Tool Cleaning.
 - g. SP-5 - White Metal Blast Cleaning.
 - h. SP-6 - Commercial Blast Cleaning.
 - i. SP-7 - Brush-Off Blast Cleaning.
 - j. SP-8, Pickling.
 - k. SP-10 - Near-White Blast Cleaning.
 - l. SP-11-T, Power Tool Cleaning to Bare Metal.
 - m. SP-13, Surface Preparation of Concrete.
 - n. Guide No. 3, PA, Guide to Safety in Painting Applications.
11. U.S. Environment Protection Agency (EPA):
 - a. Method 24 - Surface Coatings.

1.3 DEFINITIONS

- A. Terms used in this section:
 1. Submerged metal: Steel or iron surfaces below tops of channel or structure walls which will contain water even when above expected water level.
 2. Submerged concrete and masonry surfaces: Surfaces which are or will be:
 - a. Underwater.
 - b. In structures which normally contain water.
 - c. Below tops of walls of water containing structures.
 3. Exposed surface: Any metal or concrete surface, indoors or outdoors that is exposed to view.
 4. Dry film thickness (DFT): Thickness of fully cured coating, measured in mils.
 5. Volatile organic compound (VOC): Content of air polluting hydrocarbons in uncured coating product measured in units of grams per liter or pounds per gallon, as determined by EPA Method 24.
 6. Ferrous: Cast iron, ductile iron, wrought iron, and all steel alloys except stainless steel.
 7. Where SSPC surface preparation standards are specified or implied for ductile iron pipe or fittings, the equivalent NAF surface preparation standard shall be substituted for the SSPC standard.
 8. Coverage: Total minimum dry film thickness in mils, or square feet per gallon.
 9. FRP: Fiberglass Reinforced Plastic.
 10. HCl: Hydrochloric Acid.
 11. MDFT: Minimum Dry Film Thickness.
 12. MDFTPC: Minimum Dry Film Thickness per Coat.
 13. Mil: Thousandth of an inch.
 14. Military Specification-Paint.
 15. PSDS: Paint System Data Sheet.
 16. SFGP: Square Feet per Gallon.
 17. SFGPC: Square Feet per Gallon per Coat.
 18. SP: Surface Preparation.

1.4 PERFORMANCE REQUIREMENTS

- A. Coating materials used in contact with potable water supply systems shall be certified to NSF 61.

1.5 SUBMITTALS

- A. General: Submit in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.
- B. Shop Drawings:
 - 1. Schedule of proposed coating materials.
 - 2. Schedule of surfaces to be coated with each coating material.
- C. Product Data: Include description of physical properties of coatings including solids content and ingredient analysis, VOC content, temperature resistance, typical exposures and limitations, and manufacturer's standard color chips:
 - 1. Data Sheets:
 - a. For each paint system, furnish a Paint System Data Sheet (PSDS), the Manufacturer's Technical Data Sheets, and paint colors available (where applicable) for each product used in the paint system. The PSDS form is appended to the end of this section.
 - b. Submit required information on a system-by-system basis.
 - c. Furnish copies of paint system submittals to the coating applicator.
 - d. Indiscriminate submittal of Manufacturer's literature only is not acceptable.
 - e. Regulatory requirements: Submit data concerning the following:
 - f. Volatile organic compound limitations.
 - g. Coatings containing lead compounds and PCBs.
 - h. Abrasives and abrasive blast cleaning techniques, and disposal.
 - i. NSF certification of coatings for use in potable water supply systems.
- D. Samples: Include 8-inch square drawdowns or brush-outs of topcoat finish when requested. Identify each sample as to finish, formula, color name and number and sheen name and gloss units.
- E. Certificates: Submit in accordance with requirements for Product Data.
- F. Manufacturer's Instructions: Include the following:
 - 1. Special requirements for transportation and storage.
 - 2. Mixing instructions.
 - 3. Shelf life.
 - 4. Pot life of material.
 - 5. Precautions for applications free of defects.
 - 6. Surface preparation.
 - 7. Method of application.
 - 8. Recommended number of coats.
 - 9. Recommended dry film thickness (DFT) of each coat.
 - 10. Recommended total dry film thickness (DFT).
 - 11. Drying time of each coat, including prime coat.
 - 12. Required prime coat.
 - 13. Compatible and non-compatible prime coats.
 - 14. Recommended thinners, when recommended.
 - 15. Limits of ambient conditions during and after application.
 - 16. Time allowed between coats (minimum and maximum).
 - 17. Required protection from sun, wind, and other conditions.
 - 18. Touch-up requirements and limitations.
 - 19. Minimum adhesion of each system submitted in accordance with ASTM D 4541.
- G. Manufacturer's Representative's Field Reports.
- H. Operations and Maintenance Data: Submit as specified in Section 01 77 00 CLOSEOUT PROCEDURES.

1. Reports on visits to project site to view and approve surface preparation of structures to be coated.
2. Reports on visits to project site to observe and approve coating application procedures.
3. Reports on visits to coating plants to observe and approve surface preparation and coating application on items that are "shop coated."

1.6 QUALITY ASSURANCE

- A. Quality Assurance Submittals:
 1. Quality Assurance plan.
 2. Qualifications of coating applicator including List of Similar Projects and List of References substantiating experience.
 3. Factory Applied Coatings: Manufacturer's certification stating factory applied coating system meets or exceeds requirements specified.
 4. If the Manufacturer of finish coating differs from that of shop primer, provide both Manufacturers' written confirmation that materials are compatible.
 5. Manufacturer's written instructions and special details for applying each type of paint.
 6. Manufacturers' Certification of Proper Installation.
- B. Certifications: All paints and coatings to be used on this project comply with current federal, state, and local VOC regulations
- C. Applicator qualifications:
 1. Minimum of 5 years' experience applying specified type or types of coatings under conditions similar to those of the Work:
 2. Provide qualifications of applicator and references listing 5 similar projects completed in the past 2 years.
 3. Manufacturer approved applicator when manufacturer has approved applicator program.
 4. Approved and licensed by polymorphic polyester resin manufacturer to apply polymorphic polyester resin coating system.
 5. Approved and licensed by elastomeric polyurethane (100 percent solids) manufacturer to apply 100 percent solids elastomeric polyurethane system.
 6. Applicator of off-site application of coal tar epoxy shall have successfully applied coal tar epoxy on similar surfaces in material, size, and complexity as on the Project.
- D. Regulatory requirements: Comply with governing agencies regulations by using coatings that do not exceed permissible volatile organic compound limits and do not contain lead:
 1. Do not use coal tar epoxy in contact with drinking water or exposed to ultraviolet radiation.
 2. Perform surface preparation and painting in accordance with recommendations of the following:
 3. Paint Manufacturer's instructions.
 4. SSPC-PA Guide No. 3, Guide to Safety in Paint Applications.
 5. Federal, state, and local agencies having jurisdiction.
- E. Samples:
 1. Reference Panel:
 - a. Prior to start of surface preparation, furnish a 4" by 4" steel panel for each grade of sandblast specified herein, prepared to specified requirements.
 - b. Provide panel representative of the steel used; prevent deterioration of surface quality.
 - c. Upon approval of Engineer, panel to be reference source for inspection.
 - d. Unless otherwise specified, before painting work is started, prepare minimum 8" by 10" samples with type of paint and application specified on similar substrate to which paint is to be applied.
 - e. Furnish additional samples as required until colors, finishes, and textures are approved.

- f. Approved samples to be the quality standard for final finishes.
- g. Field samples:
- h. Prepare and coat a minimum 100 square foot area between corners or limits such as control or construction joints of each system.
- i. Approved field sample may be part of Work.
- j. Obtain approval before painting other surfaces.

- F. Pre-installation conference: Conduct as specified in Section 01 31 19 PROJECT MEETINGS.
- G. Compatibility of coatings: Use products by same manufacturer for prime coats, intermediate coats, and finish coats on same surface, unless specified otherwise.
- H. Services of coating manufacturer's representative: Arrange for coating manufacturer's representative to attend pre-installation conferences. Make periodic visits to the project site to provide consultation and inspection services during surface preparation and application of coatings, and to make visits to coating plants to observe and approve surface preparation procedures and coating application of items to be "shop primed and coated".
- I. Contract Closeout Submittals: Special guarantee.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle products as specified in Section 01 60 00 PRODUCT REQUIREMENTS.
- B. Remove unspecified and unapproved paints from Project site immediately.
- C. Deliver new unopened containers with labels identifying the manufacturer's name, brand name, product type, batch number, date of manufacturer, expiration date or shelf life, color, and mixing and reducing instructions.
 - 1. Do not deliver materials aged more than 12 months from manufacturing date.
- D. Store coatings in well-ventilated facility that provides protection from the sun, weather, and fire hazards. Maintain ambient storage temperature between 45 and 90 degrees Fahrenheit, unless otherwise recommended by the manufacturer.
- E. Take precautions to prevent fire and spontaneous combustion.
- F. Shipping:
 - 1. Where pre-coated items are to be shipped to the site, protect coating from damage. Batten coated items to prevent abrasion.
 - 2. Use nonmetallic or padded slings and straps in handling.

1.8 PROJECT CONDITIONS

- A. Surface moisture contents: Do not coat surfaces that exceed manufacturer specified moisture contents, or when not specified by the manufacturer, the following moisture contents:
 - 1. Plaster and gypsum wallboard: 12 percent.
 - 2. Masonry, concrete, and concrete block: 12 percent.
 - 3. Interior located wood: 15 percent.
 - 4. Concrete floors: 7 percent.
- B. Do not apply coatings:
 - 1. Under dusty conditions or adverse environmental conditions, unless tenting, covers, or other such protection is provided for structures to be coated.

2. When light on surfaces measures less than 15 foot-candles.
 3. When ambient or surface temperature is less than 55 degrees Fahrenheit unless manufacturer allows a lower temperature.
 4. When relative humidity is higher than 85 percent.
 5. When surface temperature is less than 5 degrees Fahrenheit above dew point.
 6. When surface temperature exceeds the manufacturer's recommendation.
 7. When ambient temperature exceeds 90 degrees Fahrenheit, unless manufacturer allows a higher temperature.
 8. Apply clear finishes at minimum 65 degrees Fahrenheit.
- C. Provide fans, heating devices, dehumidifiers, or other means recommended by coating manufacturer to prevent formation of condensate or dew on surface of substrate, coating between coats and within curing time following application of last coat.
- D. Provide adequate continuous ventilation and sufficient heating facilities to maintain minimum 55 degrees Fahrenheit for 24 hours before, during and 48 hours after application of finishes.
- E. Dehumidification and heating for coating of digester interiors, wet wells, and high humidity enclosed spaces:
1. Provide dehumidification and heating of digester interior spaces in which surface preparation, coating application, or curing is in progress according to the following schedule:
 - a. October 1 to April 30: Provide continuous dehumidification and heating as required to maintain the tanks within environmental ranges as specified in this Section and as recommended by the coating material manufacturer. For the purposes of this Section, "continuous" is defined as 24 hours per day and 7 days per week.
 - b. May 1 to September 30: Provide temporary dehumidification and heating as may be required to maintain the tanks within the specified environmental ranges in the event of adverse weather or other temporary condition. At Contractor's option and at his sole expense, Contractor may suspend work until such time as acceptable environmental conditions are restored, in lieu of temporary dehumidification and heating. Repair or replace any coating or surface preparation damaged by suspension of work, at Contractor's sole expense.
 2. Equipment requirements:
 - a. Capacity: Provide dehumidification, heating, and air circulation equipment with minimum capacity to perform the following:
 - 1) Maintain the dew point of the air in the tanks at a temperature at least 5 degrees Fahrenheit less than the temperature of the coldest part of the structure where work is underway.
 - 2) Reduce dew point temperature of the air in the tanks by at least 10 degrees Fahrenheit in 20 minutes.
 - 3) Maintain air temperature in the tanks at 60 degrees minimum.
 - b. Systems:
 - 1) Internal combustion engine generators: May be used; Contractor shall obtain all required permits and provide air pollution and noise control devices on equipment as required by permitting agencies.]
 - 2) Dehumidification: Provide desiccant or refrigeration drying. Desiccant types shall have a rotary desiccant wheel capable of continuous operation. No Liquid, granular, or loose lithium chloride drying systems will be allowed.
 - 3) Heating: Electric, indirect combustion, or steam coil methods may be used. Direct fired combustion heaters will not be allowed during abrasive blasting, coating application, or coating cure time.
 3. Design and submittals:
 - a. Contractor shall prepare dehumidification and heating plan for this project, including all equipment and operating procedures.

- b. Suppliers of services and equipment shall have not less than 3 years' experience in similar applications.
 - c. Supplier: The following or equal:
 - 1) Cargocaire Corporation (Munters) or equal.
 - d. Submit dehumidification and heating plan for Eengineer's review.
4. Monitoring and performance:
- a. Measure and record relative humidity and temperature of air, and structure temperature twice daily (beginning and end of work shifts) to verify that proper humidity and temperature levels are achieved inside the work area after the dehumidification equipment is installed and operational. Test results shall be made available to the Engineer upon request.
 - b. Interior space of the working area and tank(s) shall be sealed and a slight positive pressure maintained as recommended by the supplier of the dehumidification equipment.
 - c. The filtration system used to remove dust from the air shall be designed so that it does not interfere with the dehumidification equipment's ability to control the dew point and relative humidity inside the reservoir.
 - 1) The air from the tank, working area, or dust filtration equipment shall not be recirculated through the dehumidifier during coating application or when solvent vapors are present.

1.9 SEQUENCING AND SCHEDULING

- A. Sequence and Schedule: As specified in Section 01 14 00 WORK RESTRICTIONS.

1.10 SPECIAL GUARANTEE

- A. Furnish Manufacturer's extended guarantee or warranty, with Owner named as beneficiary, in writing, as special guarantee. Special guarantee shall provide for correction, or at the option of the Owner, removal and replacement of work specified in this Specification section found *defective* during a period of 1 year after the date of Substantial Completion.
- B. Contractor and paint Manufacturer shall jointly and severally furnish guarantee.

1.11 MAINTENANCE

- A. Extra materials: Deliver as specified in Section 01 77 00. Include minimum 1 gallon of each type and color of coating applied:
 - 1. When manufacturer packages material in gallon cans, deliver unopened labeled cans as comes from factory.
 - 2. When manufacturer does not package material in gallon cans, deliver material in new gallon containers, properly sealed and identified with typed labels indicating brand, type, and color.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Special coatings: One of the following or equal:
 - 1. Carboline: Carboline, St. Louis, MO.
 - 2. Ceilcote: International Protective Coatings, Berea, OH.
 - 3. Dampney: The Dampney Company, Everett, MA.
 - 4. Devoe: International Protective Coatings, Louisville, KY.
 - 5. Dudick: Dudick, Inc., Streetsboro, OH.
 - 6. GET: Global Eco Technologies, Pittsburg, CA.

7. Henkel: Henkel North America, Madison Heights MI.
8. IET: Integrated Environmental Technologies, Santa Barbara, CA.
9. Induron Protective Coatings, Birmingham, AL.
10. PPG Amercoat: PPG Protective & Marine Coatings, Brea, CA.
11. Raven Lining Systems, Broken Arrow, OK.
12. Rustoluem : Rustoleum Corp., Sommerset, NJ.
13. Sanchem: Sanchem, Chicago, IL.
14. Superior: Superior Environmental Products, Inc., Addison, TX.
15. S-W: Sherwin-Williams Co., Cleveland, OH.
16. Tnemec: Tnemec Co., Kansas City, MO.
17. Wasser: Wasser High Tech Coatings, Kent, WA.
18. ZRC: ZRC Worldwide Innovative Zinc Technologies, Marshfield, MA.

2.2 PREPARATION AND PRETREATMENT MATERIALS

- A. Metal pretreatment: As manufactured by one of the following or equal:
 1. Henkel: Galvaprep 5.
 2. International: AWLGrip Alumiprep 33.
- B. Surface cleaner and degreaser: As manufactured by one of the following or equal:
 1. Carboline Surface Cleaner No.3.
 2. Devoe: Devprep 88.
 3. S-W: Clean and Etch.

2.3 COATING MATERIALS

- A. Alkali resistant bitumastic: As manufactured by one of the following or equal:
 1. Carboline: Bitumastic No. 50.
 2. S-W: Targuard.
 3. Wasser: MC-Tar.
 4. [As specified for Coal Tar Epoxy Substitute.]
- B. Wax coating: As manufactured by the following or equal:
 1. Sanchem: No-Ox-Id A special.
- C. High solids epoxy (self-priming) not less than 72 percent solids by volume: As manufactured by one of the following or equal:
 1. Carboline: Carboguard 891.
 2. Devoe: Bar Rust 233H.
 3. Induron: PE-70
 4. PPG Amercoat: Amerlock 2.
 5. S-W: Macropoxy 646.
 6. Tnemec: HS Epoxy Series 104.
- D. Aliphatic or aliphatic-acrylic polyurethane: As manufactured by one of the following or equal:
 1. Carboline: Carbothane 134 VOC.
 2. Devoe: Devthane 379.
 3. PPG Amercoat: Amershield VOC.
 4. S-W: High Solids Polyurethane [CA].
 5. Tnemec: Endura-Shield II Series 1075 (U).
- E. Epoxy Novolac: Multi-component aggregate-filled epoxy system specifically designed for exposure to municipal wastewater. As manufactured by one of the following or equal:
 1. Sauereisen: Sewergard No. 210, 210S, or 210GL
 2. Carboline: Plasite 4550 S

3. Devoe: Devmat 100
 4. Raven 410
- F. High temperature coating 150 to 350 degrees Fahrenheit: As manufactured by one of the following or equal:
1. Carboline: Thermaline 4900.
 2. Dampney: Thermalox 245 Silicone - Zinc Dust.
 3. PPG Amercoat: Amerlock 2/400 GFK.
- G. High temperature coating 400 to 1,000 degrees Fahrenheit (dry): As manufactured by one of the following or equal:
1. Carboline: Thermaline 4700.
 2. Dampney: Thermolox 230C Series Silicone.
 3. Devoe: HT-12, High Heat Silicone.
- H. High temperature coating up to 1,400 degrees Fahrenheit: As manufactured by the following or equal:
1. Dampney: Thermalox 240 Silicone Ceramix.
- I. Asphalt varnish: AWWA C 500.
- J. Protective coal tar: As manufactured by one of the following or equal:
1. Carboline: Bitumastic No. 50.
 2. PPG Amercoat: 78HB
 3. [As specified for Coal Tar Epoxy.]
- K. Coal tar epoxy: As manufactured by one of the following or equal:
1. Carboline: 300-M, Bitumastic.
 2. PPG Amercoat: 78HB.
 3. S-W: Tar Guard 100.
 4. Tnemec: Series 46H-413.
- L. Coal tar: Where coal tar, coal tar epoxy, or coal tar mastic are specified or indicated on the Drawings, use coal tar epoxy substitute in their place. Coal tar shall not be allowed.
- M. Coal tar epoxy substitute: As manufactured by one of the following or equal:
1. [Devoe: Devtar 5A HS.
 2. S-W: Macropoxy 646 Black.]
- N. Vinyl ester: Glass mat reinforced, total system 125 mils DFT. As manufactured by one of the following or equal:
1. Carboline: Semstone 870.
 2. Ceilcote: 6640 Ceilcrete.
 3. Dudick: Protecto-Flex 800.
 4. Tnemec: Chembloc Series 239SC.
- O. Elastomeric polyurethane, 100 percent solids, ASTM D 16, Type V, (Urethane P): As manufactured by the following or equal:
1. GET: Endura-Flex EF-1988.
- P. Concrete floor coatings: As manufactured by one of the following or equal:
1. Carboline: Semstone 140SL.
 2. Devoe: Devran 124.
 3. Dudick: Polymer Alloy 1000.
 4. Tnemec: Tneme-Glaze Series 282.

- Q. Waterborne acrylic emulsion: As manufactured by one of the following or equal:
 1. S-W: DTM Acrylic B66W1.
 2. Tnemec: Tneme-Cryl Series 6.
- R. Galvanizing Zinc Compound: As manufactured by one of the following or equal:
 1. ZRC: Cold Galvanizing Compound.

2.4 MIXES

- A. Mix in accordance with manufacturer's instructions.

PART 3 - EXECUTION

3.1 GENERAL PROTECTION

- A. Protect adjacent surfaces from coatings and damage. Repair damage resulting from inadequate or unsuitable protection:
- B. Protect adjacent surfaces not to be coated from spatter and droppings with drop cloths and other coverings:
 1. Mask off surfaces of items not to be coated or remove items from area.
- C. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being coated and in particular, surfaces within storage and preparation area.
- D. Place cotton waste, cloths, and material which may constitute fire hazard in closed metal containers and remove daily from site.
- E. Remove electrical plates, surface hardware, fittings, and fastenings, prior to application of coating operations. Carefully store, clean, and replace on completion of coating in each area. Do not use solvent or degreasers to clean hardware that may remove permanent lacquer finish.

3.2 GENERAL PREPARATION

- A. Prepare surfaces in accordance with coating manufacturer's instructions, unless more stringent requirements are specified in this Section.
- B. Protect following surfaces from abrasive blasting by masking, or other means:
 1. Threaded portions of valve and gate stems, grease fittings, and identification plates.
 2. Machined surfaces for sliding contact.
 3. Surfaces to be assembled against gaskets.
 4. Surfaces of shafting on which sprockets are to fit.
 5. Surfaces of shafting on which bearings are to fit.
 6. Machined surfaces of bronze trim, including those slide gates.
 7. Cadmium-plated items, except cadmium-plated, zinc-plated, or sherardized fasteners used in assembly of equipment requiring abrasive blasting.
 8. Galvanized items, unless scheduled to be coated.
- C. Protect installed equipment, mechanical drives, and adjacent coated equipment from abrasive blasting to prevent damage caused by entering sand or dust.
- D. Concrete:
 1. Allow new concrete to cure for minimum of 28 days before coating.

2. Clean concrete surfaces of dust, mortar, fins, loose concrete particles, form release materials, oil, and grease. Fill voids so that surface is smooth. Etch or brush off-blast clean in accordance with SSPC SP-7 to provide surface profile equal to 40 to 60-grit sandpaper, or as recommended by coating manufacturer. All concrete surfaces shall be vacuumed clean prior to coating application.
- E. Ferrous metal surfaces:
1. Remove grease and oil in accordance with SSPC SP-1.
 2. Remove rust, scale, and welding slag and spatter, and prepare surfaces in accordance with appropriate SSPC standard as specified.
 3. Abrasive blast surfaces prior to coating.
 - a. When abrasive blasted surfaces rust or discolor before coating, abrasive blast surfaces again to remove rust and discoloration.
 - b. When metal surfaces are exposed because of coating damage, abrasive blast surfaces and feather in to a smooth transition before touching-up.
 - c. Ferrous metal surfaces not to be submerged: Abrasive blast in accordance with SSPC SP-10, unless blasting may damage adjacent surfaces, prohibited or specified otherwise. Where not possible to abrasive blast, power tool clean surfaces in accordance with SSPC SP-3.
 - d. Ferrous metal surfaces to be submerged: Unless specified otherwise, abrasive blast in accordance with SSPC SP-5 to clean and provide roughened surface profile of not less than 2 mils and not more than 4 mils in depth when measured with Elcometer 123, or as recommended by the coating manufacturer.
 4. All abrasive blast cleaned surfaces shall be blown down with clean dry air and or vacuumed.
- F. Ductile iron pipe and fittings to be lined or coated: Abrasive blast clean in accordance with NAPF 500-03.
- G. Sherardized, aluminum, copper, and bronze surfaces: Prepare in accordance with coating manufacturer's instructions.
- H. Galvanized surface:
1. Degrease or solvent clean (SSPC SP-1) to remove oily residue.
 2. Power tool or hand tool clean or whip abrasive blast.
 3. Test surface for contaminants using copper sulfate solution.
 4. Apply metal pretreatment within 24 hours before coating galvanized surfaces that cannot be thoroughly abraded physically, such as bolts, nuts, or preformed channels.
- I. Shop primed metal:
1. Certify that primers applied to metal surfaces in the shop are compatible with coatings to be applied over such primers in the field.
 2. Remove shop primer from metal to be submerged by abrasive blasting in accordance with SSPC SP-10, unless greater degree of surface preparation is required by coating manufacturer's representative.
 3. Correct abraded, scratched, or otherwise damaged areas of prime coat by sanding or abrasive blasting to bare metal in accordance with SSPC SP-2, SP 3, or SP-6, as directed by the Engineer.
 4. When entire shop priming fails or has weathered excessively (more than 25 percent of the item), or when recommended by coating manufacturer's representative, abrasive blast shop prime coat to remove entire coat and prepare surface in accordance with SSPC SP-10.
 5. When incorrect prime coat is applied, remove incorrect prime coat by abrasive blasting in accordance with SSPC SP-10.
 6. When prime coat not authorized by Engineer is applied, remove unauthorized prime coat by abrasive blasting in accordance with SSPC SP-10.

- 7. Shop applied bituminous paint or asphalt varnish: Abrasive blast clean shop applied bituminous paint or asphalt varnish from surfaces scheduled to receive non-bituminous coatings.
- J. Cadmium-plated, zinc-plated, or sherardized fasteners:
 - 1. Abrasive blast in same manner as unprotected metal when used in assembly of equipment designated for abrasive blasting.
- K. Abrasive blast components to be attached to surfaces which cannot be abrasive blasted before components are attached.
- L. Grind sharp edges to approximately 1/16-inch radius before abrasive blast cleaning.
- M. Remove and grind smooth all excessive weld material and weld spatter before blast cleaning in accordance with NACE SP0178.
- N. PVC and FRP Surfaces:
 - 1. Prepare surfaces to be coated by light sanding (de-gloss) and wipe-down with clean cloths, or by solvent cleaning in strict accordance with coating manufacturer's instructions.
- O. Cleaning of previously coated surfaces:
 - 1. Utilize cleaning agent to remove soluble salts such as chlorides and sulfates from concrete and metal surfaces:
 - a. Cleaning agent: Biodegradable non-flammable and containing no volatile organic compounds.
 - b. Manufacturer: The following or equal:
 - 1) Chlor-Rid International, Inc.
 - 2. Cleaning of surfaces utilizing the decontamination cleaning agent may be accomplished in conjunction with abrasive blast cleaning, steam cleaning, high-pressure washing, or hand washing as approved by the coating manufacturer's representative and the Engineer.
 - 3. Test cleaned surfaces in accordance with the cleaning agent manufacturer's instructions to ensure all soluble salts have been removed. Additional cleaning shall be carried out as necessary.
 - 4. Final surface preparation prior to application of new coating system shall be made in strict accordance with coating manufacturer's printed instructions.

3.3 MECHANICAL AND ELECTRICAL EQUIPMENT PREPARATION

- A. Identify equipment, ducting, piping, and conduit as specified in Section 22 05 53 – MECHANICAL IDENTIFICATION.
- B. Remove grilles, covers, and access panels for mechanical and electrical system from location and coat separately.
- C. Prepare and finish coat-primed equipment with color selected by the Engineer.
- D. Prepare and prime and coat insulated and bare pipes, conduits, boxes, insulated and bare ducts, hangers, brackets, collars, and supports, except where items are covered with prefinished coating.
- E. Replace identification markings on mechanical or electrical equipment when coated over or spattered.
- F. Prepare and coat interior surfaces of air ducts, convector and baseboard heating cabinets that are visible through grilles and louvers with 1 coat of flat black paint, to limit of sight line.

- G. Prepare and coat dampers exposed immediately behind louvers, grilles, convector and baseboard cabinets to match face panels.
- H. Prepare and coat exposed conduit and electrical equipment occurring in finished areas with color and texture to match adjacent surfaces.
- I. Prepare and coat both sides and edges of plywood backboards for electrical equipment before installing backboards and mounting equipment on them.
- J. Color code equipment, piping, conduit, and exposed ductwork and apply color banding and identification, such as flow arrows, naming and numbering, in accordance with Contract Documents.

3.4 GENERAL APPLICATION REQUIREMENTS

- A. Apply coatings in accordance with manufacturer's instructions.
- B. Coat metal unless specified otherwise:
 - 1. Aboveground piping to be coated shall be empty of contents during application of coatings.
- C. Verify metal surface preparation immediately before applying coating in accordance with SSPC SP COM.
- D. Allow surfaces to dry, except where coating manufacturer requires surface wetting before coating.
- E. Wash coat and prime sherardized, aluminum, copper, and bronze surfaces, or prime with Manufacturer's recommended special primer.
- F. Prime shop primed metal surfaces. Spot prime exposed metal of shop primed surfaces before applying primer over entire surface.
- G. Multiple coats:
 - 1. Apply minimum number of specified coats.
 - 2. Apply additional coats when necessary to achieve specified thicknesses.
 - 3. Apply coats to thicknesses specified, especially at edges and corners.
 - 4. When multiple coats of same material are specified, tint prime coat and intermediate coats with suitable pigment to distinguish each coat.
 - 5. Lightly sand and dust surfaces to receive high gloss finishes, unless instructed otherwise by coating manufacturer.
 - 6. Dust coatings between coats.
- H. Coat surfaces without drops, overspray, dry spray, runs, ridges, waves, holidays, laps, or brush marks.
- I. Remove spatter and droppings after completion of coating.
- J. Apply coating by brush, roller, trowel, or spray, unless particular method of application is required by coating manufacturer's instructions or these Specifications.
- K. Plural component application: Drums shall be premixed each day. All gauges shall be working order prior to the start of application. Ratio checks shall be completed prior to each application. A spray sample shall be sprayed on plastic sheeting to insure set time is complete prior to each application. Hardness testing shall be performed after each application.
- L. Spray application:

1. Stripe coat edges, welds, nuts, bolts, difficult to reach areas by brush before beginning spray application, as necessary, to ensure specified coating thickness along edges.
2. When using spray application, apply coating to thickness not greater than that recommended in coating manufacturer's instructions for spray application.
3. Use airless spray method, unless air spray method is required by coating manufacturer's instruction or these Specifications.
4. Conduct spray coating under controlled conditions. Protect adjacent construction and property from coating mist, fumes, or overspray.

M. Drying and recoating:

1. Provide fans, heating devices, or other means recommended by coating manufacturer to prevent formation of condensate or dew on surface of substrate, coating between coats and within curing time following application of last coat.
2. For submerged service the Contractor shall provide a letter to the Engineer that the lining system is fully cured and ready to be placed into service.
3. Limit drying time to that required by these Specifications or coating manufacturer's instructions.
4. Do not allow excessive drying time or exposure which may impair bond between coats.
5. Recoat epoxies within time limits recommended by coating manufacturer.
6. When time limits are exceeded, abrasive blast clean and de-gloss clean prior to applying another coat.
7. When limitation on time between abrasive blasting and coating cannot be met before attachment of components to surfaces which cannot be abrasive blasted, coat components before attachment.
8. Ensure primer and intermediate coats of coating are unscarred and completely integral at time of application of each succeeding coat.
9. Touch up suction spots between coats and apply additional coats where required to produce finished surface of solid, even color, free of defects.
10. Leave no holidays.
11. Sand and feather in to a smooth transition and recoat and recoat scratched, contaminated, or otherwise damaged coating surfaces so damages are invisible to naked eye.

N. Concrete:

1. Apply first coat (primer) only when surface temperature of concrete is decreasing in order to eliminate effects of off-gassing on coating.

3.5 ALKALI RESISTANT BITUMASTIC

A. Preparation:

1. Prepare surfaces in accordance with general preparation requirements.

B. Application:

1. Apply in accordance with general application requirements and as follows:
 - a. Apply at least 2 coats, 8 to 14 mils dry film thickness each.

3.6 WAX COATING

A. Preparation:

1. Prepare surfaces in accordance with general preparation requirements.

B. Application:

1. Apply in accordance with general application requirements and as follows:
 - a. Apply at least 1/32-inch thick coat with 2-inch or shorter bristle brush.
 - b. Thoroughly rub coating into metal surface with canvas covered wood block or canvas glove.

3.7 HIGH SOLIDS EPOXY SYSTEM

- A. Preparation:
 - 1. Prepare surfaces in accordance with general preparation requirements and as follows:
 - a. Abrasive blast ferrous metal surfaces to be submerged at jobsite in accordance with SSPC SP-5 prior to coating. When cleaned surfaces rust or discolor, abrasive blast surfaces in accordance with SSPC SP-10.
 - b. Abrasive blast non-submerged ferrous metal surfaces at jobsite in accordance with SSPC SP-10, prior to coating. When cleaned surfaces rust or discolor, abrasive blast surfaces in accordance with SSPC SP 6.
 - c. Abrasive blast clean ductile iron surfaces at jobsite in accordance with SSPC SP-7.
- B. Application:
 - 1. Apply coatings in accordance with general application requirements and as follows:
 - a. Apply minimum 2-coat system with minimum total dry film thickness (DFT) of 12 mils.
 - b. Recoat or apply succeeding epoxy coats within time limits recommended by manufacturer. Prepare surfaces for recoating in accordance with manufacturer's instructions.
 - c. Coat metal to be submerged before installation when necessary, to obtain acceptable finish, and to prevent damage to other surfaces.
 - d. Coat entire surface of support brackets, stem guides, pipe clips, fasteners, and other metal devices bolted to concrete.
 - e. Coat surface of items to be exposed and adjacent 1 inch to be concealed when embedded in concrete or masonry.

3.8 HIGH SOLIDS EPOXY AND POLYURETHANE COATING SYSTEM

- A. Preparation:
 - 1. Prepare surfaces in accordance with general preparation requirements and as follows:
 - a. Prepare concrete surfaces in accordance with general preparation requirements.
 - b. Touch up shop primed steel and miscellaneous iron.
 - c. Abrasive blast ferrous metal surfaces at jobsite prior to coating. Abrasive blast clean rust and discoloration from surfaces.
 - d. Degrease or solvent clean, whip abrasive blast, power tool, or hand tool clean galvanized metal surfaces.
 - e. Lightly sand (de-gloss) fiberglass and poly vinyl chloride (PVC) pipe to be coated and wipe clean with dry cloths, or solvent clean in accordance with coating manufacturer's instructions.
 - f. Abrasive blast clean ductile iron surfaces.
- B. Application:
 - 1. Apply coatings in accordance with general application requirements and as follows:
 - a. Apply 3 coat system consisting of:
 - 1) Primer: 4 to 5 mils dry film thickness high solids epoxy.
 - 2) Intermediate coat: 4 to 5 mils dry film thickness high solids epoxy.
 - 3) Topcoat: 2.5 to 3.5 mils dry film thickness aliphatic or aliphatic-acrylic polyurethane topcoat.
 - 2. Recoat or apply succeeding epoxy coats within 30 days or within time limits recommended by manufacturer, whichever is shorter. Prepare surfaces for recoating in accordance with manufacturer's instructions.

3.9 EPOXY NOVOLAC SYSTEM

- A. Preparation:
 - 1. Prepare surfaces in accordance with general preparation requirements and as follows:

2. Prepare concrete to obtain clean, open pore with exposed aggregate in accordance with manufacturer's instructions.
3. Prepare ferrous metal surfaces in accordance with SSPC SP-5, with coating manufacturer's recommended anchor pattern.
4. Complete application of prime coat within 6 hours of abrasive blast cleaning. When cleaned surfaces rust or discolor, abrasive blast surfaces in accordance with SSPC SP-5.
5. When handling steel, wear gloves to prevent hand printing.
6. Adjust pH of concrete to within 7 to 11 before applying prime coat.

B. Application:

1. Apply coatings in accordance with general application requirements and in accordance with manufacturer's instructions.
2. Continue to monitor dew point. Dew point shall remain 5 degrees above ambient temperature for a minimum of 8 hours after application of coating.

3.10 HIGH TEMPERATURE COATING

A. Preparation:

1. Prepare surfaces in accordance with general preparation requirements and as follows:
 - a. Abrasive blast surface in accordance with SSPC SP-10.

B. Application:

1. Apply coatings in accordance with general application requirements and as follows:
 - a. Apply number of coats in accordance with manufacturer's instructions.

3.11 ASPHALT VARNISH

A. Preparation:

1. Prepare surfaces in accordance with general preparation requirements.

B. Application:

1. Apply coatings in accordance with general application requirements and as follows:
 - a. Apply minimum 2 coats.

3.12 PROTECTIVE COAL TAR

A. Preparation:

1. Prepare surfaces in accordance with general preparation coal tar requirements.

B. Application:

1. Apply coatings in accordance with general application requirements and as follows:
 - a. Apply minimum 20 mils dry film thickness coating.

3.13 COAL TAR EPOXY

A. Preparation:

1. Prepare surfaces in accordance with general preparation requirements and as follows:

- B. Abrasive blast iron or steel surfaces to be coated as submerged metal in accordance with SSPC SP-5. Prepare other metal surfaces to be coated with coal tar epoxy in accordance with epoxy manufacturer's instructions.

C. Application:

1. Apply coatings in accordance with general application requirements and as follows:

- a. Waterproofing outside surfaces of concrete structures: Apply minimum 2 coats with total dry film thickness of 40 mils.
- b. Apply 2 coats of [8 mils] each for a total [16 mils] dry film thickness.
- c. Apply coal tar epoxy on blasted steel on same day that steel is blasted.
- d. Apply succeeding coats over previous coat as soon as application does not cause sagging, within the following times, or as recommended by the coating manufacturer, whichever is sooner.

Average Temperature Degrees (Fahrenheit)	Maximum Time Between Coats (Hours)
50 to 60	36
60 to 70	24
70 to 80	12
80 to 120	4

- e. Apply additional coats required to obtain specified thickness.
- f. When previous coat has cured or set or Maximum Time Between Coats has lapsed, abrasive blast previous coat until surface film is removed. Wash and clean surface with cleaning solvent. Apply succeeding coat within Maximum Time Between Coats or as recommended by coating manufacturer, whichever is sooner.
- g. When succeeding coat is applied over previous coat which has cured or set or Maximum Time Between Coats has lapsed, and surface has not been abrasive blasted, remove entire coating system to substrate, and apply new coating system.
- h. Where coating system is applied to exterior concrete surfaces below grade, extend system at least 3 inches above finish grade in straight level. Step extended system down 3 inches when extended system reaches 6 inches above finish grade.

3.14 COAL TAR EPOXY SUBSTITUTE

- A. Preparation:
 - 1. Prepare surfaces in accordance with general preparation requirements and in accordance with the coating manufacturer's printed instructions.
- B. Application:
 - 1. Apply 2 coats at 6 mils to 8 mils each, for a minimum total DFT of 12 mils.

3.15 VINYL ESTER

- A. Preparation:
 - 1. Prepare surfaces in accordance with coating manufacturer's recommendations and as directed and approved by coating manufacturer's representative.
- B. Application:
 - 1. Apply prime coat, as required by coating manufacturer, base coat, glass mat, and topcoat to total dry film thickness of 125 mils minimum:
 - a. Final topcoat on floors shall include non-skid surface, applied in accordance with manufacturer's instructions.
 - 2. Perform high voltage holiday detection test in accordance with SP0188-06, over 100 percent of coated surface areas to ensure pinhole free finished coating system.
 - 3. All work shall be accomplished in strict accordance with coating manufacturer's instructions and under direction of coating manufacturer's representative.

3.16 ELASTOMERIC POLYURETHANE (100 PERCENT SOLIDS)

- A. Preparation:
 - 1. Prepare surfaces in strict accordance with coating manufacturer's instructions and as directed and approved by coating manufacturer's representative.
- B. Application:
 - 1. Apply epoxy primer at DFT of 1 to 2 mils, in strict accordance with manufacturer's instructions.
 - 2. Apply polyurethane coating at minimum total DFT as follows:
 - a. Steel: 60 mils DFT.
 - b. Ductile iron and ductile iron pipe coating and lining: 30 mils DFT.
 - c. Concrete: 120 mils DFT.
 - d. Or as recommended by the coating manufacturer and accepted by the Engineer.
- C. For concrete application, provide saw cutting for coating terminations in strict accordance with manufacturer's instructions:
- D. Perform high voltage holiday detection test in accordance with SP0188-06, over 100 percent of coated surface areas to ensure pinhole free finished coating system.

3.17 CONCRETE FLOOR COATINGS

- A. Preparation:
 - 1. Prepare surfaces in accordance with general application requirements and in strict accordance with coating manufacturer's instructions.
- B. Application:
 - 1. Apply primer if required by coating manufacturer.
 - 2. Apply 1 or more coats as recommended by coating manufacturer to receive a minimum total dry film thickness of 25 mils, color as selected by Owner.
- C. Final topcoat shall include non-skid surface, applied in strict accordance with coating manufacturer's instructions.

3.18 WATERBORNE ACRYLIC EMULSION

- A. Preparation:
 - 1. Remove all oil, grease, dirt, and other foreign material by Solvent Cleaning in accordance with SSPC SP-1.
 - 2. Lightly sand all surfaces and wipe thoroughly with clean cotton cloths before applying coating.
- B. Application:
 - 1. Apply 2 or more coats to obtain a minimum dry film thickness (DFT) of 5.0 mils.

3.19 FIELD QUALITY CONTROL

- A. Each coat will be inspected. Strip and remove defective coats, prepare surfaces and recoat. When approved, apply next coat.
- B. Control and check dry film thicknesses and integrity of coatings.
- C. Measure dry film thickness with calibrated thickness gauge.

- D. Dry film thicknesses on ferrous-based substrates may be checked with Elcometer Type 1 Magnetic Pull-Off Gage or Positector 6000.
- E. Verify coat integrity with low-voltage sponge or high-voltage spark holiday detector, in accordance with SP0188 06. Allow Engineer to use detector for additional checking.
- F. Check wet film thickness before coal tar epoxy coating cures on concrete or non-ferrous metal substrates.
- G. Arrange for services of coating manufacturer's field representative to provide periodic field consultation and inspection services to ensure proper surface preparation of facilities and items to be coated, and to ensure proper application and curing:
 - 1. Notify Engineer 24 hours in advance of each visit by coating manufacturer's representative.
 - 2. Provide Engineer with a written report by coating manufacturer's representative within 48 hours following each visit.

3.20 PROTECTIVE COATINGS SYSTEMS

- A. System No. 2: Submerged Metal – Potable General:

Surface Prep.	Paint Material	Min. Coats, Cover
Abrasive Blast, or Centrifugal Wheel Blast (SP 5)	Primer – High Solids Epoxy (Self Priming)	1 coat, 6 MDFT
	Top Coat – High Solids Epoxy	3 coats, 3 MDFTPC

- B. System No. 4: Exposed Metal – Mildly Corrosive:

Surface Prep.	Paint Material	Min. Coats, Cover
Abrasive Blast (SP 10)	Primer – Per Manufacturer's Recommendations	1 coat, 2.5 MDFT
	Top Coat – Aliphatic Polyurethane	1 coat, 3 MDFT

- C. System No. 5: Buried Metal - General:

Surface Prep.	Paint Material	Min. Coats, Cover
Abrasive Blast or Centrifugal Wheel Blast (SP 10)	Standard Hot Coal-Tar Enamel	AWWA C203
	-OR- Coal-Tar Epoxy	AWWA C210
	-OR- Tape Coat System	AWWA C214
	For Acidic Soil, Brackish Water High Bacteria - Hot Coal-Tar, Double Felt	AWWA C203, App. A, Sec. A1.5
	For Highly Abrasive Soil, Brackish Water - Hot Coal-Tar, Fibrous	AWWA C203, App. A, Sec. A1.5

Surface Prep.	Paint Material	Min. Coats, Cover
	Glass -OR- Tape Coat System	AWWA C214 with Double Outer Wrap

D. System No. 10 Galvanized Metal Conditioning:

Surface Prep.	Paint Material	Min. Coats, Cover
Solvent Clean (SP 1), followed by Hand Tool (SP 2), or Power Tool (SP 3),	Wash Primer or Coating Manufacturer's Recommendation.	1 coat, 0.4 MDFT
		Remaining coats as required by exposure

E. System No. 11 Galvanized Metal Conditioning:

Surface Prep.	Paint Material	Min. Coats, Cover
Solvent Clean (SP 1), followed by Hand Tool (SP 2), Power Tool (SP 3), or Brush-off Blast (SP 7)	Primer – Organic Zinc Rich	1 coat, 3 MDFT Additional coats as required by exposure.

F. System No. 12 Skid-Resistant Aluminum and FRP:

Surface Prep.	Paint Material	Min. Coats, Cover
Brush-off Blast (SP 7) or Plastic Surface Preparation	High Solids Epoxy (aggregated)	1 coat, 16 MDFT

G. System No. 13 Sliding Metal:

Surface Prep.	Paint Material	Min. Coats, Cover
Solvent Clean (SP 1), followed by Hand Tool (SP 2), Power Tool (SP 3), or Brush-off Blast (SP 7)	Wax Coating	1 coat, 31 MDFT

H. System No. 14 Exposed PVC:

Surface Prep.	Paint Material	Min. Coats, Cover
Plastic Surface Preparation	Primer – Per Manufacturer's Recommendations	1 coat, 2 MDFT

	Waterborne Acrylic Emulsion	1 coat, 3 MDFT
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I. System No. 15 Aluminum and Dissimilar Metal Insulation:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 1	Alkali Resistant Bitumastic or Coal-Tar Epoxy Substitute	1 coat, 18 MDFT

J. System No. 16 Existing Concrete/CMU Repair:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 13	Filler – Per Manufacturer's Recommendations	1 coat, 10 MDFT
	Primer – Per Manufacturer's Recommendations	1 coat, 5 MDFT
	Top Coat – High Solids Epoxy	1 coat, 4 MDFT

K. System No. 17 New Concrete/CMU Exterior (as required by application schedule):

Surface Prep.	Paint Material	Min. Coats, Cover
SP 13	Filler – Per Manufacturer's Recommendations	1 coat, 10 MDFT
	Intermediate Coat – High Solids Epoxy	1 coat, 4 MDFT
	Top Coat – Aliphatic Polyurethane	1 coat, 3 MDFT

L. System No. 18 Concrete/CMU – Interior or Immersion Mildly Corrosive:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 13	Filler – Per Manufacturer's Recommendations	1 coat, 10 MDFT
	Intermediate Coat – High Solids Epoxy	1 coat, 6 MDFT
	Top Coat – Aliphatic Polyurethane	1 coat, 6 MDFT

3.21 SCHEDULE OF ITEMS NOT REQUIRING COATING

- General: Unless specified otherwise, the following items do not require coating:
- Items that have received final coat at factory and not listed to receive coating in field.
- Aluminum, brass, bronze, copper, plastic (except PVC pipe), rubber, stainless steel, chrome, Everdur, or lead.

4. Buried or encased piping or conduit.
5. Exterior concrete.
6. Galvanized steel wall framing, galvanized electrical conduits, galvanized pipe trays, galvanized cable trays, and other galvanized items:
 - a. Areas on galvanized items or parts where galvanizing has been damaged during handling or construction shall be repaired as follows:
 - 1) Clean damaged areas by SSPC SP-1, SP-2, SP-3, or SP-7 as required.
 - 2) Apply 2 coats of a Galvanizing Zinc Compound in strict accordance with manufacturer's instructions.
7. Grease fittings.
8. Fiberglass ducting or tanks in concealed locations.
9. Steel to be encased in concrete or masonry.

3.22 SCHEDULE OF SURFACES TO BE COATED IN THE FIELD

- A. In general, apply coatings to steel, iron, galvanized surfaces, and wood surfaces unless specified or otherwise indicated on the Drawings. Coat concrete surfaces and anodized aluminum only when specified or indicated on the Drawings. Color coat all piping as specified in Section 40 23 39.
- B. Following schedule is incomplete. Coat unlisted surfaces with same coating system as similar listed surfaces. Verify questionable surfaces.
- C. Metal:
 1. System 2A – Submerged Metal – Potable
 - a. Above grade piping, wall pipes, and pipe sleeves.
 - b. Slide gate guides.
 - c. Structural Steel.
 2. System 4 – Exposed Metal – Mildly Corrosive
 3. System 5 – Buried Metal – General
 4. Buried, below-grade portions of steel items, except buried stainless steel or ductile iron.
 5. System 10 – Galvanized Metal Conditioning
 6. System 11 – Galvanized Metal Conditioning
 7. System 12 – Skid-Resistant Aluminum and FRP
 - a. Aluminum checker plate in all exterior locations, and in wet interior locations.
 8. System 13 - Sliding Metal
 - a. Sliding contact surfaces of slide gates and sluice gates.
 9. System 15 - Aluminum and Dissimilar Metal Insulation
 - a. Aluminum surfaces embedded or in contact with concrete, masonry, and other metals.
 - b. Stainless steel embedded in concrete.
 - c. Dissimilar metals for electrical insulation.
- D. Other Materials
 1. System 14 - Exposed PVC
 - a. All exterior exposed-to-view PVC and CPVC surfaces, and FRP surfaces without integral UV resistant gel coat.
- E. Concrete/CMU:
 1. System 17 – New Concrete/CMU Exterior
 - a. Safety markings
 2. System 18 – Concrete/CMU Interior or Immersion Mildly Corrosive

END OF SECTION

SECTION 09 96 33 – HAZARDOUS MATERIAL REMOVAL

PART 1 - GENERAL

1.1 SCOPE

- A. This specification covers the removal of hazardous material from metal surfaces in the event that the existing coating or prime coat is found to contain hazardous amounts of the RCRA 8 metals.
- B. Under Bid Item No. 5, it should be assumed that hazardous amounts are not present at the Downtown Ground Storage Tank. If project is deemed hazardous, the additional removal costs associated with Hazardous Material Removal shall be included under Bid Item No. 6.
- C. The CONTRACTOR shall be responsible for all aspects of the project, including, but not limited to collection and disposal of all blast and paint debris from the tank. The CONTRACTOR shall be responsible for the tank from the time it is initially taken out of service until it is removed and disposal is complete.
- D. In the event that the existing coatings on the water tank are "lead-containing," all federal, state and local regulations shall be strictly adhered to for worker protection, environmental pollution control, handling of debris, determining if the debris is a hazardous waste and assuring proper disposal.
- E. For abrasive blast cleaning of any "lead-containing" coatings, the CONTRACTOR shall use an abrasive additive that renders lead immobile and is safe for long-term sanitary landfill disposal of recycling/refuse. Blastox™ or similar type additive may be used.
- F. The CONTRACTOR shall be responsible for all costs associated with sampling, worker protection, environmental pollution control, handling of debris, laboratory analysis and waste disposal.
- G. In addition to the requirements of the Contract for General Liability and other insurance coverage, the CONTRACTOR shall be required to carry a minimum of \$5,000,000 (five million dollars) of pollution hazard insurance coverage. An approved insurance certificate indicating the required pollution hazard coverage shall be provided before award of the Contract

1.2 WORK INCLUDED

- A. Preparation of surfaces, which are to receive finishes.
- B. Collection, handling and disposal of debris.

1.3 RELATED WORK AND APPLICABLE REQUIREMENTS SPECIFIED ELSEWHERE

- A. ALL BIDDING REQUIREMENTS, CONTRACT FORM AND CONDITIONS OF THE CONTRACT AND GENERAL REQUIREMENTS shall apply to all work included in this section.

1.4 REFERENCE DOCUMENTS AND STANDARDS

- A. Code of Federal Regulations
 - 1. 29 CFR 1910 Occupational Safety and Health Standards (General Industry Standards)
 - 2. 29 CFR 1910.134 Respiratory Protection
 - 3. 29 CFR 1910.1020 Access to Employee Exposure and Medical Records
 - 4. 29 CFR 1910.1025 Lead

5. 29 CFR 1910.1200 Hazard Communication
6. 29 CFR 1926 Safety and Health Regulations for Construction (Construction Industry Standards)
7. 29 CFR 1926.62 Interim Final Standard on Lead Exposure in Construction
8. 40 CFR 50 National Primary and Secondary Ambient Air Quality Standards
9. 40 CFR 261 Identification and Listing of Hazardous Waste
10. 40 CFR 258 Land Disposal Restrictions

B. National Institute for Occupational Health and Safety

1. NIOSH Method 7082 Lead

C. Occupational Safety and Health Administration

1. OSHA Booklet 3126 Working with Lead in the Construction Industry

D. Society for Protective Coatings

1. SSPC-Guide 6 (CON), Guide for Containing Debris Generated During Paint Removal Operations
2. SSPC-Guide 7 (DIS), Guide for the Disposal of Lead-Contaminated Surface Preparation Debris

1.5 ENVIRONMENTAL CONDITIONS

- A. Provide minimum 25-foot candles (270 lx.) of lighting on surfaces to be finished.

1.6 CONTAINMENT, COLLECTION AND DISPOSAL OF DEBRIS

- A. The CONTRACTOR shall provide a containment system to prevent the migration of any hazardous blast media, dust and paint residue onto or from the property of the OWNER. The containment system shall provide the highest level of emission control required by governmental regulations and include the cover panels, screens, tarps, scaffolds, supports and shrouds used to enclose an entire work area. Refer to SSPC-Guide 6 (CON) Guide for Containing Debris Generated During Paint Removal Operations. Containment and collection shall be in accordance with applicable federal, state and local requirements.
- B. The CONTRACTOR shall place waterproof plastic sheeting on the ground surrounding the exterior of the tank which is bermed to a sufficient depth to contain all debris generated in the cleaning process.
- C. For disposal of surface preparation debris, refer to SSPC-Guide 7 (DIS) Guide for the Disposal of Lead-Contaminated Surface Preparation Debris. All surface preparation debris must be disposed of in accordance with applicable federal, state and local regulations.
- D. The CONTRACTOR shall be responsible for all cost associated with containment collection and waste disposal that may result from the execution of this project.
- E. The CONTRACTOR shall be responsible for removing, handling and disposal of any soil that is contaminated with lead from his operations and replacement with uncontaminated soil.
- F. All expenses associated with the soil sampling and lead analysis shall be included in the base price to clean and paint the tank.

1.7 OPERATIONS SPECIFIC FOR LEAD ABATEMENT

- A. General Requirements

1. Contractor shall remove 100 percent of the existing lead containing paint systems. Surfaces of welds shall be scraped, chipped, and wire brushed as necessary to remove all residual paint and residue.
2. All lead abatement operations, including recovery and disposal of blasting materials, shall be performed in accordance with the applicable regulations and ordinances.
3. All lead abatement workers and supervisors and lead inspectors shall be certified in accordance with 19 CFR 20-8.020.
4. The contractor shall provide copies of the testing data and permits required to prove to appropriate regulatory agencies that blasting residue is safe for disposal in a sanitary landfill.

B. Containment and Air Monitoring

1. The containment system shall be Class 3 or better as outlined in SSFC – Guide 6 (CON) with emissions monitored in accordance with the methods specified in Section 4 “Procedures”. Dust collectors shall be used in conjunction with the forced air flow.
2. The OWNER reserves the right to stop work or to require additional or different enclosure methods, if the CONTRACTOR’S operations create a nuisance beyond the site in the sole opinion of the Owner or any regulatory agency.
3. CONTRACTOR shall be responsible for continuously monitoring the ambient air outside the work zone for lead contamination associated with lead paint removal.
4. CONTRACTOR will employ monitoring methods complying with USEPA methods for surveillance of lead in ambient air as described in Title 40, Code of Federal Regulations, Part 58, Appendix E.
5. Ambient air samples shall be collected before, during and after surface cleaning operations associated with this contract.
6. Ambient samplers will be positioned upwind and downwind of the tank being cleaned at locations in conformance with EPA regulations.
7. Ambient air sampling and analysis shall include appropriate quality assurance/quality control measures to assure validity of data and must include the use of chain of custody forms for all samples submitted for analysis, field blank corrections, analysis of upwind and downwind filters and at least one upstream and one downstream sample for analytical spike recovery.

C. Soil Sampling, Testing and Disposal

1. The CONTRACTOR shall remove one soil sample per 1,000 sq ft within the limits of the site (all land within 30 feet of the blast containment enclosure) prior to the start of work at the site, identify the soil samples, and test for total lead.
2. Soil samples shall consist of five $\frac{3}{4}$ inch diameter by $\frac{1}{2}$ inch deep plugs taken from a 1 square foot area shall be documented. After Substantial Completion of the Work, the Owner and the Contractor shall remove another set of soil samples from the same locations to be tested for total lead. If the results of the total lead tests reveal that the lead levels in the soil have increased by more than 100mg/kg (or less if stipulated by federal, state or local laws and regulations), the Contractor, at his expense, shall clean the site to reduce the amount of lead in the soil in accordance with local, state, and federal guidelines.
3. Paint and cleaning debris shall be cleaned up daily and stored in leak-proof covered dumpsters lined with polyethylene sheets. Each dumpster shall be labeled in accordance with local, state and federal requirements.
4. The CONTRACTOR shall collect at least four random representative samples (100 grams minimum per sample) of the combined paint and spent cleaning materials from each dumpster as instructed by the Owner. Each sample is to be tested for lead by Toxicity Characteristic Leaching Procedure Testing (TCLP Testing) or subsequent testing required by the Resource Conservation and Recovery Act (RCRA) or local or state regulations to determine if the material will be classified as a hazardous material.
5. All spent abrasive and blast residue shall be legally disposed of at the appropriate class landfill by the Contractor in containers approved by the USEPA and local, state and federal regulations.

1.8 PROTECTION AND SAFETY PRECAUTIONS

- A. Take all precautions necessary to avoid adversely affecting the surrounding environment with blast media or paint particle drift or overspray. All of the CONTRACTOR'S activities shall comply with federal, state and local requirements for environmental pollution control.
- B. Plug and protect the tank inlet/outlet and overflow pipe at all times during the execution of the work to prevent damage and the entrance of blast media and debris.
- C. Adequately protect other surfaces, cathodic protection system and level controls from paint and damage. Repair damage as a result of inadequate or unsuitable protection.
- D. All of the CONTRACTOR'S activities and equipment used on the job site must be in compliance with federal, state and local law. Defective or substandard equipment shall not be used. Hoists, ladders, electrical equipment, scaffolding and hand or powered tools must meet safety standards.

1.9 CRITERIA FOR CONTROLS OVER WORKER PROTECTION

- A. OSHA requirements for worker protection as outlined in 29 CFR 1910.1025 Lead and OSHA Booklet 3126 Working With Lead in the Construction Industry shall be followed.
- B. The CONTRACTOR shall provide the necessary protection as required by the applicable federal, state and local laws for the removal of the paint linings for his personnel and for the OWNER'S representative who will be observing the work. This includes, but is not limited to, exposure monitoring, respiratory protection, compliance program, protective work clothing, worker personal hygiene, project housekeeping, worker medical surveillance/blood lead level tests, employee information and training, project signs and proper project record keeping. The CONTRACTOR shall be responsible for all associated costs of the above mentioned items and those costs associated with the testing required to insure worker/observer protection as required by the applicable federal, state and local laws.
- C. The CONTRACTOR shall submit a detailed worker protection plan to the OWNER at least 10 days prior to beginning work. This plan shall comply with the most current OSHA and other governmental agency standards for workers exposed to lead. This plan shall include, but not be limited to, the following programs that the CONTRACTOR will implement for this project:
 - 1. Employee exposure monitoring
 - 2. Respiratory protection
 - 3. Personal hygiene
 - 4. Medical surveillance
 - 5. Employee training
 - 6. Protective work clothing
 - 7. Housekeeping
 - 8. Warning signs
 - 9. Verification of compliance

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)

SECTION 09 97 00 – EXTERIOR SURFACE PREPARATION AND PAINTING OF GROUND STORAGE TANK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Work necessary to complete surface preparation and painting of the exterior of a water ground storage tank and safety climb device as specified here in. This work is to include the removal and replacement of all existing utility infrastructure on exterior of the tank in order to properly prepare and paint the surface. The removal and replacement of the existing safety climb will be required during preparation and painting of the ground storage tank.
- B. Work will also include the painting of the Owner-selected logo on the exterior of the water storage tank.
- C. The Contractor shall be responsible for all aspects of the project, including, but not limited to cleaning, abrasive blasting, collection, and disposal of all blast and paint debris, repair of the tank and any safety equipment pertaining to the use of and access to the tank.
- D. The tank shall not be taken out of service and must remain operational at all times.
- E. Related Sections:
 - 1. Section 01 33 00 – Submittal Procedures.

1.2 WORK INCLUDED

- A. The work of this section includes the surface preparation of all metal surfaces per SSPC standards and coating of all exterior surfaces. The successful bidder shall furnish all materials, labor and equipment to repair, weld caulk, provide containment of spent abrasive/emissions, sand blast, dehumidify, and paint the tank in accordance with the following schedule. It is also the responsibility of the Contractor to collect, handle, and dispose all debris.
- B. NOTE: Full shrouding of the ground storage tank during exterior blasting and painting operations may be required per Manufacturer Recommendations. This tank is located near a residential neighborhood. Work hours Monday through Friday will be limited to daylight hours only (7:00 A.M. – sundown.) and on weekends and holidays work hours shall be limited from 9:00 A.M. to sundown.
- C. Protective coatings shall be applied to the following surfaces:
 - 1. Tank exterior surfaces
 - 2. Above grade piping and valves on the tank
 - 3. Safety climb device
- D. The following shall not be coated and shall be protected from drips, over sprays, etc. unless indicated otherwise:
 - 1. Stainless steel piping, materials and equipment
 - 2. Galvanized steel piping, materials and equipment
 - 3. Aluminum materials and equipment

1.3 SUBMITTALS

- A. General: Administrative, shop drawings, samples, quality control, and contract closeout documents shall conform to the requirements of Section 01 33 00, SUBMITTAL PROCEDURES.

- B. In addition to the requirements of Section 01 33 00, SUBMITTAL PROCEDURES, submit the following additional specific information:
1. Design of shroud for paint containment for exterior including class/bonnet type and interior and exterior OSHA approved rigging
 2. Name and address of manufacturer of all products and applications
 3. Include all MSDS sheets with each product submitted
 4. Manufacturer's certificate of compliance for all commercial products
 5. Special shipping, storage, and protection and handling instructions
 6. Generic type of paint (vinyl, epoxy, etc.) for exterior, solvents, thinners, cleaners, etc.
 7. Trade name and numbers identifying each specific product, including batch numbers and expiration data
 8. Abrasive media to be used including size and type
 9. Application rate or wet film thickness required to achieve the stated dry film thickness
 10. Color and number of paint and primer, along with color chart
 11. Blast profile recommended by the paint manufacturer and the blast grit gradation need to meet profile recommendation
 12. Testing Labs to be used
 13. Testing procedures
 14. Test results, reports, and certifications
 15. Design of logo to be painted, including size, font, color, degrees from north for positioning, etc.
 16. Manifest of all waste material removed from project site ensuring its proper disposal

1.4 REFERENCE SPECIFICATIONS AND STANDARDS

- A. Without limiting the general aspects of other requirements of these specifications, all surface preparation, coating and painting of exterior surfaces and inspection shall conform to the applicable requirements:
1. Coating manufacturer's printed instructions.
 2. American Society of Testing Materials:
 - a. ASTM B117 Salt Spray (FOG).
 - b. ASTM D149 Dielectric Strength.
 - c. ASTM D4060 Abrasion.
 - d. ASTM D4541 Adhesion.
 - e. ASTM D4585 Humidity.
 - f. ASTM G53 QUV Exposure.
 3. American National Standards Institute/National
 - a. Sanitation Foundation
 - 1) ANSI/NSF Standard 61 Listed Drinking Water System Components - Health Effects.
 4. American Water Works Association:
 - a. ANSI/AWWA Standard C652-02 Disinfection.
 - b. ANSI/AWWA D100-96 Welded Steel Tanks.
 5. Code of Federal Regulations:
 - a. 29 CFR 1910 Occupational Safety and Health Standards (General Industry Standards).
 - b. 29 CFR 1910.134 Respiratory Protection.
 - c. 29 CFR 1910.1020 Access to Employee Exposure and Medical Records.
 - d. 29 CFR 1910.1025 Lead.
 - e. 29 CFR 1910.1200 Hazard Communication.
 - f. 29 CFR 1926 Safety and Health Regulations for Construction (Construction Industry Standards).
 - g. 29 CFR 1926.62 Interim Final Standard on Lead Exposure in Construction.
 - h. 40 CFR 50 National Primary and Secondary Ambient Air Quality Standards.
 - i. 40 CFR 261 Identification and Listing of Hazardous Waste.
 - j. 40 CFR 268 Land Disposal Restrictions.

- k. 29 CFR 1910.146 Confined Space Entry Program
 - 6. National Institute for Occupational Health and Safety:
 - a. NIOSH Method 7082 Lead.
 - 7. Occupational Safety and Health Administration:
 - a. OSHA Booklet 3126 Working with Lead in the Construction Industry.
 - 8. Steel Structures Painting Council:
 - a. SSPC Systems and Specifications, Vol. 2, Fifth Ed.
 - b. SSPC-PA2 Paint Thickness Measurement.
 - c. SSPC-PA5 Guide to Maintenance Painting Programs.
 - d. SSPC-Guide 61 (CON), Guide for Containing Debris Generated During Paint Removal Operations.
 - e. SSPC-Guide 71 (DIS), Guide for the Disposal of Lead-Contaminated Surface Preparation Debris.

- B. The Owner's decision shall be final as the interpretation and/or conflict between any of the referenced specifications and standards contained herein.

1.5 CONTRACTOR

- A. The Contractor shall have a minimum of five (5) years practical experience and successful completion history in the application of specified product to surfaces of steel water tanks. He shall substantiate this requirement by furnishing a list of references and recent job completions as part of the bid submittal.
- B. The Contractor shall submit with his bid a written statement by the coatings manufacturer stating that the Contractor is familiar with the materials specified, is capable of performing the work specified herein and has successfully completed similar coating projects.
- C. The personnel performing the work shall be knowledgeable and have the required experience and skill to adequately perform the work for this project, in accordance with SSPC-PA1, "Shop, Field and Maintenance Painting".
- D. Contractor's Superintendent/Foreman shall have a minimum of 5 years' experience with coating storage tanks. Superintendent/Foreman shall be onsite at all times while Work indicated within this Section is underway.
- E. The Contractor is responsible for all claims for paint damage during the progress of the painting and is especially forewarned of this responsibility so that he may exert all possible precaution and care for protection of property.

1.6 COLOR AND SAMPLES

- A. Before any work commences, the contractor shall prepare samples at the job as required until the colors and textures are approved by Owner or Owner's designee.

1.7 LOGO

- A. Provide Owner with a scaled architectural rendering of Celina Tank Logo for approval prior to commencing paint work. Mock-up shall be to scale, color, and indicate size of Logo and lettering. Paint Samples of proposed colors shall be submitted for Owner approval.



1.8 SPECIAL REQUIREMENTS

- A. Each coat of paint shall have a marked visual difference from the preceding coat unless otherwise directed.
- B. Contain, treat, and dispose of any dust, spray, drainage, or spillage resulting from coating operations. It shall be the Contractor's responsibility to determine if the materials to be disposed of are classified as Hazardous Waste. Disposal of waste, hazardous or otherwise shall be in accordance with applicable regulations. The contractor shall be aware of and understand the regulations concerning disposal of waste generated by coating operations.
- C. Material shall be delivered to the job site in unbroken containers and shall be applied strictly in accordance with the manufacturer's printed directions. Thinning shall be done in accordance with the directions of the manufacturer. Any containers which are broken, opened, water-marked and/or contain caked, lumpy or otherwise damaged material are unacceptable and shall immediately be removed from the work site. The storage area shall be heated to a minimum allowable temperature of forty (40) degrees Fahrenheit.
- D. All primers shall be compatible with the finish coatings.
- E. All metal work shall be coated in accordance with the specifications of the Steel Structures Painting Council.
- F. Nameplates on equipment shall not be painted. If accidentally painted, all paint shall be removed.
- G. The Contractor shall provide and be familiar with the use of film thickness gauges (wet and dry), holiday detectors, sling psychrometer, and such other instruments and gauges as may be required to comply with the specifications.

PART 2 - PRODUCT DELIVERY, STORAGE & HANDLING

2.0 PRODUCT

- A. The paints and paint products used for these projects shall be manufactured by:
 - 1. Tnemec Corporation

2. The Sherwin Williams Company
3. Carboline
4. PPG Industries

- B. All materials shall be as recommended by the manufacturer for the surface to which they are to be applied, and shall be compatible with all other materials used on the same surface.
- C. All materials shall be lead-free as defined by the Consumer Product Safety Act, Part 1303. Additionally, all materials shall be free of other heavy metals such as chrome, mercury and cadmium.
- D. All paint shall be delivered to the site in the manufacturer's unbroken, sealed containers. Each container shall be labeled by the manufacturer. Labels shall give the manufacturer's name, type of paint, and label analysis showing all important constituents of the paint, such as alkyd, titanium, zinc, acrylate esters, etc., color of paint, instructions for reducing and manufactured date, batch numbers, and expiration date.
- E. No coating submitted or used on this project shall have a VOC (volatile organic content) in excess of 340 grams/liter or 2.8 lbs/gal.
- F. Use only the coating specified in this Section. Use only those thinners and solvents recommended by the manufacturer, only in the amounts necessary to produce the manufacturer's recommended spreading rate, and in amounts not exceeding the maximum quantities stated in the manufacturer's literature.
- G. The coating material shall not show excessive settling in a freshly opened full can and shall be easily re-dispersed with a paddle to a smooth, homogeneous state. It shall show no curdling, livering, caking or color separation and shall be free of lumps or skim surfaces.
- H. Testing: Protective coatings shall be applied under quality control procedures which include inspection of surface preparation and for each coat applied. Do not proceed with the next step until the Owner's representative has approved the previous step. The Contractor shall be solely responsible for testing for this Section, at no further cost to the Owner. The Owner's representative shall also make such tests, if it is considered necessary. Cooperate with the Owner, providing equipment, scaffolds, and other equipment as requested by the Owner's Representative.
- I. Testing Equipment: Furnish the testing apparatus necessary for testing surface preparation, environmental conditions and coatings as specified.
- J. After receiving the Notice to Proceed, but before starting work, the Contractor shall submit a listing of the products to be used on the job. The listing shall include:
 1. The name and address of the manufacturer,
 2. The generic type of paint (vinyl, epoxy, etc.),
 3. Trade name and numbers identifying each specific product, including batch numbers and expiration date
 4. The dry film thickness recommended by the manufacturer for each coat,
 5. The application rate or wet film thickness required to achieve the stated dry film thickness,
 6. The color name and number (with color chart),
 7. Blast profile recommended by the paint manufacturer and the blast grit gradation needed to meet the profile recommendation.

2.1 COATING SCHEDULES

- A. EN – 03 Tank Exterior System:

1. Finish coat shall be high gloss.
2. Surface Preparation: NACE No. 3/SSPC-SP 6 – Commercial Blast Cleaning.
3. Application Method(s): Spray or Roller as recommended by the paint manufacturer. Brush shall only be used for touch up and stripe coating. Finish coat shall be sprayed, roller application will not be accepted.
4. Organic zinc-rich primer shall be minimum 80 percent zinc by weight.
5. Preconstruction Priming:
 - a. Preconstruction priming shall be in accordance with AWWA D102. Full removal of construction primer is not required if the primer is fully compatible with the specified paint system primer. A letter from the paint manufacturer certifying compatibility shall be submitted with coating submittal.
 - b. Weld seams and bare steel shall be cleaned to NACE No. 3/SSPC-SP 6 – Commercial Blast Cleaning.
 - c. Areas with adherent preconstruction primer shall be cleaned to NACE No. 4/SSPC SP-7 – Brush-Off Blast Cleaning.
 - d. A full field coat of the specified prime coat shall be applied over the spot-cleaned bare steel and remaining preconstruction primer.
6. Three-coat system to be one of the following and of the same Manufacturer of all other coating products used on this Project:
 - a. Sherwin-Williams:

Coat	Product	DFT (mils)	Color
Prime Coat	Corothane I Galvacap	3 – 4 mils	Gray
Stripe Coat	Acrolon 218 HS		Beige
Intermediate Coat	Acrolon 218 HS	3 – 6 mils	Beige
Finish Coat	FluoroKem HS	3.5 – 5 mils	T.B.D.
Minimum and Maximum DFT for System		9.5 – 15 mils	
Logo	FluoroKem HS	3.5 – 5 mils	T.B.D.

- b. Carboline:

Coat	Product	DFT (mils)	Color
Prime Coat	Carbozinc 859	4 – 6 mils	Gray
Stripe Coat	Carbothane 133 HB		Beige
Intermediate Coat	Carbothane 133 HB	3 – 5 mils	Beige
Finish Coat	Carboxane 950	2 – 3 mils	T.B.D.
Minimum and Maximum DFT for System		10 – 14 mils	
Logo	Carboxane 950	2 – 3 mils	T.B.D.

- c. PPG:

Coat	Product	DFT (mils)	Color
Prime Coat	Amercoat 68HS	4 – 5 mils	Gray
Stripe Coat	Amercoat 450HS		Beige
Intermediate Coat	Amercoat 450HS	2 – 3 mils	Beige

Finish Coat	Coraflon ADS Intermix	1.5 – 2.2 mils	T.B.D.
Minimum and Maximum DFT for System		7.5 – 10.2 mils	
Logo	Coraflon ADS Intermix	1.5 – 2.2 mils	T.B.D.

d. Tnemec:

Coat	Product	DFT (mils)	Color
Prime Coat:	Tnemec-Zinc 90-97	2.5 – 3.5 mils	Gray
Stripe Coat:	Endura-Shield Series 73		Beige
Intermediate Coat:	Endura-Shield Series 73	2.5 – 4.5 mils	Beige
Finish Coat:	Series 700 Hydroflon	2.5 – 4 mils	T.B.D.
Minimum and Maximum DFT for System		7.5 – 12 mils	
Logo:	Series 700 Hydroflon	2.5 – 4 mils	T.B.D.

PART 3 - EXECUTION

3.1 GENERAL

- A. Where a product is not definitely named, it is intended that the best products of the better manufacturers shall be used, and only the highest quality will be approved by the owner.
- B. After application of one manufacturer's product of a certain color and purpose has begun, that manufacturer's material shall be used throughout the job. No paint or thinners or reducers of different brands may be mixed together or blended onto surfaces.

3.2 PROTECTION OF EXISTING STRUCTURES

- A. The Contractor shall be responsible for the protection of all existing structures and any damage caused by this operation shall be repaired immediately without cost to the Owner. It shall be the responsibility of the prospective contractor to examine the site completely before submitting his bid.

3.3 PREPARATION OF SURFACES

- A. Surface preparation will be based upon comparison with:
 1. Pictorial Surface Preparation Standards for Painting Steel Surfaces: SSPC-VIS 1-89, ASTM Designation D2200-95, Standard Methods of Evaluating Degree of Rusting on Painted Surfaces, ASTM D 4417-91, Method A and/or Method C or NACE Standard RP0287-87, and ASTM Designation D610 Visual Standard for Surfaces of New Steel Air-blast Cleaned with Sand Abrasive
 2. In all cases the written standard shall take precedence over the visual standard. In addition, NACE Standard RP0178-91, along with the Visual Comparator, shall be used to verify the surface preparation of welds.
- B. All surfaces to be painted shall be prepared in a workmanlike manner, with the objective of obtaining a smooth, clean and dry surface. No painting shall be done until the prepared surfaces are approved by the owner or owner's representative.

- C. Gradation of the sand or grit used in the blasting process shall be such that a blast profile is obtained that is suitable for the paint being used, as specified by the paint manufacturer.
- D. Metal
1. Specifications of Cleaning Methods by Steel Structures Painting Council:
 - a. SSPC-SP 1 - Solvent Cleaning
 - b. Removal of oil, grease, dirt, soil, salts and contaminants by cleaning with solvents, vapor, alkali, emulsion, or steam.
 - c. SSPC-SP 2 - Hand-Tool Cleaning
 - d. Removal of loose rust, loose mill scale, and loose paint to degree specified by hand –chipping, scraping, sanding, and wire brushing.
 - e. SSPC-SP 3 – Power Tool Cleaning
 - f. Removal of loose rust, mill scale, and loose paint to degree specified, by power-tool chipping, de-scaling, sanding, wire-brushing, and grinding.
 - g. SSPC-SP 4 – Flame-Cleaning of New Steel
 - h. Dehydrating and removal of rust, loose mill scale, and some tight mill scale by the use of flame, followed by wire-brushing.
 - i. SSPC-SP 5 – White Metal Blast-Cleaning (NACE #1)
 - j. Removal of all visible rust, mill scale, paint, and foreign matter by blast-cleaning by wheel or nozzle (dry or wet) using sand, grit or shot. (For very corrosive atmosphere where high cost of cleaning is warranted.)
 - k. SSPC-SP 6 – Commercial Blast-Cleaning (NACE #3)
 - l. Blast-cleaning until at least two-thirds of each element of surface area is free of all visible residues. (For rather severe conditions of exposure.)
 - m. SSPC-SP 7 – Brush-Off Blast Cleaning (NACE #4)
 - n. Blast-cleaning of all except tightly adhering residues of mill scale, rust, and coating, exposing numerous evenly distributed flecks of underlying metal.
 - o. SSPC-SP 8 – Pickling
 - p. Complete removal of rust and mill scale by acid pickling, duplex pickling, or electrolytic pickling. May pacify surface.
 - q. SSPC-SP 9 – Weathering Followed by Blast-Cleaning
 - r. Weathering to remove all or part of the mill scale, followed by blast-cleaning to one of the above standards as required.
 - s. SSPC-SP 10 – Near-White Blast-Cleaning (NACE #2)
 - t. Blast-cleaning to nearly white metal cleanliness, until at least 95% of each element of surface area is free of all visible residues. (For high humidity, chemical atmosphere, marine or other corrosive environments.) Cleaned metal shall be primed immediately after cleaning. All non-ferrous metals to be field-primed, shall be solvent-cleaned prior to painting.
 2. General: All ferrous metal to be primed in the field shall have all rough edges, weld seams, and corners ground smooth. All rust, dust and scale, as well as other foreign substances, shall be removed by sandblasting.
 - a. Interior metal surfaces shall be blasted in accordance with SSPC-SP 10 (near white metal finish).
 - b. Exterior metal surfaces shall be blasted in accordance with SSPC-SP6 (commercial blast cleaning).
 3. Welding:
 - a. All depressions 1/8" or deeper, as measured by a pit gauge, shall be completely filled with weld and ground smooth prior to blast cleaning. The contractor shall furnish and be familiar with the use of a pit gauge. In cases of conflict, the owners gauge shall prevail.
 - b. All structural and pipe welding shall be performed by a welder certified by the American Welding Society. Evidence of certification shall be filed with owner and welder shall have proof of certification at all times while on the project site.
 - c. Slag, weld metal accumulation and spatters not removed by the Fabricator, Erector, or installer shall be removed by chipping and/or grinding. All sharp edges shall be

peened, ground or otherwise blunted as required by the Owner. All grinding and finishing of welds, edges, etc. shall be performed prior to solvent cleaning and abrasive blasting. Welds shall be prepared as per NACE Standard RP0178 for all interior and exterior surfaces:

- d. Butt Welds: Shall be ground smooth and free of all defects, designation "D".
 - e. Lap Welds: Shall be ground smooth and blended, designation "D", excepting that visual imperfections and ripples are allowable.
 - f. Fillet Welded Tee Joint: Shall be ground smooth and blended, designation "D"
4. All metal surfaces shall be blasted just prior to painting. All blasted areas shall be primed within six (6) hours of blasting. All blasted areas exposed for more than six (6) hours shall be re-blasted prior to priming.
 5. Field blast cleaning for all surfaces shall be by dry method unless otherwise directed. Blast nozzles shall be venturi-type nozzles with a minimum pressure at the nozzle of 90 psi.
 6. Particle size of abrasives used in blast cleaning shall be that which will produce a 1.5 – 3.0 mil surface profile or in accordance with recommendations of the manufacturer of the specified coating or paint system to be applied.
 7. Abrasives used in blast cleaning operations shall be new, and free of contaminants that would interfere with adhesion of coating or paint and shall not be reused unless specifically approved in writing by the owner.
 8. During blast cleaning operations, caution shall be exercised to ensure that existing coatings or paint are not exposed to abrasion from blast cleaning.
 9. The Contractor shall keep the area of his work and the surrounding environment in a clean condition. He shall not permit blasting materials to accumulate as to constitute a nuisance or hazard to the accomplishment of the work, the operation of the existing facilities or to the surrounding environment. If blast abrasive is left on the tank floor while painting the ceilings and walls, no paint may be applied to walls within six feet of the floor.
 10. Blast cleaned surfaces shall be cleaned prior to application of specified coatings or paint. All surfaces shall be free of dust, dirt, and other residue resulting from the abrasive blasting operation. No coatings or paint shall be applied over damp or moist surfaces. All surfaces to be coated shall be profiled and inspected for level of blast efforts prior to coating.
 11. All welds shall be neutralized with a suitable chemical compatible with the specified coating or paint.

3.4 THINNERS AND PAINT PREPARATION

- A. Where thinning is necessary, only products of the manufacturer furnishing the paints, and for the particular purpose, shall be allowed; and all such thinning shall be done strictly in accordance with the manufacturer's instructions, as well as with the full knowledge and approval of the owner.
- B. Do not use materials beyond the manufacturer's recommended shelf life.
- C. Do not use mixed materials beyond the manufacturer's recommended pot life.

3.5 APPLICATION OF PAINT

- A. Coating and paint application shall conform to the requirements of the Steel Structure Painting Council Paint Application Specification SSPC-PA1, latest revision, for "Shop, Field and Maintenance Painting".
- B. Each application of coating or paint shall be applied evenly, free of brush marks, sags, runs, bubbles, drips, waves, laps, unnecessary brush marks, over spray, environmental contaminants or other physical defects, including shadows, and be UNIFORM in color, texture and gloss. Thus, all coatings shall be applied in a professional manner to achieve the specified dry film thickness (DFT). Coatings and paints shall be sharply cut to lines. Finished surfaces shall be free from defects or blemishes. Cleaning and coating shall be scheduled such that dust and other materials from adjoining work will not contaminate wet or newly coated surfaces.

- C. The CONTRACTOR shall submit written detailed procedures for all surface preparation and application of coating, including touch-up procedures. The procedures shall be approved by the ENGINEER and OWNER, with no exceptions, before any surface preparation, application, or touch-up begins.
- D. Protective coverings or drop cloths shall be used to protect floors, fixtures, piping, and equipment. Care shall be taken to prevent debris or any other foreign matter from entering water mains. The covers and plugs shall remain in place until just prior to filling the tank for disinfection. Care shall be exercised to prevent coatings or paints from being spattered onto surfaces which are not to be coated or painted. Report to the Owner surfaces from which materials cannot be satisfactorily removed.
- E. When two coats of coating or paint are specified, where possible, the first coat shall contain sufficient approved color additive to act as an indicator of coverage or the two coats must be of contrasting color. Should a third interior coating be used, it too shall be contrasting in color from the second interior coating.
- F. Steel surfaces that have rusted or changed color shall be re-blasted in accordance with these specifications. No visible rust shall be over-coated under any circumstances.
- G. The painter shall apply each coating at the rate and in the manner specified by the manufacturer. If the material has thickened or must be diluted for application by spray gun, the coating shall be built up to the same thickness achieved with undiluted material. Deficiencies in film thickness shall be corrected by the application of additional coats of paint as required. No paint shall be applied when the surrounding air temperature, as measured in the shade, is below 50 degrees Fahrenheit. No paint shall be applied when the steel surface temperature is less than or equal to 5 degrees Fahrenheit above the dew point, or when the relative humidity is above 85% unless approved by the Owner and the paint manufacturer. Paint shall not be applied to wet or damp surfaces, and shall not be applied in rain, snow, fog, or mist. No paint shall be applied when it is expected that the surface temperature is expected to drop below manufacturer's recommendations within 4 – 6 hours after coating application.
- H. Thickness & Holiday Checking:
 - 1. Thickness of coatings and paint shall be checked with a non-destructive, magnetic-type thickness gauge, as per SSPC-PA2 - Measurement of Dry Film Thickness with Magnetic Gauges
 - 2. The integrity of ALL interior coated surfaces shall be checked with a low voltage holiday detector in accordance with NACE Standard RP0188. The non-destructive holiday detector shall not exceed the voltage recommended by the manufacturer of the coating system. A solution of 1-ounce non-sudsing type wetting agent, such as Kodak Photo-Flo, and 1 gallon of tap water shall be used to perform the holiday testing. All pinholes and/or holidays shall be marked and repaired in accordance with the manufacturer's printed recommendations and retested. The CONTRACTOR shall perform the holiday testing under the supervision of the OWNER or OWNER'S Representative. All touched up pinholes and re-coated areas shall cure for a minimum of seven (7) days prior to re-testing for holidays. No pinholes, holidays or other irregularities will be permitted in the final coating.
- I. Drying Time shall be construed to mean "under normal conditions". Where conditions are other than normal because of the weather or because painting must be done in confined spaces, longer drying time will be necessary. Additional coats of paint shall not be applied, nor shall units be returned to service until paints are thoroughly dry.
- J. Finished work shall be uniform, of approved color, smooth and free of runs, sags, defective brushing, clogging, or excessive flooding. Make edges of paint adjoining other materials or colors sharp and clean, without overlapping.

- K. At completion, touch up and restore finish where damaged, and leave in good condition, as determined by the Owner.

3.6 SOLVENT VAPOR REMOVAL

A. General

1. All solvent vapors will be exhausted both during and after coating application at a minimum rate of one air change every four hours to allow the proper curing of the coating material. High rates of production may require an increase in ventilation.
2. Forced ventilation as noted above shall be continued for 7 days or until such time as the coating has reached "full cure to immersion" as specified by the coating manufacturer.
3. Paint manufacturer or Owner's representative will be consulted concerning points not covered herein.
4. When dehumidification is used, blasting of all exterior surfaces must be complete, cleaned and accepted prior to the application of any coating.

B. Humidity Control

1. Dehumidification equipment will be used to control the environment in the space 24 hours a day during blast cleaning, coating application, and coating cure. Equipment will conform to the following requirements:
2. Equipment
 - a. Desiccant dehumidifiers, as manufactured by Munters Corporation or approved equal, will be a solid desiccant design having a single rotary desiccant wheel capable of fully automatic continuous operation. No liquid, granular, or loose lithium chloride drying systems will be accepted.
 - b. The use of direct expansion (DX) refrigeration type dehumidifiers with reheat may be considered if the expected ambient temperature will remain above 60 degrees F. Below that, coils may not remove moisture and as noted above, reheat alone will not change the dew point. Heating the space changes relative humidity only and does not change the dew point; therefore not a substitute for dehumidification, unless substrate temperature is high enough to meet dew point differential.
 - c. The dehumidification system may consist of a combination of desiccant and refrigerant equipment for year round use to maintain very low dew points in the space.
3. Environment
 - a. During the blasting operation, shrouding and dehumidification equipment will be used as needed to maintain a recommended environment for paint application and humidity control. A differential of 20 to 25 degrees F between substrate surface temperature and space air dew point temperature shall be maintained. In addition, relative humidity should not exceed 40% to 45%. For most coatings, the above parameters would be advantageous, for coating application and cure (or coating manufacturer's recommendation should be followed). Occasional outside ambient conditions may result in temporary fluctuation in dew point spreads. In all cases the visual standard called for by the specification for the steel cleanliness will be adhered to. Refer to Manufacturer for specific requirements.
4. Testing for Contaminants
 - a. Steel surfaces shall also be tested for pH and presence of chlorides and/or other non-visible contaminants.
5. Air Changes
 - a. The air changes rate for maintaining a differential of 20 to 25 degrees F between inside surface temperature and inside space dew point temperature with a maximum relative humidity of 40% to 45% in the space, will depend upon the type of equipment to be used and the time of the year. Another consideration is length of time required to hold the blast. The volume of a given space is a major factor in determining equipment type and size. The rate of air changes per hour may be anywhere from 1.0 to 6.0 or more to hold the desired degree of cleanliness of the blast.

6. Temperature Control
 - a. Auxiliary heat, cooling and/or insulation may be necessary to maintain the surface temperature at an acceptable level for the coating manufacturer's application parameters. This auxiliary equipment must be approved for use by the supplier of the dehumidification equipment and will meet the following requirements:
 - 1) Heaters and refrigerant type systems must be installed in the process air supply duct between, and/or blended with, the dehumidifier as close to the space as possible.
 - 2) Only electric, indirect fired combustion, or steam coil auxiliary heaters will be used. No direct-fired space heaters will be allowed during the blasting, coating, and curing phases.
 - 3) Heaters will be equipped with controls that automatically turn the heater off if the airflow is interrupted or the internal temperature of the heater exceeds its design temperature or that of the supply duct.
7. The space to be controlled will be sealed off as well as possible, allowing air to escape the space away from the point where the dehumidified air is being introduced. Filter the air escaping the space; the filtration system must be designed so that it does not interfere with the dehumidification equipment's ability to control the dew point and relative humidity of space. Do not re-circulate the air from the space or from filtration equipment back through the dehumidifier during coating application or when solvent vapors are present.

3.7 CONTAINMENT

- A. A full shroud of the entire structure is required during media/sand blasting and painting of the exterior.
- B. Containment System: The Contractor shall design a containment system for the work area. Containment design is to be submitted and approved by the Engineer.
- C. The containment shall control environmental emissions and control the working environment within containment so all Federal, State and local regulations have been observed and that the method(s) of removal complies with the governing specifications, Nevertheless, in the instance of conflict between any Federal, State or local regulations and the governing specifications, the Federal, State or local regulations shall supersede any requirements contained herein.
- D. Blasting inside a tank, tank column, or modular containment is considered working within a closed environment. OSHA, therefore, requires a clean, uncontaminated air source outside the enclosure with an appropriate backup such as another source of clean, uncontaminated air to be activated by merely switching a valve contained on the worker's body; air bottles strapped onto the worker; Scott Air Packs attached to the worker's body; or other OSHA approved and accepted air sources.
- E. The Contractor shall employ negative air pressure inside the structure with the air vented to the outside, filtered, dewatered, and returned to the enclosed space at least as clean as native air.

3.8 REPAIRS & APPURTENANCES

- A. Welding
 1. All welders shall be qualified in accordance with the current ASME-BPV-IX. Form QW-484 of ASME-BPV-IX shall be submitted for each welder. Welder is to have certification on person at all times while at the project site.
 2. Completed welds shall be detailed in accordance with NACE Standard RP0178 designation D. Any full penetrations welds on the primary structure of this tank shall be tested radio graphically at the expense of the contractor by an approved third party testing laboratory in accordance with the governing code and standards. The owner or inspector will select the number and locations of all testing.

B. Tank Repairs

1. Remove and replace the existing safety climb device. All removed devices shall be stored on site until all paint related work has been completed. Once replaced, apply touch-up paint to the GST and ladder as required.
2. Two five-point harness safety belts with positive stop feature shall also be provided and be OSHA approved.
3. Other repairs:
 - a. Any other needed repairs not covered in the Specifications that are discovered during the course of the work shall be brought to the attention of the Owner and the Owner and Engineer shall make a decision whether or not to have the repair work accomplished.
 - b. Extension of the contract time will be considered where necessary to accommodate the needed additional repairs; however, no other claims shall be allowed for any delays of the work due to the Owner and Engineer investigating the repair claim. A decision on the submitted repair will be made by the Owner and Engineer in as short of time period as possible.

3.9 INSPECTION

- A. Inspection for this project shall consist of 'hold point' inspections. The Owner's Representative shall inspect the surface prior to abrasive blasting, after abrasive blasting but prior to application of coating materials, and between subsequent coats of material. Final inspection shall take place after all coatings are applied. Contractor will insure that sufficient rigging is in place so that the OWNER or his representative shall be able to safely conduct the required inspections. Irregularities due to poor workmanship will be corrected by the CONTRACTOR at his expense. Re-inspection fees charged by the INSPECTOR will be the responsibility of the CONTRACTOR. The Owner reserves the right to require this correction at any time during construction or at final inspection.
- B. Inspection Devices shall be furnished by the contractor until final acceptance of coating and painting is accepted. All inspection devices must be in good working condition for detection of holidays and measurement of dry film thickness of coating and paint. The Contractor shall also furnish U.S. Department Commerce, National Bureau of Standards certified thickness calibration plates and/or plastic shims, depending upon the thickness gauge used, to test the accuracy of dry film thickness gauges and certified instrumentation to test the accuracy of holiday detectors. Dry film gauges and holiday detectors shall be made available for the Inspector's use at all times until final acceptance of application. Holiday detection devices shall be operated in the presence of the Owner's Representative.
 1. Surfaces that have been sand-blasted in the field shall be inspected prior to primer application and shall meet the requirements of the Steel Structures Painting Council specifications SSPC-SP 6 or 10, where applicable.
 2. No field coat of paint shall be applied until the surface has been inspected and approved by the owner.
 3. The film thickness of each coat shall be checked by each of the following methods:
 - a. Immediately after application, wet-film thickness readings shall be taken with a wet-film gauge.
 - b. When thoroughly cured, dry-film thickness readings shall be made with a properly calibrated dry-film thickness gauge, or other gauge as approved by the owner.
 4. Wet film thickness readings or spread rate checks shall be made by the contractor at least once every 15 minutes or every 100 square feet.
 5. The contractor shall provide and record temperature, humidity, and dew point checks at least four times per day. Checks shall be logged showing time and readings. The logs shall be submitted to the owner upon completion of the project.
- C. Warranty Inspection: Warranty inspection shall be scheduled during the eleventh month following acceptance of all coating and painting work. The warranty inspection shall be performed by the

owner and/or the owner's representative. The contractor shall also be present. All defective work shall be repaired in accordance with this specification, AWWA D102, Section 9, unless otherwise specified herewith in. All defective work shall be repaired to the satisfaction of the Owner. The Contractor shall warranty all repair work for one year.

- D. If failures in any portion of the tank's surface exceed five (5) percent of that portion, as determined by the OWNER, then for that portion, the entire coating system shall be completely removed, re-coated and re-tested in accordance with the specifications herein. In the event any portion of the tank surface requires complete repair as provided herein, a second anniversary inspection shall be made unless the OWNER otherwise deems it not to be necessary. If subsequent anniversary inspections are to be made, time stipulations, coating removal, repair, re-testing and anniversary inspection requirements shall be the same as provided for in this specification.
- E. The CONTRACTOR shall provide suitable and adequate equipment as may be necessary to facilitate complete inspection of all exterior surfaces. The CONTRACTOR shall bear all costs of the anniversary inspection and shall incorporate such costs into his bid.
- F. Any location, including but not limited to locations where a coating has peeled off, bubbled, blistered, chipped, or cracked, etc., or where pinholes and/or holidays are present and locations where rusting or corrosion is evident, will be considered a failure or defect of the coating system and shall be repaired as required. Repairs will be made at areas or locations where coating failures are found.
- G. Methods of testing for coating failure which, may or may not be evident, shall include, but not be limited to, adhesion tests, film thickness measurement, holiday testing, etc. Testing may be non-destructive or destructive. The CONTRACTOR, at his expense, shall repair all areas where destructive tests are performed.
- H. The anniversary repair work shall be completed within an agreed time period as determined by the OWNER and CONTRACTOR. All repairs shall be made as per the coating manufacturers written repair work instructions or that which is approved and acceptable to the OWNER and completed within ninety (90) calendar days of the anniversary inspection. Holiday testing will be used to check all interior coating repairs, including the interior roof.

3.10 CLEANING

- A. The Contractor shall:
 1. Protect floors, glass, hardware, electric receptacles and switches, wood, etc. to prevent damage to same by painting.
 2. Be responsible for any damage done to work of other contractors, and replace any materials damaged to such extent that they cannot be restored to their original condition.
 3. Upon completion of work, clean off all paint spots and stains from floors, woodwork, glass, hardware, etc. and leave work in perfect condition.
 4. Be solely responsible for all property damaged by overspray. Spraying shall be done at times and in a manner that will keep overspray to a minimum.
 5. Remove all scrap material, used sand or grit, trash and other debris produced from the preparation, sand blasting, or painting processes. The final condition of the site shall be similar to its condition prior to this project.

3.11 PAINTING SCHEDULE

- A. The following is not intended to be a complete list of all materials and work required, but a guide to the type, quality and finish required for the various surfaces. Any painting obviously necessary for a complete job shall be accomplished. Surfaces to be painted, which are not scheduled, shall

be painted with a primer appropriate for the material and finish coats as used for similar or adjacent structures.

B. Stenciling

1. On the access hatch and at the lower edge of the painted surface, the paint code system shall be stenciled. The paint code stencil shall contain the following information:
 - a. Contractor
 - b. Paint System (Fed/or Mil Specification(s))
 - c. Date of Application
 - d. Paint Manufacturer
2. The above general outline of principal features does not in any way limit the responsibility of the Contractor to perform all work required by the Specifications. Any sundry labor, materials, equipment, and/or appurtenances not specifically detailed or specified but required to complete the project shall be provided as an integral part of the scope of work hereinafter specified.

C. Exterior Coating System

1. Surface Preparation Prior to Abrasive Blast Cleaning: Weld flux and spatter shall be removed by power tool cleaning. Sharp projections shall be ground to a smooth contour. All welds shall be ground to a smooth contour as per NACE Standard RP0178 and herein.
2. Surface Preparation: SSPC-SP 6 Commercial Blast Cleaning. Anchor profile shall be 1.5 to 3.0 mils as per ASTM D 4417 Method C or NACE Standard RP0287.
3. Coating System:
 - a. 1st Coat: Epoxy Primer system applied at 4.0 – 6.0 dry mils. Thin only with manufacturer approved thinner.
 - b. 2nd Coat: Beige Polyurethane system applied at 3.0 – 5.0 dry mils. Thin only with manufacturer approved thinner.
 - c. 3rd Coat & Logo: Owner preference color, polyurethane system applied at 3.0 – 5.0 dry mils. Thin only with manufacturer approved thinner.
 - d. 4th Coat (if Sherwin Williams: Clear coat sealant system applied at 1.0 – 1.5 dry mils.
4. Total dry film thickness shall be a minimum of 10.0 mils per SSPC-PA 2 dry film inspection standards, with exceptions as noted in this specification.

D. Curing Time

1. The curing times recommended by the manufacturer shall be followed between coats and prior to Disinfection.

3.12 FOOTING RING SEALANT

- A. This section covers the requirements for sealing the bottom edge of the steel tank to the surface of the concrete ring footing.

B. Products

1. The contractor shall submit certification from the manufacturer that the sealant used meets or exceeds the requirements of Federal Specifications TT-S-001543 and TT-S-00230. A material comparable to Dow Corning 790 building sealant, or approved equal by the owner, meeting these specifications shall be used.
2. B. The “Backer Rod” shall be constructed of materials compatible with the sealant used.

C. Ring Sealant Application

1. All surfaces to be sealed shall be dry and cleaned of all dirt, dust, grit, and other loose material prior to the installation of the “Backer Rod”.
2. A backer rod shall be inserted into the joint before the joint is sealed. Placement of the backer rod shall produce a sealant depth to width ratio as specified by the sealant manufacturer.

3. Placement of the sealant shall be as specified by the sealant manufacturer for the joint size to be filled. Several applications may be required to completely fill the void.
4. The final sealant surface shall be smooth and free of voids. All sealant adjacent to the joint shall be removed.

3.13 REPORTING/RECORDS

- A. All work, including inspections, shall be recorded daily by the CONTRACTOR. A copy of each daily report shall be placed in a file kept on the job site. Copies of the report shall be submitted weekly to the water plant superintendent by the site representative.
- B. The reports shall include, but not necessarily limited to, the following information:
 1. Date
 2. Contractor and sub-contractor name (where applicable),
 3. Inspector name (where applicable),
 4. Work Identification including:
 - a. Type of work
 - b. Location of work performed
 - c. Time of day each portion of the work was begun and completed
 5. Weather conditions, including corresponding time of day, before, during and after work begins including:
 - a. Temperature (air and surface)
 - b. Humidity/dew point
 - c. Wind velocity/direction
 6. Remarks and results of work
 7. Contractor signature
 8. Generalized drawings shall include
 - a. Plan view of reservoir
 - b. Profile view of reservoir
 - c. Plate location
 - d. North arrow
 - e. Any drawings that will help to indicate location of work performed.

3.14 SAFETY AND HEALTH REQUIREMENTS

- A. General: In accordance with requirements set forth by regulatory agencies applicable to the construction industry and manufacturer's printed instructions and appropriate technical bulletins and manuals, the Contractor shall provide and require use of personal protective lifesaving equipment for persons working on or about the project site. All provisions must meet OSHA standards.
- B. Head and Face Protection and Respiratory Devices: Equipment shall include protective helmets which shall be worn by all persons while in the vicinity of the work. In addition, workers engaged in or near the work during sandblasting shall wear eye and face protection devices and air purifying half-mask or mouthpiece respirators with appropriate filters. Barrier creams shall be used on any exposed areas of skin.
- C. Ventilation: Where ventilations is used to control hazardous exposure, all equipment shall be explosion proof. Ventilation shall reduce the concentration of air contaminants to a degree that a hazard does not exist. Air circulation and exhausting of solvent vapors shall be continued until coatings have fully cured for immersion service. From the beginning of interior coating and until interior coating is complete, the CONTRACTOR shall monitor the air for its lower explosion limit (LEL). CONTRACTOR shall submit to the OWNER, for review and approval, the air monitor technical literature. The OWNER and his representatives shall be allowed to check and inspect the monitor at any time.

- D. Sound Levels: Whenever the occupational noise exposure exceeds maximum allowable sound levels, the Contractor shall provide and require the use of approved ear protection devices. Noise control of equipment during working and non-working hours shall be submitted to the OWNER for review and approval. If excessive noise is noted by the OWNER or neighboring residents, the CONTRACTOR shall modify or replace the existing equipment to reduce the noise to an OWNER acceptable level. CONTRACTOR shall bear all costs for noise reduction and incorporate this cost and any others into their bid.
- E. Illumination: Adequate illumination shall be provided while work is in progress, including explosion-proof lights and electrical equipment. Whenever required by the Owner's Representative, the Contractor shall provide additional illumination and necessary supports to cover all areas to be inspected. The level of illumination for inspection purposes shall be determined by the inspector.
- F. Temporary Ladders and Scaffolding: All temporary ladders and scaffolding shall conform to applicable safety requirements in accordance with OSHA safety standards. They shall be erected where requested by the Inspector or Engineer to facilitate inspection and be moved by the Contractor to locations requested by the Owner or Owner's Representative.
- G. Air Monitoring: Ambient Air Quality – Visible Emissions: Visible emissions shall be used as criteria for project shut down until corrections to the containment are made. Visible emissions shall be determined in accordance with 40 CFR 60, Appendix A Method 22.
- H. Ambient Air Quality for Particulate Matter (40 CFR 50): Emissions in excess of 150 up/m3 of PM 10 over a 24 hour period shall be cause for shut down of the project until corrections to the containment are made to comply with this level. Monitoring for this level shall be accomplished using high volume air samplers.
- I. Confined Space: The Contractor shall provide confined space training certificates of all persons who will be working on this project. Certificates shall be submitted to Owner before work begins. Contractor shall also provide method and location of life saving winch and tripod.
- J. The Contractor is required to submit the following upon selection:
1. Contractor qualifications certifying experience and references for the work contemplated.
 2. Safety Program in writing and a schedule of regularly scheduled safety orientation meetings complying with OSHA.
 3. Detailed work schedule.
 4. Quality Control program.
 5. Methodology for compliance with full containment of spent abrasive and proper disposal to include hazardous waste removal and disposal.
 6. TACB Form PI-7 "Registration Form for Standard Exemptions"
 7. Health and Safety plan
 8. Worker protection plan
 9. Containment plan
- K. Miscellaneous Items
1. Waste Disposal:
 - a. Contractor is responsible for properly disposing of all waste generated during the course of the project. It is the Contractor's responsibility to ensure waste is disposed of in the proper Landfill site. Contractor is encouraged to utilize the services of a local waste hauler. Copies of manifests documenting proper disposal shall be submitted to Owner.
 2. Reference List (to be submitted with bid). Bidder is required to submit a list of all similar projects (surface preparation and painting) completed within the last five years. Refer to

Section 00 45 13, QUALIFICATION STATEMENT for additional requirements. The list shall include:

- a. Project title and location
- b. Contact name and telephone number
- c. Project cost

3.15 FINAL INSPECTION AND ACCEPTANCE

- A. When the improvements provided for by the contract shall have been completely performed on the part of the Contractor, the Contractor shall notify the Owner that the improvement is ready for final inspection. The Owner shall then make such final inspection, and if the work is satisfactory and in accordance with the specifications and contract documents, the Contractor shall be issued a Certificate of Acceptance.
- B. All Warranties and guarantees shall commence from the date of the certificate of acceptance.

END OF SECTION

Attachment: Contract Doc (Pump Stations Improvement Phase 2)



3010 Gaylord Parkway
Suite 190
Frisco, TX 75034

TEL 972.377.7480
FAX 972.377.8380

www.GarverUSA.com

02/06/2019

Mrs. Catherine Oduro
City of Celina
142 N. Ohio Street
Celina, TX 75009

Re: Celina Pump Stations Phase 2 Improvements
Recommendation of Award

Dear Mrs. Oduro:

Bids were received for the Celina Pump Stations Phase 2 Improvements Project at City Hall at 3:00 PM on February 4, 2019. The bids have been checked for accuracy and for compliance with the contract documents. A tabulation of the bids received is enclosed with this letter.

A total of 3 bids were received on the project. Archer Western Construction LLC submitted the low base bid for the project in the amount of \$2,980,576.99. Archer Western Construction LLC also submitted the low base bid and additive alternatives total in the amount of **\$3,656,576.99**.

We conducted reference checks on the provided references and they have been positive. The submitted qualifications and similar projects meet the size and scope of this project. Therefore, we believe that the bid submitted by Archer Western Construction LLC represents a responsive and responsible bid. We recommend that the construction contract for the Celina Pump Stations Phase 2 Improvements be awarded to Archer Western Construction LLC, along with any alternatives that you wish.

Please call me if you have any questions.

Sincerely,

GARVER, LLC

A handwritten signature in blue ink that reads 'M. Beatriz Dongell'.

Beatriz Dongell, P.E.
Project Manager

Attachments: Bid Tabulation

Attachment: 2019-02-05 Recommendation of Award (Pump Stations Improvement Phase 2)



Celina Pump Stations Phase 2 Improvements
Bid Tabulation

Attachment: 2019-02-05 Recommendation of Award (Pump Stations Improvement Phase 2)

Pre-Qualified Contractors	Archer Western	Felix Construction	Gracon Construction
Attended Pre-Bid	Yes	Yes	Yes
Acknowledgement of All Addenda	Yes	Yes	Yes
Bid contains the following forms:			
1. Bid Form/Proposal	Yes	Yes	Yes
2. List of Manufacturer's	Yes	Yes	Yes
3. List of Proposed Subcontractors	Yes	Yes	Yes
4. Bid Bond	Yes	Yes	Yes
5. Davis Bacon Wage Rates	Yes	Yes	Yes
6. Qualifications Statement	Yes	Yes	Yes
7. Coating Manufacturer Written Statement and Reference List	Yes	No	No
Note:			7. to be provided later
Bid Prices as Opened 02/04/2019 (All values expressed in full dollars)			
Celina Road Pump Station Improvements, in accordance with specifications and drawings	\$ 959,000.00	\$ 1,000,000.00	\$ 1,410,000.00
Downtown Pump Station Improvements, in accordance with specifications and drawings	\$ 1,139,000.00	\$ 1,213,534.50	\$ 1,992,000.00
Cash Allowance 1: Pre-Negotiated Firm Price for Vertical Split Case Pumps	\$ 271,576.99	\$ 271,576.99	\$ 271,576.99
External Recoating of Celina Ground Storage Tank	\$ 193,000.00	\$ 142,000.00	\$ 275,000.00
Decorative Metal Fencing and Motorized Gate System	\$ 129,000.00	\$ 163,000.00	\$ 260,000.00
Decommission and Disposal of Downtown Ground Storage Tank	\$ 22,000.00	\$ 47,000.00	\$ 80,000.00
Contingency Allowance 3: Additional Disposal Costs Required from Positive Lead Paint Test	\$ 70,000.00	\$ 70,000.00	\$ 70,000.00
PLC HMI and SCADA Programming	\$ 45,000.00	\$ 55,000.00	\$ 60,000.00
Remove Existing Cap and Connect Existing 30" Water Line	\$ 9,000.00	\$ 4,000.00	\$ 15,000.00
Remove Existing Cap and Connect Existing 36" Water Line	\$ 12,000.00	\$ 4,000.00	\$ 18,000.00
Storm Water Pollution Prevention Plan (SWPPP)	\$ 6,000.00	\$ 8,000.00	\$ 5,000.00
Trench Safety System	\$ 5,000.00	\$ 500.00	\$ 2,000.00
Contingency Allowance 1: Work Change Directives Allowance	\$ 100,000.00	\$ 100,000.00	\$ 100,000.00
Contingency Allowance 2: Independent Testing Allowance	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00
Total Lump Sum Base Bid Price	\$ 2,980,577.00 \$ 2,980,576.99	\$ 3,098,611.49	\$ 4,578,576.99
Note:	Correction to base bid		
Additive Alternates			
Alternate 1: Celina Road Backup Power	\$ 529,000.00	\$ 533,027.00	\$ 680,000.00
Alternate 2: Downtown Pump #2 and associated valves, piping, appurtenances and other equipment	\$ 121,000.00	\$ 259,444.00	\$ 185,000.00
Alternate 3: Paved Driveways, at both Celina Road and Downtown locations	\$ 15,000.00	\$ 28,572.00	\$ 45,000.00
Alternate 4: Design, Provide, and Install Irrigation System at Downtown pump station	\$ 11,000.00	\$ 28,077.00	\$ 37,000.00
Total Additive Alternates	\$ 676,000.00	\$ 849,120.00	\$ 947,000.00
Total Lump Sum Base Bid and Additive Alternates Price	\$ 3,656,577.00 \$ 3,656,576.99	\$ 3,947,731.49	\$ 5,525,576.99
Deductive Alternates			
Alternate 1: Remove Morgan Lake EST SCADA Programming	-\$ 30,000.00	-\$ 30,000.00	-\$ 30,000.00

INDICATES CORRECTION TO BID

Pre-Qualified Contractors	Archer Western	Felix	Gracon
Key Sub-Contractors			
1. Electrical	ALLTECH	CF Electric	CF Electric
2. GST Coating	Corrosion Central Resources	Corrosive Eliminators	Corr. Contr.
3. General Painting	Texas Premier Coatings		
4. HVAC	Suburban Heating and Air		Suburban Heating and Air
5. Fencing	Titan Fence Co.		Hawk



Administration
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Paul DeBuff, Assistant to the City Manager
CC: Jason Laumer, City Manager
Date: February 12, 2019
Re: 5th Addendum for Settlement with Marilee

Action Requested:

Consider and act to authorize the Mayor to execute a contract by and between the City of Celina and Marilee Special Utility District for the fifth addendum to the Full and Final Settlement Agreement and Release executed on April 24, 2001. (Laumer)

Background Information:

This agreement outlines the payments due from the City to the Marilee Special Utility District in the event that the City approves a final plat on any territory located within the District's CCN. In addition, it adds three areas to the City of Celina's CCN.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

This item has been reviewed by the City Attorney.

Supporting Documents:

- Proposed agreement

Staff Recommendation:

Staff recommends approval.

NO. 401-01829-00

CITY OF CELINA, TEXAS	§	IN THE 401 st JUDICIAL
	§	
Plaintiff	§	
	§	
vs.	§	DISTRICT COURT OF
	§	
GUNTER RURAL WATER SUPPLY	§	
CORPORATION,	§	
Defendant.	§	COLLIN COUNTY, TEXAS

**FIFTH ADDENDUM TO THE FULL AND FINAL SETTLEMENT
AGREEMENT AND RELEASE**

This Fifth Addendum is being entered into to modify the Full and Final Settlement Agreement and Release execute by the parties on April 24, 2001 (the "Agreement") in the above referenced case based on the following considerations:

WHEREAS, based on a modification of the policy of the City of Celina (the "City") relating to annexations, the City has requested that Marilee Special Utility District f/k/a Gunter Special Utility District f/k/a Gunter Rural Water Supply Corporation (the "District") modify Section C.9 and Exhibit "I" of the Agreement and add Exhibit "J" to the Agreement, as found in Exhibit 1 attached hereto and incorporated by reference for all purposes herein; and

WHEREAS, the District has determined that it is in the best interests of all concerned that Section C.9 and Exhibit "I" of the Agreement be modified and add Exhibit "J" to the Agreement, as found below and in the attached Exhibit 1, respectively, in order to accommodate the City.

NOW, THEREFORE, the City and the District agree as follows:

1. Section C.9 of the Agreement is modified to provide as follows:

"9. The term "District" shall mean Marilee Special Utility District f/k/a Gunter Special Utility District f/k/a Gunter Rural Water Supply Corporation, and being the same entity as "Gunter" or "Defendant" as defined herein this Agreement.

(a) Except for the three subdivisions set forth above in paragraph C.8 and below in paragraphs C.9.(d)-(e), Celina shall pay the District within sixty (60) days from the last of the following actions to occur: (i) the voluntary annexation of any developed areas that are within the District's CCN and (ii) Celina's initiation of water service to the areas voluntary annexed, according to the following terms:

<u>Years</u>	<u>Price</u>
2001-2009	\$750.00 per acre \$1,500.00 per meter**
2010-2019	\$1,250.00 per acre \$2,000.00 per meter**
2020 forward	\$1,750.00 per acre \$2,500.00 per meter**

** The greater of the per meter price or the per acre price for developed areas. As used herein, compensation for meters shall be determined by the number of water meters physically located on the ground within the CCN area being annexed by Celina as of the date of an annexation ordinance.

(b) Except for the three subdivisions set forth above in paragraph C.8 and below in paragraphs C.9.(d)-(e), Celina shall pay the District within sixty (60) days following the involuntary annexation of any developed areas that are within the District's CCN according to the following terms:

<u>Years</u>	<u>Price</u>
2001-2009	\$750.00 per acre \$1,500.00 per meter**
2010-2019	\$1,250.00 per acre \$2,000.00 per meter**
2020 forward	\$1,750.00 per acre \$2,500.00 per meter**

** The greater of the per meter price or the per acre price for developed areas. As used herein, compensation for meters shall be determined by the number of water meters physically located on the ground within the CCN area being annexed by Celina as of the date of an annexation ordinance.

(c) Except for the property set forth below in paragraphs C.9.(d)-(e), Celina shall pay the District for any undeveloped area that is located wholly or partially within the District's CCN on or before the thirtieth (30th) day following Celina's approval of a final plat of any territory located wholly or partially within the District CCN.

The amount to be paid by Celina to the District for the District's CCN for undeveloped areas will be determined by the year in which the payment is due pursuant to the following:

<u>Years</u>	<u>Price</u>
2001-2009	\$750.00 per acre
2010-2019	\$1,250.00 per acre
2020 forward	\$1,750.00 per acre

(d) Celina shall acquire from the District the portion of the District's CCN found in Exhibit "I", attached hereto and incorporated herein for all purposes, (the "2018 Territory"), upon Celina's annexation of the 2018 Territory.

(i) The District shall receive Five Hundred Dollars (\$500.00) per acre for approximately 2,302 acres within the 2018 Territory for a total amount not to exceed **One Million One Hundred Fifty-One Thousand Dollars and No Cents (\$1,151,000.00)** from Celina. Such payment for the 2018 Territory shall be made to the District in five (5) equal annual installments at the interest rate of zero percent (0%) per annum, with each payment equaling Two Hundred Thirty Thousand Two Hundred Dollars and No Cents (\$230,200.00) due October 15th of each year, beginning October 15, 2019.

(ii) If Celina executes a development agreement with the property owner(s) of the 2018 Territory, then Celina shall pay the District full payment and/or any remaining payments for the 2018 Territory within twelve (12) months from the executed date of such development agreement.

(e) Celina shall acquire from the District the portion of the District's CCN found in Exhibit "J", attached hereto and incorporated herein for all purposes, (the "2019 Territory"), in accordance with the following:

(i) The District shall receive \$1,250.00 per acre for the 35.049 acres within the 2019 Territory for a total amount of **Forty-Three Thousand Eight Hundred Eleven Dollars and Twenty-Five Cents (\$43,811.25)** from Celina due on or before December 31, 2019;

(ii) The District will provide retail water service to the 2019 Territory, subject to the District's rates, rules, and regulations, until Celina is able to provide continuous and adequate water service to the 2019 Territory and has given the District at least sixty (60) days written notice prior to Celina's intent to serve the 2019 Territory; and

(iii) The parties shall file a Joint Application to be prepared by Celina to transfer the District's CCN for the 2019 Territory to Celina. Celina shall be responsible for any fees associated with filing such Application until completion.

(f) Within ten (10) days following approval, Celina will deliver to the District a true and correct copy of each final plat that is approved by Celina that relates to any territory that this located wholly or partially within the District's CCN.

(g) Any payments required by this Agreement that are not paid on or before the due date will earn interest at the rate of one percent (1%) per month from and after the due date."

2. Exhibit "I" of the Agreement shall be modified and Exhibit "J" shall be added to the Agreement, as respectively found in the attached Exhibit 1 of this Addendum.

3. The City and the District ratify, affirm, and republish the Agreement, as modified herein, as a valid and enforceable agreement between the parties pursuant to its terms.

4. The undersigned, on behalf of each respective party to this Addendum and by their signatures, bind, covenant, represent and warrant that they have the authority of their principal to bind the party to the terms, covenants, and conditions of this Addendum and the Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Fifth Addendum on the dates set forth in the respective acknowledgments.

CITY OF CELINA, TEXAS

By: _____
Sean Terry, Mayor

STATE OF TEXAS §
 §
COUNTY OF COLLIN §

This document was acknowledged before me, the undersigned authority, on the _____ day of _____, 2019, by **Sean Terry**, Mayor of **the City of Celina, Texas** (the "City"), on behalf of the City for the purposes and consideration therein expressed.

Notary Public, State of Texas

Attachment: Fifth Addendum - rev 02-05-19 (5th Addendum for Settlement with Marilee)

MARILEE SPECIAL UTILITY DISTRICT

By: _____
Denny Brackeen, President

STATE OF TEXAS §
 §
COUNTY OF COLLIN §

This document was acknowledged before me, the undersigned authority, on the _____ day of _____, 2019, by **Denny Brackeen**, President of **Marilee Special Utility District** (the "District"), on behalf of the District for the purposes and consideration therein expressed.

Notary Public, State of Texas

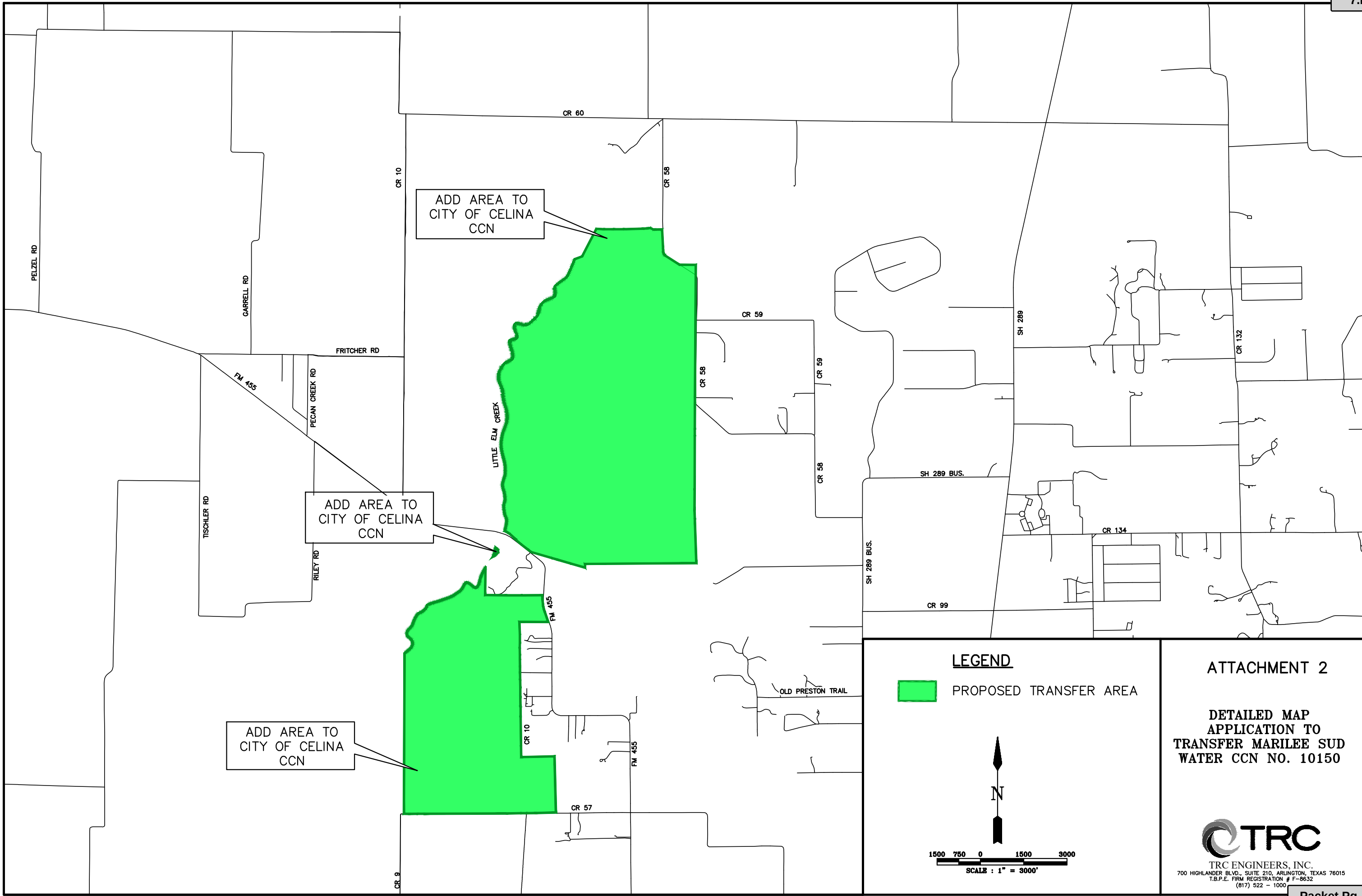
Attachment: Fifth Addendum - rev 02-05-19 (5th Addendum for Settlement with Marilee)

EXHIBIT 1
OF THE
FIFTH ADDENDUM TO THE FULL AND FINAL SETTLEMENT
AGREEMENT AND RELEASE

Attachment: Fifth Addendum - rev 02-05-19 (5th Addendum for Settlement with Marilee)

EXHIBIT I

Attachment: Fifth Addendum - rev 02-05-19 (5th Addendum for Settlement with Marilee)



Attachment: Fifth Addendum - rev 02-05-19 (5th Addendum for Settlement with Marilee)

ATTACHMENT 2

**DETAILED MAP
APPLICATION TO
TRANSFER MARILEE SUD
WATER CCN NO. 10150**

TRC
TRC ENGINEERS, INC.
700 HIGHLANDER BLVD., SUITE 210, ARLINGTON, TEXAS 76015
T.B.P.E. FIRM REGISTRATION # F-8632
(817) 522 - 1000

Marilee Special Utility District**Dynavest Property Located Within Certificate of Convenience and Necessity Number 10150****Metes and Bounds Description**Area 1

BEGINNING at a point located on the northwesterly corner of Dynavest tract 26;

THENCE South 87 degrees 03 minutes 11 seconds East, 266.86 feet;

THENCE South 89 degrees 20 minutes 14 seconds East, 329.62 feet;

THENCE North 89 degrees 34 minutes 32 seconds East, 340.03 feet;

THENCE North 88 degrees 27 minutes 56 seconds East, 703.54 feet;

THENCE North 84 degrees 07 minutes 12 seconds East, 116.03 feet;

THENCE North 84 degrees 07 minutes 11 seconds East, 52.89 feet;

THENCE North 84 degrees 07 minutes 12 seconds East, 67.16 feet;

THENCE South 61 degrees 13 minutes 46 seconds East, 109.95 feet;

THENCE North 89 degrees 39 minutes 20 seconds East, 43.89 feet;

THENCE North 89 degrees 39 minutes 20 seconds East, 42.72 feet;

THENCE North 89 degrees 39 minutes 20 seconds East, 222.16 feet;

THENCE South 02 degrees 45 minutes 22 seconds East, 652.45 feet;

THENCE South 02 degrees 30 minutes 59 seconds East, 61.07 feet;

THENCE South 03 degrees 24 minutes 24 seconds East, 56.42 feet;

THENCE South 05 degrees 49 minutes 35 seconds East, 33.02 feet;

THENCE South 15 degrees 40 minutes 47 seconds East, 39.69 feet;

THENCE South 28 degrees 23 minutes 35 seconds East, 28.20 feet;

THENCE South 37 degrees 34 minutes 06 seconds East, 22.26 feet;

THENCE South 37 degrees 34 minutes 08 seconds East, 10.73 feet;

THENCE South 51 degrees 34 minutes 54 seconds East, 24.82 feet;

THENCE South 57 degrees 26 minutes 09 seconds East, 590.80 feet;

THENCE South 89 degrees 39 minutes 38 seconds East, 565.24 feet;

THENCE South 00 degrees 23 minutes 16 seconds West, 4575.98 feet;

THENCE South 00 degrees 20 minutes 46 seconds West, 206.08 feet;

THENCE South 00 degrees 12 minutes 03 seconds West, 919.39 feet;
 THENCE South 00 degrees 08 minutes 37 seconds West, 207.29 feet;
 THENCE South 00 degrees 11 minutes 51 seconds West, 1840.81 feet;
 THENCE South 00 degrees 11 minutes 50 seconds West, 747.93 feet;
 THENCE South 01 degrees 31 minutes 26 seconds East, 287.23 feet;
 THENCE South 01 degrees 56 minutes 12 seconds East, 1551.61 feet;
 THENCE South 89 degrees 36 minutes 17 seconds West, 3854.88 feet;
 THENCE South 00 degrees 36 minutes 54 seconds East, 130.20 feet;
 THENCE North 73 degrees 49 minutes 55 seconds West, 522.57 feet;
 THENCE North 73 degrees 49 minutes 55 seconds West, 490.85 feet;
 THENCE North 73 degrees 49 minutes 56 seconds West, 169.60 feet;
 THENCE North 73 degrees 49 minutes 55 seconds West, 762.97 feet;
 THENCE North 51 degrees 28 minutes 32 seconds West, 144.29 feet;
 THENCE North 52 degrees 30 minutes 35 seconds West, 280.59 feet;
 THENCE North 49 degrees 30 minutes 00 seconds West, 288.91 feet;
 THENCE North 38 degrees 42 minutes 32 seconds East, 10.12 feet;
 THENCE North 47 degrees 28 minutes 47 seconds West, 256.41 feet;
 THENCE North 57 degrees 16 minutes 35 seconds West, 60.80 feet;
 THENCE North 57 degrees 17 minutes 56 seconds West, 0.76 feet;
 THENCE North 60 degrees 39 minutes 05 seconds West, 0.67 feet;
 THENCE North 60 degrees 40 minutes 16 seconds West, 71.02 feet;
 THENCE North 60 degrees 40 minutes 07 seconds West, 0.62 feet;
 THENCE North 64 degrees 24 minutes 07 seconds West, 0.52 feet;
 THENCE North 64 degrees 23 minutes 37 seconds West, 73.80 feet;
 THENCE Northerly along Little Elm Creek and the Marilee SUD CCN boundary to the POINT OF BEGINNING.

Area 2

Beginning at a point of intersection of Dynavest tract 2 and Marilee SUD CCN boundary;

THENCE South 01 degrees 04 minutes 47 seconds West, 965.61 feet;
THENCE South 89 degrees 14 minutes 08 seconds East, 759.98 feet;
THENCE North 89 degrees 52 minutes 14 seconds East, 532.33 feet;
THENCE North 89 degrees 32 minutes 38 seconds East, 688.56 feet;
THENCE South 01 degrees 52 minutes 12 seconds East, 150.97 feet;
THENCE South 06 degrees 42 minutes 35 seconds East, 166.24 feet;
THENCE South 07 degrees 07 minutes 30 seconds East, 65.25 feet;
THENCE South 11 degrees 48 minutes 09 seconds East, 110.79 feet;
THENCE South 19 degrees 49 minutes 02 seconds East, 95.49 feet;
THENCE South 18 degrees 52 minutes 20 seconds East, 335.29 feet;
THENCE South 17 degrees 35 minutes 36 seconds East, 37.46 feet;
THENCE North 89 degrees 36 minutes 25 seconds West, 998.15 feet;
THENCE South 02 degrees 06 minutes 49 seconds East, 449.28 feet;
THENCE South 00 degrees 08 minutes 53 seconds East, 266.77 feet;
THENCE South 01 degrees 33 minutes 55 seconds West, 189.84 feet;
THENCE South 00 degrees 45 minutes 50 seconds East, 229.05 feet;
THENCE South 00 degrees 45 minutes 51 seconds East, 161.30 feet;
THENCE South 00 degrees 45 minutes 50 seconds East, 253.36 feet;
THENCE South 00 degrees 45 minutes 50 seconds East, 209.64 feet;
THENCE South 00 degrees 45 minutes 50 seconds East, 247.06 feet;
THENCE South 00 degrees 45 minutes 51 seconds East, 257.24 feet;
THENCE South 00 degrees 09 minutes 48 seconds East, 328.09 feet;
THENCE South 01 degrees 21 minutes 50 seconds East, 328.52 feet;
THENCE South 02 degrees 19 minutes 30 seconds East, 26.12 feet;
THENCE South 00 degrees 38 minutes 06 seconds East, 316.33 feet;
THENCE South 00 degrees 45 minutes 50 seconds East, 1028.93 feet;
THENCE South 00 degrees 45 minutes 51 seconds East, 396.05 feet;
THENCE North 88 degrees 44 minutes 21 seconds East, 1154.40 feet;
THENCE South 01 degrees 23 minutes 21 seconds East, 1944.74 feet;

THENCE South 88 degrees 11 minutes 48 seconds West, 722.46 feet;
 THENCE South 89 degrees 36 minutes 34 seconds West, 289.56 feet;
 THENCE South 89 degrees 15 minutes 56 seconds West, 191.67 feet;
 THENCE South 89 degrees 15 minutes 56 seconds West, 520.49 feet;
 THENCE South 89 degrees 44 minutes 31 seconds West, 2854.49 feet;
 THENCE South 89 degrees 35 minutes 36 seconds West, 217.99 feet;
 THENCE South 89 degrees 35 minutes 35 seconds West, 275.25 feet;
 THENCE North 89 degrees 23 minutes 06 seconds West, 193.10 feet;
 THENCE North 00 degrees 14 minutes 13 seconds East, 16.58 feet;
 THENCE North 00 degrees 14 minutes 13 seconds East, 5550.57 feet;
 THENCE Northeasterly along Little Elm Creek and the Marilee SUD CCN boundary to the POINT OF BEGINNING.

Area 3

Beginning at a point of intersection of Dynavest tract 2 and Marilee SUD CCN boundary;
 THENCE South 55 degrees 18 minutes 18 seconds East, 67.54 feet;
 THENCE South 38 degrees 39 minutes 36 seconds East, 50.89 feet;
 THENCE South 03 degrees 58 minutes 31 seconds East, 96.90 feet;
 THENCE South 45 degrees 02 minutes 18 seconds West, 82.50 feet;
 THENCE South 45 degrees 00 minutes 00 seconds West, 61.81 feet;
 THENCE South 61 degrees 23 minutes 23 seconds West, 98.29 feet;
 THENCE Northerly along Little Elm Creek and the Marilee SUD CCN boundary to the POINT OF BEGINNING.
 Total Dynavest property located within the Marilee SUD CCN Number 10150 boundary is approx. 2,302 acres.

EXHIBIT J

Attachment: Fifth Addendum - rev 02-05-19 (5th Addendum for Settlement with Marilee)

*[Celina Estates map and metes and bounds
prepared by Engineer
to be added here]*



Engineering
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Catherine Oduro, Engineer
CC: Kim Brawner, Director of Engineering
Date: February 12, 2019
Re: Water Transmission Line- Project B

Action Requested:

Consider and act to authorize the City Manager to execute a contract between the City of Celina and McKee Utility Contractors in the amount of \$3,525,254.00 for the construction of 36-inch and 30-inch water line and appurtenances (Brawner)

Background Information:

The ongoing water modeling project (Work Order #2) documented an immediate need for upsizing the main transmission pipeline from the Celina Road Pump Station (CRPS) to the Downtown Pump Station (DTPS), as well as a discharge line from the DTPS to E. Sunset Boulevard. These expansions are needed to provide the projected capacity due to planned development. The improvements include approximately 25,700 linear feet of 24 inch to 36 inch water transmission lines and appurtenances. This project has been divided into three phases with the project B being the second phase. The Project B includes approximately 10,091 feet of 36 inch and 30-inch water lines and appurtenances.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

Funds are available within the 2018 bond funds.

Legal Review:

Standard contract documents are being utilized which the City Attorney has previously reviewed and approved.

Supporting Documents:

Location Map; Standard Form of Agreement; Recommendation letter and Bid Tabulations

Staff Recommendation:

Approve the proposed contract.



3010 Gaylord Parkway
Suite 190
Frisco, TX 75034

TEL 972.377.7480
FAX 972.377.8380

www.GarverUSA.com

1/31/2019

Mrs. Catherine Oduro
City of Celina
142 N. Ohio Drive
Celina, TX 75009

Re: Celina Water Transmission Improvements Project - B
Recommendation of Award

Dear Mrs. Oduro:

Bids were received for the Water Transmission Improvements Project - B at City Hall at 3:00 PM on January 28th, 2018. The bids have been checked for accuracy and for compliance with the contract documents. A tabulation of the bids received is enclosed with this letter.

A total of 10 bids were received for the project. McKee Utility Contractors, Inc. submitted the low base bid for the project in the amount of **\$3,525,254.00**.

We believe the bid submitted by McKee Utility Contractors, Inc. represents a responsive and responsible bid. We recommend the construction contract for Water Transmission Improvements – “Project B” be awarded to McKee Utility Contractors, Inc.

Please call me if you have any questions.

Sincerely,

GARVER, LLC

A blue ink signature of Paul Banschobach, written in a cursive style.

Paul Banschobach, P.E.
Project Manager

Attachments: Bid Tabulation

Attachment: Recommendation of Award (Water Transmission Line- Project B)

Project B - Bid Tabulation

Item No.	Item	Quantity	Unit	McKee Utility Contractors		Quality Excavation		S.J. Louis Construction	
				Unit Cost	Item Cost	Unit Cost	Item Cost	Unit Cost	Item Cost
1	36" AWWA C900-16 PVC DR21 Waterline	5,642	LF	\$ 142.00	\$ 801,164.00	\$ 199.00	\$ 1,122,758.00	\$ 247.00	\$ 1,393,574.00
2	36" CL 150 Restrained Joint Ductile Iron Pipe with Polywrap	4,448	LF	\$ 300.00	\$ 1,334,400.00	\$ 245.00	\$ 1,089,760.00	\$ 292.00	\$ 1,298,816.00
3	30" CL 150 Restrained Joint Ductile Iron Pipe with Polywrap	425	LF	\$ 220.00	\$ 93,500.00	\$ 250.00	\$ 106,250.00	\$ 249.00	\$ 105,825.00
4	36" Butterfly Valve	6	EA	\$ 20,000.00	\$ 120,000.00	\$ 20,000.00	\$ 120,000.00	\$ 22,500.00	\$ 135,000.00
5	30" Butterfly Valve	1	EA	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 20,500.00	\$ 20,500.00
6	Ductile Iron Fittings	17	TN	\$ 30,000.00	\$ 510,000.00	\$ 19,000.00	\$ 323,000.00	\$ 1.00	\$ 17.00
7	4" Air Release/Vacuum Valve and Vault	2	EA	\$ 10,000.00	\$ 20,000.00	\$ 30,000.00	\$ 60,000.00	\$ 10,400.00	\$ 20,800.00
8	6" Blowoff Valve	3	EA	\$ 10,000.00	\$ 30,000.00	\$ 18,000.00	\$ 54,000.00	\$ 5,700.00	\$ 17,100.00
9	1" Water Service connection - OTOC	3	EA	\$ 500.00	\$ 1,500.00	\$ 3,300.00	\$ 9,900.00	\$ 3,000.00	\$ 9,000.00
10	Relcoate Existing 6" Blowoff Valve	1	EA	\$ 500.00	\$ 500.00	\$ 8,000.00	\$ 8,000.00	\$ 4,500.00	\$ 4,500.00
11	Relcoate Existing Fire Hydrant	2	EA	\$ 500.00	\$ 1,000.00	\$ 4,000.00	\$ 8,000.00	\$ 2,800.00	\$ 5,600.00
12	48" Steel Casing Pipe - Direct Bury	100	LF	\$ 350.00	\$ 35,000.00	\$ 580.00	\$ 58,000.00	\$ 382.00	\$ 38,200.00
13	48" Steel Casing Pipe - OTOC	126	LF	\$ 800.00	\$ 100,800.00	\$ 800.00	\$ 100,800.00	\$ 1,047.00	\$ 131,922.00
14	Remove and Replace Asphalt Pavement Driveway	450	LF	\$ 12.00	\$ 5,400.00	\$ 20.00	\$ 9,000.00	\$ 8.00	\$ 3,600.00
15	Remove and Replace Concrete Driveway	750	SF	\$ 15.00	\$ 11,250.00	\$ 35.00	\$ 26,250.00	\$ 11.00	\$ 8,250.00
16	Remove and Replace Gravel Driveway	800	SF	\$ 1.00	\$ 800.00	\$ 3.00	\$ 2,400.00	\$ 1.00	\$ 800.00
17	Remove and Replace Barbed Wire Fencing	180	LF	\$ 5.00	\$ 900.00	\$ 15.00	\$ 2,700.00	\$ 10.00	\$ 1,800.00
18	Provide and Install Temporary Construction Fence	4,150	LF	\$ 2.50	\$ 10,375.00	\$ 5.00	\$ 20,750.00	\$ 2.50	\$ 10,375.00
19	Provide and Install Temporary Boundary Fence	3,615	LF	\$ 1.00	\$ 3,615.00	\$ 4.00	\$ 14,460.00	\$ 2.50	\$ 9,037.50
20	Hydromulch Seeding	9	AC	\$ 3,000.00	\$ 27,000.00	\$ 3,100.00	\$ 27,900.00	\$ 900.00	\$ 8,100.00
21	Project Sign	1	EA	\$ 500.00	\$ 500.00	\$ 900.00	\$ 900.00	\$ 500.00	\$ 500.00
22	Clearing and Grubbing	1	LS	\$ 5,000.00	\$ 5,000.00	\$ 3,000.00	\$ 3,000.00	\$ 6,000.00	\$ 6,000.00
23	Storm Water Pollution Prevention Plan	1	LS	\$ 5,000.00	\$ 5,000.00	\$ 4,000.00	\$ 4,000.00	\$ 20,000.00	\$ 20,000.00
24	Traffic Control Plan	1	LS	\$ 5,000.00	\$ 5,000.00	\$ 1,200.00	\$ 1,200.00	\$ 1,500.00	\$ 1,500.00
25	Trench Safety System	1	LS	\$ 1,000.00	\$ 1,000.00	\$ 1,200.00	\$ 1,200.00	\$ 2,500.00	\$ 2,500.00
26	BNSF Railway ROW Crossing	101	LF	\$ 800.00	\$ 80,800.00	\$ 880.00	\$ 88,880.00	\$ 1,106.00	\$ 111,706.00
27	Remove Exsting Cap and Connect to Existing 36" Water Line	2	EA	\$ 250.00	\$ 500.00	\$ 14,000.00	\$ 28,000.00	\$ 3,700.00	\$ 7,400.00
28	Remove Exsting Cap and Connect to Existing 30" Water Line	1	EA	\$ 250.00	\$ 250.00	\$ 12,000.00	\$ 12,000.00	\$ 3,700.00	\$ 3,700.00
29	Mobilization, Demobilization, Bonds and Insurance	1	LS	\$ 100,000.00	\$ 100,000.00	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00
30	Contingency Allowance	1	LS	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00
31	Sodding	300	SY	\$ 15.00	\$ 4,500.00	\$ 5.00	\$ 1,500.00	\$ 3.50	\$ 1,050.00
32	Provide BNSF Flagger for Bid Item 26	1	LS	\$ 500.00	\$ 500.00	\$ 20,000.00	\$ 20,000.00	\$ 8,000.00	\$ 8,000.00
	Total Bid Price				\$ 3,525,254.00		\$ 3,689,608.00		\$ 3,735,172.50

INDICATES CORRECTION IN BID

Attachment: Recommendation of Award (Water Transmission Line- Project B)

Project B - Bid Tabulation

Item No.	Item	Quantity	Unit	Belt Construction		ANA Site Construction		Condie Construction Co.	
				Unit Cost	Item Cost	Unit Cost	Item Cost	Unit Cost	Item Cost
1	36" AWWA C900-16 PVC DR21 Waterline	5,642	LF	\$ 163.00	\$ 919,646.00	\$ 170.00	\$ 959,140.00	\$ 194.00	\$ 1,094,548.00
2	36" CL 150 Restrained Joint Ductile Iron Pipe with Polywrap	4,448	LF	\$ 220.50	\$ 980,784.00	\$ 290.00	\$ 1,289,920.00	\$ 265.00	\$ 1,178,720.00
3	30" CL 150 Restrained Joint Ductile Iron Pipe with Polywrap	425	LF	\$ 188.00	\$ 79,900.00	\$ 248.00	\$ 105,400.00	\$ 220.00	\$ 93,500.00
4	36" Butterfly Valve	6	EA	\$ 24,310.00	\$ 145,860.00	\$ 23,325.00	\$ 139,950.00	\$ 23,500.00	\$ 141,000.00
5	30" Butterfly Valve	1	EA	\$ 22,416.00	\$ 22,416.00	\$ 20,825.00	\$ 20,825.00	\$ 20,500.00	\$ 20,500.00
6	Ductile Iron Fittings	17	TN	\$ 21,816.00	\$ 370,872.00	\$ 23,280.00	\$ 395,760.00	\$ 22,500.00	\$ 382,500.00
7	4" Air Release/Vacuum Valve and Vault	2	EA	\$ 30,952.00	\$ 61,904.00	\$ 25,235.00	\$ 50,470.00	\$ 19,300.00	\$ 38,600.00
8	6" Blowoff Valve	3	EA	\$ 16,254.00	\$ 48,762.00	\$ 11,530.00	\$ 34,590.00	\$ 10,800.00	\$ 32,400.00
9	1" Water Service connection - OTOC	3	EA	\$ 6,029.00	\$ 18,087.00	\$ 2,050.00	\$ 6,150.00	\$ 4,000.00	\$ 12,000.00
10	Relcoate Existing 6" Blowoff Valve	1	EA	\$ 5,346.00	\$ 5,346.00	\$ 4,105.00	\$ 4,105.00	\$ 3,500.00	\$ 3,500.00
11	Relcoate Existing Fire Hydrant	2	EA	\$ 4,306.00	\$ 8,612.00	\$ 2,370.00	\$ 4,740.00	\$ 2,100.00	\$ 4,200.00
12	48" Steel Casing Pipe - Direct Bury	100	LF	\$ 611.50	\$ 61,150.00	\$ 570.00	\$ 57,000.00	\$ 445.00	\$ 44,500.00
13	48" Steel Casing Pipe - OTOC	126	LF	\$ 1,325.00	\$ 166,950.00	\$ 1,200.00	\$ 151,200.00	\$ 1,047.00	\$ 131,922.00
14	Remove and Replace Asphalt Pavement Driveway	450	LF	\$ 15.00	\$ 6,750.00	\$ 22.00	\$ 9,900.00	\$ 8.50	\$ 3,825.00
15	Remove and Replace Concrete Driveway	750	SF	\$ 18.50	\$ 13,875.00	\$ 12.00	\$ 9,000.00	\$ 35.00	\$ 26,250.00
16	Remove and Replace Gravel Driveway	800	SF	\$ 5.00	\$ 4,000.00	\$ 2.00	\$ 1,600.00	\$ 2.20	\$ 1,760.00
17	Remove and Replace Barbed Wire Fencing	180	LF	\$ 11.00	\$ 1,980.00	\$ 15.00	\$ 2,700.00	\$ 14.00	\$ 2,520.00
18	Provide and Install Temporary Construction Fence	4,150	LF	\$ 16.50	\$ 68,475.00	\$ 3.00	\$ 12,450.00	\$ 5.50	\$ 22,825.00
19	Provide and Install Temporary Boundary Fence	3,615	LF	\$ 16.00	\$ 57,840.00	\$ 4.00	\$ 14,460.00	\$ 4.00	\$ 14,460.00
20	Hydromulch Seeding	9	AC	\$ 2,071.00	\$ 18,639.00	\$ 2,560.00	\$ 23,040.00	\$ 3,700.00	\$ 33,300.00
21	Project Sign	1	EA	\$ 3,815.00	\$ 3,815.00	\$ 1,400.00	\$ 1,400.00	\$ 730.00	\$ 730.00
22	Clearing and Grubbing	1	LS	\$ 21,800.00	\$ 21,800.00	\$ 43,600.00	\$ 43,600.00	\$ 35,000.00	\$ 35,000.00
23	Storm Water Pollution Prevention Plan	1	LS	\$ 30,411.00	\$ 30,411.00	\$ 22,590.00	\$ 22,590.00	\$ 36,000.00	\$ 36,000.00
24	Traffic Control Plan	1	LS	\$ 43,600.00	\$ 43,600.00	\$ 14,515.00	\$ 14,515.00	\$ 10,000.00	\$ 10,000.00
25	Trench Safety System	1	LS	\$ 27,250.00	\$ 27,250.00	\$ 27,380.00	\$ 27,380.00	\$ 6,400.00	\$ 6,400.00
26	BNSF Railway ROW Crossing	101	LF	\$ 1,325.00	\$ 133,825.00	\$ 1,283.00	\$ 129,583.00	\$ 1,089.00	\$ 109,989.00
27	Remove Exsting Cap and Connect to Existing 36" Water Line	2	EA	\$ 14,170.00	\$ 28,340.00	\$ 6,100.00	\$ 12,200.00	\$ 11,600.00	\$ 23,200.00
28	Remove Exsting Cap and Connect to Existing 30" Water Line	1	EA	\$ 12,208.00	\$ 12,208.00	\$ 5,900.00	\$ 5,900.00	\$ 9,500.00	\$ 9,500.00
29	Mobilization, Demobilization, Bonds and Insurance	1	LS	\$ 141,291.00	\$ 141,291.00	\$ 110,625.00	\$ 110,625.00	\$ 141,000.00	\$ 141,000.00
30	Contingency Allowance	1	LS	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00
31	Sodding	300	SY	\$ 6.50	\$ 1,950.00	\$ 15.00	\$ 4,500.00	\$ 6.50	\$ 1,950.00
32	Provide BNSF Flagger for Bid Item 26	1	LS	\$ 38,150.00	\$ 38,150.00	\$ 34,500.00	\$ 34,500.00	\$ 33,000.00	\$ 33,000.00
	Total Bid Price			\$ 3,744,488.00		\$ 3,899,193.00		\$ 3,889,599.00	

INDICATES CORRECTION IN BID

Project B - Bid Tabulation

Item No.	Item	Quantity	Unit	Interstate Pipeline Utility		Excel Trenching		Mountain Cascade		Dickerson Construction	
				Unit Cost	Item Cost	Unit Cost	Item Cost	Unit Cost	Item Cost	Unit Cost	Item Cost
1	36" AWWA C900-16 PVC DR21 Waterline	5,642	LF	\$ 200.00	\$ 1,128,400.00	\$ 281.00	\$ 1,585,402.00	\$ 217.00	\$ 1,224,314.00	\$ 196.00	\$ 1,105,832.00
2	36" CL 150 Restrained Joint Ductile Iron Pipe with Polywrap	4,448	LF	\$ 270.00	\$ 1,200,960.00	\$ 306.00	\$ 1,361,088.00	\$ 274.00	\$ 1,218,752.00	\$ 270.00	\$ 1,200,960.00
3	30" CL 150 Restrained Joint Ductile Iron Pipe with Polywrap	425	LF	\$ 235.00	\$ 99,875.00	\$ 265.00	\$ 112,625.00	\$ 230.00	\$ 97,750.00	\$ 235.00	\$ 99,875.00
4	36" Butterfly Valve	6	EA	\$ 24,100.00	\$ 144,600.00	\$ 18,000.00	\$ 108,000.00	\$ 21,000.00	\$ 126,000.00	\$ 25,000.00	\$ 150,000.00
5	30" Butterfly Valve	1	EA	\$ 21,000.00	\$ 21,000.00	\$ 16,200.00	\$ 16,200.00	\$ 19,000.00	\$ 19,000.00	\$ 20,750.00	\$ 20,750.00
6	Ductile Iron Fittings	17	TN	\$ 26,000.00	\$ 442,000.00	\$ 0.01	\$ 0.17	\$ 20,000.00	\$ 340,000.00	\$ 27,750.00	\$ 471,750.00
7	4" Air Release/Vacuum Valve and Vault	2	EA	\$ 26,300.00	\$ 52,600.00	\$ 24,800.00	\$ 49,600.00	\$ 14,000.00	\$ 28,000.00	\$ 25,000.00	\$ 50,000.00
8	6" Blowoff Valve	3	EA	\$ 15,500.00	\$ 46,500.00	\$ 11,600.00	\$ 34,800.00	\$ 9,000.00	\$ 27,000.00	\$ 12,500.00	\$ 37,500.00
9	1" Water Service connection - OTOC	3	EA	\$ 3,415.00	\$ 10,245.00	\$ 6,000.00	\$ 18,000.00	\$ 2,600.00	\$ 7,800.00	\$ 2,500.00	\$ 7,500.00
10	Relcoate Existing 6" Blowoff Valve	1	EA	\$ 3,000.00	\$ 3,000.00	\$ 6,600.00	\$ 6,600.00	\$ 1,500.00	\$ 1,500.00	\$ 3,500.00	\$ 3,500.00
11	Relcoate Existing Fire Hydrant	2	EA	\$ 2,790.00	\$ 5,580.00	\$ 6,700.00	\$ 13,400.00	\$ 1,200.00	\$ 2,400.00	\$ 3,000.00	\$ 6,000.00
12	48" Steel Casing Pipe - Direct Bury	100	LF	\$ 610.00	\$ 61,000.00	\$ 380.00	\$ 38,000.00	\$ 600.00	\$ 60,000.00	\$ 625.00	\$ 62,500.00
13	48" Steel Casing Pipe - OTOC	126	LF	\$ 1,208.00	\$ 152,208.00	\$ 882.00	\$ 111,132.00	\$ 1,200.00	\$ 151,200.00	\$ 1,075.00	\$ 135,450.00
14	Remove and Replace Asphalt Pavement Driveway	450	LF	\$ 8.00	\$ 3,600.00	\$ 10.00	\$ 4,500.00	\$ 12.00	\$ 5,400.00	\$ 11.50	\$ 5,175.00
15	Remove and Replace Concrete Driveway	750	SF	\$ 24.00	\$ 18,000.00	\$ 15.00	\$ 11,250.00	\$ 30.00	\$ 22,500.00	\$ 15.00	\$ 11,250.00
16	Remove and Replace Gravel Driveway	800	SF	\$ 7.00	\$ 5,600.00	\$ 5.00	\$ 4,000.00	\$ 2.00	\$ 1,600.00	\$ 1.50	\$ 1,200.00
17	Remove and Replace Barbed Wire Fencing	180	LF	\$ 17.00	\$ 3,060.00	\$ 10.00	\$ 1,800.00	\$ 25.00	\$ 4,500.00	\$ 10.00	\$ 1,800.00
18	Provide and Install Temporary Construction Fence	4,150	LF	\$ 5.50	\$ 22,825.00	\$ 3.00	\$ 12,450.00	\$ 7.00	\$ 29,050.00	\$ 10.00	\$ 41,500.00
19	Provide and Install Temporary Boundary Fence	3,615	LF	\$ 2.00	\$ 7,230.00	\$ 3.00	\$ 10,845.00	\$ 7.00	\$ 25,305.00	\$ 10.00	\$ 36,150.00
20	Hydromulch Seeding	9	AC	\$ 2,120.00	\$ 19,080.00	\$ 2,420.00	\$ 21,780.00	\$ 3,600.00	\$ 32,400.00	\$ 6,000.00	\$ 54,000.00
21	Project Sign	1	EA	\$ 715.00	\$ 715.00	\$ 1,000.00	\$ 1,000.00	\$ 500.00	\$ 500.00	\$ 1,000.00	\$ 1,000.00
22	Clearing and Grubbing	1	LS	\$ 5,000.00	\$ 5,000.00	\$ 4,500.00	\$ 4,500.00	\$ 30,000.00	\$ 30,000.00	\$ 7,000.00	\$ 7,000.00
23	Storm Water Pollution Prevention Plan	1	LS	\$ 22,820.00	\$ 22,820.00	\$ 15,000.00	\$ 15,000.00	\$ 25,000.00	\$ 25,000.00	\$ 18,000.00	\$ 18,000.00
24	Traffic Control Plan	1	LS	\$ 2,950.00	\$ 2,950.00	\$ 9,000.00	\$ 9,000.00	\$ 8,000.00	\$ 8,000.00	\$ 3,250.00	\$ 3,250.00
25	Trench Safety System	1	LS	\$ 13,500.00	\$ 13,500.00	\$ 1,000.00	\$ 1,000.00	\$ 5,000.00	\$ 5,000.00	\$ 31,500.00	\$ 31,500.00
26	BNSF Railway ROW Crossing	101	LF	\$ 1,350.00	\$ 136,350.00	\$ 882.00	\$ 89,082.00	\$ 1,200.00	\$ 121,200.00	\$ 1,200.00	\$ 121,200.00
27	Remove Exsting Cap and Connect to Existing 36" Water Line	2	EA	\$ 8,440.00	\$ 16,880.00	\$ 21,000.00	\$ 42,000.00	\$ 5,000.00	\$ 10,000.00	\$ 10,500.00	\$ 21,000.00
28	Remove Exsting Cap and Connect to Existing 30" Water Line	1	EA	\$ 9,230.00	\$ 9,230.00	\$ 11,200.00	\$ 11,200.00	\$ 5,000.00	\$ 5,000.00	\$ 9,000.00	\$ 9,000.00
29	Mobilization, Demobilization, Bonds and Insurance	1	LS	\$ 83,640.00	\$ 83,640.00	\$ 90,000.00	\$ 90,000.00	\$ 180,200.00	\$ 180,200.00	\$ 196,857.00	\$ 196,857.00
30	Contingency Allowance	1	LS	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00
31	Sodding	300	SY	\$ 13.00	\$ 3,900.00	\$ 15.00	\$ 4,500.00	\$ 5.00	\$ 1,500.00	\$ 15.00	\$ 4,500.00
32	Provide BNSF Flagger for Bid Item 26	1	LS	\$ 5,000.00	\$ 5,000.00	\$ 7,500.00	\$ 7,500.00	\$ 40,000.00	\$ 40,000.00	\$ 8,000.00	\$ 8,000.00
	Total Bid Price			\$ 3,947,348.00		\$ 3,996,254.17		\$ 4,050,871.00		\$ 4,123,999.00	

INDICATES CORRECTION IN BID

SPECIFICATIONS AND CONTRACT DOCUMENTS



For the Construction of CELINA WATER TRANSMISSION IMPROVEMENTS PROJECT B

CELINA, TEXAS

Volume 1 of 2
Bidding and Contract Documents
Technical Specifications
Divisions 1 - 40

Garver Project No. 18088205

THIS DOCUMENT IS RELEASED FOR THE PURPOSE
OF BIDDING UNDER THE AUTHORITY OF M. BEATRIZ
DONGELL, P.E. 107252 ON 01/11/2019.

Prepared For:

City of Celina

January 2019



CERTIFICATIONS

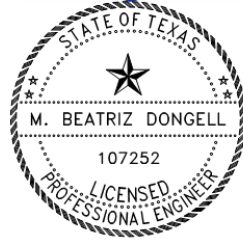
CELINA WATER TRANSMISSION IMPROVEMENTS – PROJECT B
GARVER PROJECT NO. 18088205
CITY OF CELINA PROJECT NO. 18-6206

I hereby certify that the applicable portions of this project plans and specifications were prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the laws of the State of TX.

SEAL AND SIGNATURE

M. Beatriz Dongell, P.E.

M. Beatriz Dongell



Digitally Signed 01/11/2019

Digitally Signed: January 11, 2019

APPLICABLE DIVISION OR
PROJECT RESPONSIBILITY

Division 00
 Division 01
 Division 02
 Division 03
 Division 13
 Division 31
 Division 32
 Division 33
 Division 40

GARVER, LLC CERTIFICATE OF AUTHORIZATION:

TX ENGINEERING FIRM REGISTRATION NO. F-5713

Expiration Date: 1/31/2019

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

CELINA WATER TRANSMISSION IMPROVEMENTS – PROJECT B

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PART 1 BIDDING REQUIREMENTS



**CITY OF CELINA
CELINA, TX
CELINA WATER TRANSMISSION IMPROVEMENTS – PROJECT B
Client Project No. 18-5827**

ADVERTISEMENT FOR BIDS

Sealed bids from bidders for **CELINA WATER TRANSMISSION IMPROVEMENTS – PROJECT B**, to be constructed for the **CITY OF CELINA** will be received at the Celina City Hall and addressed to **City of Celina Engineering Department, Celina City Hall, 142 N. Ohio St., Celina, TX 75009**, until **3 pm on Monday, January 28th, 2019**, at which time the bids shall be publicly opened and read aloud. No bids will be accepted after 3:00 pm on January 28th, 2019. Bids received after this time will be returned unopened. Address Bids to Dawn Berry. Contract Documents may be examined free of charge at the following address:

Owner
City of Celina
142 N. Ohio Street
Celina, TX 75009
Dawn Berry

A **mandatory** Pre-Bid Meeting will be held at **3:00 pm on Tuesday, January 22nd, 2019** at the Celina City Hall located at 142 N. Ohio St., Celina, Texas. Pre-Bid Meeting attendance is mandatory for bidders on this project. Each bidder shall be limited to three personnel per organization. Bids shall not be accepted from bidders that do not attend the Pre-Bid Meeting.

In general, the complete Work will provide the Owner with approximately 10,100 linear feet of 36-inch waterline, continuing from the end of the previously bid Celina Water Transmission Improvements – Project A, following FM 428 North to the intersection of FM 428 and CR 56, East to the BNSF railroad, and North to the Downtown Celina Pump Station. The complete Work will also include approximately 450 linear feet of 30-inch waterline, originating from the Downtown Celina Pump Station and running South before being capped prior to crossing East Ash Street.

Bids shall be on a lump sum and unit price basis, with alternate bid items as indicated in the Bid Form.

Digital copies of the bid documents are available at <http://civcastusa.com> for free. These documents may be downloaded by entering CivCast Project Number **18088205-B** on the “Browse Projects” page. For assistance, contact CivCast at 281.376.4577 or support@civcast.com. **Addendums to the bid package will be issued through the online CivCast Plan Holders List; therefore, all prime bidders shall be responsible for downloading the bid documents from the CivCast online plan room in order to be included in the Plan Holders List. Prime bidders should be registered on the CivCast Plan Holders List in order to submit a bid on the project. Bidders must enter the addenda numbers in Article 3.01 of the Bid Form to verify receipt.**

All bidders have been required to complete Document 00 45 13, Qualification Statement. Qualification of Bidders is required. Due to the critical nature of the construction, the experience and qualifications of Bidders will be evaluated by the Owner upon the opening of Bids. Bids will be graded based on criteria indicated in Section 00 45 13 – Contractor’s Qualification Package, which will be used to demonstrate Bidder’s qualifications to perform the Work. The qualifications of Bidder’s will be at the discretion of the Owner.

Bids shall be accompanied by a cashier's or certified check upon a national or state bank in an amount of five percent (5%) of the total maximum bid price payable without recourse to the Owner, or a bid bond in the same amount from a reliable surety company, as a guarantee that the Bidder will enter into a contract and execute performance and payment bonds within fifteen (15) days after notice of award of Contract to him. Such bid guarantee shall be made payable to **CITY OF CELINA**.

The successful Bidder must furnish performance and payment bonds each in the amount of 100 percent (100%) of the contract price from an approved Surety Company holding a permit from the State of Texas, to act as Surety and be acceptable according to the latest list of companies holding certificates of authority from the Secretary of Treasury of the United States, or other Surety or Sureties acceptable to the Owner.

Bids must remain in effect for **90** days after the bid opening date. Within **90** days from the bid date, the Owner may award the contract to the lowest responsive, responsible bidder or reject any or all bids for the project.

Bidders are expected to inspect the site of the work and to inform themselves regarding local conditions and conditions under which the work is to be done. Attention is called to the provisions of the Acts of the 43rd Legislature of the State of Texas and subsequent amendments concerning the wage scale and payment of prevailing wages specified. Prevailing wage rates will be as established by the City of Celina for this project.

The **CITY OF CELINA** reserves the right to reject any or all bids, to waive irregularities in the bids and bidding deemed to be in the best interests of the **CITY OF CELINA**, and to reject nonconforming, nonresponsive, or conditional bids. In case of ambiguity or lack of clearness in stating the price in the bids, the Owner reserves the right to consider the most advantageous construction thereof, or to reject the bid. Unreasonable or unbalanced unit prices will be considered sufficient cause of rejection of any bid or bids.

All project related questions shall be directed to the Project Manager at the following contact information:

Project Manager
Beatriz Dongell, P.E.
3010 Gaylord Pkwy #190, Frisco, TX 75034
MBDongell@GarverUSA.com
(972) 377-7480

Published Dates: **January 11th, 2019 and January 18th, 2019**

END OF ADVERTISEMENT FOR BIDS

INSTRUCTIONS TO BIDDERS

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ARTICLE 1 – DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof:
- A. *Bidder* – Any individual, partnership, corporation, joint venture, or other combination thereof who submits a Bid to Owner for the Work contemplated, acting directly or through an authorized representative. As used in the Contract Documents, masculine pronouns refer to both masculine and feminine genders.
 - B. *Successful Bidder* – The lowest responsible Bidder submitting a responsive Bid to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.
 - C. *Issuing Office* – The office from which the Bidding Documents are to be issued.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, Bidder shall submit written evidence establishing its qualifications such as financial data, previous experience, and present commitments, as detailed in Section 00 45 13 Qualifications Statement.
- 3.02 The criteria which will be used to determine the lowest responsive and responsible Bidder are as follows:
- A. Responsive Bidder: Means a Bidder who has submitted a Bid which conforms in all material respects to the Bidding Documents.
 - B. Responsible Bidder: Means a Bidder who has the capacity and capability in all respects to perform fully the contract requirements and who has the integrity and reliability to assure good faith performance. Among factors to be considered in determining whether the Bidder meets these standards, are:
 - 1. Financial, material, equipment, facility, and personnel resources and expertise necessary to meet contractual requirements;
 - 2. A record of integrity;
 - 3. A record of Successful Completion defined as: completion of a project within a reasonable time and budget;
 - 4. Qualified legally to contract with the Owner, and;
 - 5. Has not failed to supply any necessary information in connection with the inquiry concerning responsibility.
- 3.03 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.04 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

- 3.05 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

- a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
- b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
- d. Technical Data contained in such reports and drawings.

2. Owner will make pdf digital copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

- C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

- A. Bidder shall conduct Site visit(s) by appointment, during normal working hours, and shall not disturb any ongoing operations at the Site.
- B. Bidder is not required to conduct any subsurface testing of Site conditions.

- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.
- D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

- A. Site visits and work at the Site will be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work for which a Bid is to be submitted. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

- A. Examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. Visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. Become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. Carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;
- E. Consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;
- F. Agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

- G. Become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. Promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- I. Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- J. Agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 6 – PRE-BID CONFERENCE

- 6.01 A mandatory pre-Bid conference will be held at the date and time identified in the Advertisement for Bids and Addenda as appropriate. Representatives of Owner and Engineer will be present to discuss the Project. Pre-Qualified Bidders are required to attend and participate in the conference. Engineer will transmit to all prospective Bidders, who have been previously pre-qualified by the Owner, of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than forty-eight (48) hours prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents. The final addenda shall be issued at a minimum of twenty-four (24) hours prior to the opening of bids' date and time.
- 7.03 In the event of a conflict between the plans and specifications, the specifications shall govern.

ARTICLE 8 – BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of **5 percent** of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a cashier's or certified check, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 of the General Conditions.
- 8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

- 8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, milestones are to be achieved and the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS

- 11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or “or-equal” items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or “or-equal” item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract. All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 12.01 The apparent Successful Bidder, and any other Bidder so requested, shall within 30 minutes after Bid opening, submit Section 00 41 19, List of Proposed Subcontractors, for prior approval of the Owner.
- If requested by Owner, before executing any subcontract, and within three (3) days after bid opening, the apparent Successful Bidder, and any other Bidder so requested, shall submit an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award. Declining to make requested substitutions will **not** constitute grounds for forfeiture of the Bid security of any Bidder.
- 12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.
- 12.03 The quantities of work or material stated in unit price items of the Bid are supplied only to give an indication of the general scope of the Work; the Owner does not expressly or by implication agree that the actual amount of work or material will correspond therewith.

- 12.04 With this bid, the CONTRACTOR acknowledges and agrees the requirements of Paragraph 11.02 to the Instructions to Bidders.

ARTICLE 13 – PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form shall be completed either in ink or type and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
 - B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”
 - C. A conditional bid will not be considered.
- 13.02 A Bid by a corporation or partnership shall be executed in the corporate or partnership name by an officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate or partnership address and state of incorporation shall be shown. The corporate seal shall be affixed and attested by the corporate secretary or an assistant corporate secretary.
- 13.03 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
- 13.04 A Bid by an individual shall show the Bidder’s name and official address.
- 13.05 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.06 All names shall be printed in ink below the signatures.
- 13.07 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.08 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.09 The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder’s state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

- 14.01 Base Bid with Alternates
- A. Bidders shall submit a Bid on a lump sum basis for the Base Bid and include a separate price for each alternate described in the Bidding Documents and as provided for in the Bid Form. The price for each alternate will be the amount replacing the base Bid if Owner selects the alternate. The lowest responsive Bid shall be a responsible Bid based upon the total of the Base Bid and any combination of alternatives as selected by the Owner.
 - B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form.
 - C. The Bid price shall include such amounts as the Bidder deems proper for overhead and profit on account of cash allowances, if any, named in the Contract Documents as provided in paragraph 13.02 of the General Conditions.
 - D. Discrepancies between words and figures will be resolved in favor of the figures.

14.02 Unit Price

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
- B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity" (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the figures.

14.03 Allowances

- A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 15 – SUBMITTAL OF BID

- 15.01 The Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.
- 15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title and number(s) (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." The Bidders name and return address shall be plainly marked on the package. Mailed Bid shall be addressed to Dawn Berry, Purchasing Agent c/o **City of Celina, Texas, Celina City Hall, 142 N. Ohio Dr., Celina, TX 75009.**
- 15.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

- 16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

- 17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.
- 19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.
- 19.03 Evaluation of Bids
- A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
 - B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
- 19.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.
- 19.06 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 19.07 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in the best interests of the Owner.
- 19.08 Unless otherwise indicated, a single award will not be made for less than all the Bid Items of an individual Bid Schedule. In the event the Work is contained in more than one Bid Schedule, the Owner may award schedules individually or in combination. In the case of two or more Bid Schedules which are alternative to each other, only one of such alternative schedules will be awarded.

ARTICLE 20 – BONDS AND INSURANCE

- 20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance, payment, and maintenance bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

- 21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within 10 days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 22 – SALES AND USE TAXES

- 22.01 The project Owner is exempt from Texas state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes **shall not** be included in the Bid. Refer to Paragraph SC-7.09 of the Supplementary Conditions for additional information.

ARTICLE 23 – RETAINAGE

- 23.01 Provisions concerning CONTRACTOR's rights to deposit securities in lieu of retainage are set forth in the Agreement.

ARTICLE 24 – CONTRACTS TO BE ASSIGNED

- 24.01 Not Used

ARTICLE 25 – BUY AMERICAN

- 25.01 In accordance with the Buy American provision in Public Law 95-117 (section 215 of Public Law 92-500 as amended) the Contractor agrees that preference will be given to domestic material, by the contractor, subcontractors, materialmen, and suppliers and Owner in the performance of this contract.

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END OF INSTRUCTIONS TO BIDDERS

BIDDER'S CHECKLIST OF REQUIRED ITEMS

This Bidder's Checklist is provided to ensure all required forms are completed and returned as part of the bid submission. All forms must be included as indicated for a bid to be considered a complete, responsive bid. Appropriate signatures and date are required on each document. If an item is missing, the bid may be declared unresponsive and therefore rejected. **This sheet will serve as the cover sheet for the bid submission.**

Completed* Spec. Section

Attended Pre-Bid	☐	00 11 00
Acknowledgement of All Addenda	☐	
Bid contains the following forms:	☐	
1. Bid Form/Proposal	☐	00 41 13
2. List of Proposed Subcontractors	☐	00 41 19
3. Bid Bond	☐	00 43 13
4. Davis Bacon Wage Rates	☐	00 43 43
5. Qualification Statement	☐	00 45 13
*Check when filled out, signed, and included with submission of bid packet.		

Within three (3) days after Bid Opening:

Bidder acknowledges to provide within three (3) days after Bid Opening (Low Bidder Only):

1. Bidder's Qualifications of Subcontractor (if requested)
2. Bid breakdown shall be provided to form the basis for the making of Progress Partial Payments (if applicable)

Within seven (7) days after Notice of Award:

Bidder acknowledges that within seven (7) days after Notice of Award, Successful Contractor is required to complete the following before execution and award of the contract:

1. Section 00 52 00, Agreement (all pages and supporting documents)
2. Section 00 61 13, Performance Bond
3. Section 00 61 16, Payment Bond
4. Section 00 61 19, Maintenance Bond
5. Completed Certificates of Insurance

Prior to Construction:

Awarded Contractor required to submit Construction Schedule **before** construction begins.

Seal (if incorporated)

Bidder Name: _____

Address: _____

City, State, Zip Code: _____

Contractor Number: _____

Contact Name: _____

Title: _____

Contact Number: _____

Contact Email: _____

Signature of Authorized Agent for Bidder: _____

Date: _____

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ARTICLE 1 – BID RECIPIENT

- 1.01 This Bid is submitted to:

**City of Celina
142 N. Ohio St.
Celina, TX 75009**

- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

- 2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for **90** days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.
- 2.02 In submitting this Bid, Bidder acknowledges and accepts Contractor's representations as more fully set forth in the Agreement Form.
- 2.03 In submitting this Bid, Bidder certifies Bidder is qualified to do business in the State of TX as required by laws, rules and regulations or, if allowed by statute, covenants to obtain such qualification prior to contract award.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

- 3.01 In submitting this Bid, Bidder represents that:

- A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information,

observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.
- K. By submitting a bid/proposal under this solicitation, the Bidder understands that the bid/proposal is subjected to the Davis/Bacon Act including prevailing wage rates and the Contract Work hours and Safety Standards Act.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
 - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
 - 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

- 5.01 Contingency Allowances: Bidder agrees that the following contingency efforts, products (materials and equipment) as further described in Sections 01 29 00, PAYMENT PROCEDURES, and 01 50 00, TEMPORARY FACILITIES AND CONTROLS, will be furnished and paid for on a cash allowance basis and that the amount shown is an estimated amount to be included in the Total Base Bid. Bidder further acknowledges that final payment will be based on actual costs as determined in conformance with the Bidding Documents and as authorized by Change Order. Bidder agrees that the following contingency allowances are for the sole use of the Owner to cover unanticipated costs and have been computed in accordance with Paragraph 13.02 of the General Conditions.

ITEM	DESCRIPTION	CONTINGENCY ALLOWANCE
1.	Work Change Directives	\$ 200,000.00
Lump Sum for Contingency Allowances		\$ 200,000.00

- 5.02 Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

- 5.03 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Base Bid Item No.	Bid Qty	Description (Bidder to write Bid Price in words)	Unit Price	Bid Price
1	5,642 LF	Provide and install 36-inch AWWA C900-16 PVC DR21 Waterline, for the unit price of: _____	\$	\$
2	4.448 LF	Provide and install 36-inch CL 150 Restrained Joint Ductile Iron Pipe with Polywrap, for the unit price of: _____	\$	\$
3	425 LF	Provide and install 30-inch CL 150 Restrained Joint Ductile Iron Pipe with Polywrap, for the unit price of: _____	\$	\$

Base Bid Item No.	Bid Qty	Description (Bidder to write Bid Price in words)	Unit Price	Bid Price
4	6 EA	Provide and install 36-inch Butterfly Valve (Direct Bury), for the unit price of: _____ _____	\$	\$
5	1 EA	Provide and install 30-inch Butterfly Valve (Direct Bury), for the unit price of: _____ _____	\$	\$
6	17 TN	Provide and install Ductile Iron Fittings, for the unit price of: _____ _____	\$	\$
7	2 EA	Provide and install 4-inch Air Release/Vacuum Valve and Vault, for the unit price of: _____ _____	\$	\$
8	3 EA	Provide and install 6-inch Blow-off Valve, for the unit price of: _____ _____	\$	\$
9	3 EA	Provide and install 1-inch water service connection by other than Open Cut, for the unit price of: _____ _____	\$	\$
10	1 EA	Relocate Existing 6-inch Air Blow-off assembly, for the unit price of: _____ _____	\$	\$
11	2 EA	Relocate Existing Fire Hydrant Assembly, for the unit price of: _____ _____	\$	\$

Base Bid Item No.	Bid Qty	Description (Bidder to write Bid Price in words)	Unit Price	Bid Price
12	100 LF	Provide and install 48-inch Steel Casing Pipe – Direct Bury, for the unit price of: _____ _____	\$	\$
13	230 LF	Provide and install 48-inch Steel Casing Pipe – Bored, for the unit price of: _____ _____	\$	\$
14	450 SF	Remove and replace Asphalt Pavement/Driveway, for the unit price of: _____ _____	\$	\$
15	750 SF	Remove and replace Concrete Pavement, for the unit price of: _____ _____	\$	\$
16	800 SF	Remove and replace Gravel Driveway, for the unit price of: _____ _____	\$	\$
17	90 LF	Remove and Replace Existing Fencing, for the unit price of: _____ _____	\$	\$
18	4,150 LF	Provide and Install Temporary Construction Fence, for the unit price of: _____ _____	\$	\$
19	3,615 LF	Provide and Install Temporary Boundary Fence, for the unit price of: _____ _____	\$	\$

Base Bid Item No.	Bid Qty	Description (Bidder to write Bid Price in words)	Unit Price	Bid Price
20	9.0 AC	Provide and install Hydromulch Seeding, for the unit price of: _____ _____	\$	\$
21	1 EA	Provide and install Project Sign, for the unit price of: _____ _____	\$	\$
22	1 LS	Perform Clearing and Grubbing, for the lump sum price of: _____ _____	N/A	\$
23	1 LS	Design and implement Storm Water Pollution Prevention Plan (SWPPP), for the lump sum price of: _____ _____	N/A	\$
24	1 LS	Design and implement Traffic Control Plan, for the lump sum price of: _____ _____	N/A	\$
25	1 LS	Trench Safety System development, design, and implementation as required by the Occupational Safety and Health Administration and the assumption of responsibility for system, complete and in place, for the lump sum price of: _____ _____	N/A	\$
26	80 LF	Crossing of BNSF Railway Right-of-Way, for the Linear Foot price of: _____ _____	\$	\$
27	2 EA	Remove Existing Cap and Connect to Existing 36-inch Water Line, for the unit price of: _____ _____	\$	\$

Base Bid Item No.	Bid Qty	Description (Bidder to write Bid Price in words)	Unit Price	Bid Price
28	1 EA	Remove Existing Cap and Connect to Existing 30-inch Water Line, for the unit price of: _____ _____	\$	\$
29	1 LS	Mobilization, Demobilization, Bonds and Insurance, a maximum of 5% of the Total Contract Amount, for the lump sum of: _____ _____	N/A	\$
30	1 LS	Contingency Allowance 1 for Work Change Directives (miscellaneous work on a change authorization basis) required during completion of the Project to be used solely at the discretion of the Owner and Engineer, for the lump sum of: _____ _____	N/A	\$200,000.00
Total Base Bid Price			\$	

Total of Lump Sum and Unit Price Bids = Total Base Bid Price
(Bidder to write price in figures and words)

\$

5.04 BID ALTERNATES

- A. The undersigned bidder offers to make, at the bid alternate prices (Bid Alternates) following, the changes in the work covered in the Total Base Bid Price that are specified in the bid alternates priced below:
- B. It is understood that:
 1. All bid alternate prices shall be filled in. The work detailed by the bid alternate(s) is an extension of the nature of the work for the Total Base Bid Price's project. This proposal requires that the undersigned Bidder propose on all work detailed by the Total Base Bid Price's project and the decrease in work as detailed by each and all of the bid alternates. Failure to comply with this requirement of submitting a price for each and all of the bid alternates may render the Bid non-responsive and may cause its rejection.
 2. The acceptance or rejection of any or all of these bid alternates is at the option of the Owner.
 3. Acceptance or rejection of bid alternates will not necessarily be made on the basis of price alone.
 4. The acceptance or rejection of one or more bid alternates will not affect the Total Base Bid Project bid, nor other conditions of this bid, nor the price of other accepted bid alternates.

5. Reference Section 00 21 00, Article 19 for Method of Award.
6. The undersigned has carefully examined the plans and other contractual documents and has coordinated the scopes between the Total Base Bid Documents and the Bid Alternate Documents. Through submittal of a bid, the undersigned agrees and understands that the documents have been prepared with the highest level of care in the effort to coordinate the scopes of the Total Base Bid Project documents and the Bid Alternate documents. The undersigned agrees and accepts the responsibilities to coordinate and construct all required interconnections and coordination facilities between the Total Base Bid Project and any of, any combination of, and/or a total combination of the Bid Alternates to develop complete and operational facilities that meet the regulatory requirements for the facilities and the requirements set forth by these contract documents.

Bid Qty	Bid Alternates (Bidder to write price in words)	Unit Price	Bid Price
5,642 LF	Alternate A.1: Replace Bid Item No. 1 – 5,642 LF (Unrestrained Runs) of 36" AWWA C900-16 PVC DR21 Waterline for 36" CL 150 Push-On Joint Ductile Iron Pipe with Polywrap, for the unit price of: _____ _____	\$	\$
1 LS	Alternate A.2: Provide and install cathodic protection for 36-inch CL 150 Push on Joint Ductile Iron Pipe at existing gas crossings: _____ _____	\$	\$

ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete within 160 calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 180 calendar days after the date when the Contract Times commence to run.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.01 The following documents are submitted with and made a condition of this Bid:
 - A. Required Bid security in the form of a certified or bank check, or a Bid Bond, issued by a surety meeting the requirements of the General Conditions.
 - B. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;
 - C. Required Bidder Qualifications Statement (Section 00 45 13) with supporting data;
 - D. List of Proposed Subcontractors (Section 00 41 19); and
 - E. Davis/Bacon wage rates and State of Texas Department of Labor wage rates

ARTICLE 8 – DEFINED TERMS

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

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ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

By:

[Signature] _____

[Printed name] _____

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____

(where applicable)

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Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

LIST OF PROPOSED SUBCONTRACTORS

I, the undersigned General Contractor, hereby certify that proposals from the following Subcontractors were used in the preparation of my bid. I agree that if I am the successful Bidder and if the following subcontracts are approved, I will not enter into contracts with others for these divisions of the work without prior written approval from the Engineer and the Owner.

Type of Work:

Subcontractor's Name:.....

License No.:

Address:

Type of Work:

Subcontractor's Name:.....

License No.:

Address:

Type of Work:

Subcontractor's Name:.....

License No.:

Address:

Type of Work:

Subcontractor's Name:.....

License No.:

Address:

Type of Work:

Subcontractor's Name:.....

License No.:

Address:

Bidder (General Contractor):

License No.:

By: *

Title:.....

*Signature must be the same as on the Bid Form.

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

BID

Bid Due Date:

Description: Celina Water Transmission Improvements – Project B

BOND

Bond Number:

Date:

Penal sum _____ \$ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

Bidder's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Addresses are to be used for giving any required notice.

Provide execution by any additional parties, such as joint venturers, if necessary.

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2 All Bids are rejected by Owner, or
 - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

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General Decision Number: TX180028 01/05/2018 TX28

Superseded General Decision Number: TX20170028

State: Texas

Construction Type: Heavy

Counties: Collin, Dallas, Denton, Ellis, Kaufman and Rockwall
Counties in Texas.

Water and Sewer Lines/Utilities (Including Related Tunneling
Where the Tunnel is 48" or Less in Diameter)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* PLUM0100-002 11/01/2017

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 30.84	11.51

SUTX1991-004 09/23/1991		

	Rates	Fringes
Laborers:		
Common.....	\$ 7.25	
Utility.....	\$ 7.467	
Pipelayer.....	\$ 7.828	
Power equipment operators:		
Backhoe.....	\$ 10.804	
Crane.....	\$ 10.942	
Front End Loader.....	\$ 9.163	
Tunneling Machine (48" or less).....	\$ 9.163	

TRUCK DRIVER.....\$ 8.528

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=====

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example:

PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations.

Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7).
Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board).
Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====

END OF GENERAL DECISION

**SECTION 00 45 13 QUALIFICATION STATEMENT
(CONTRACTOR QUALIFICATION PACKAGE)**

The proposed work is generally described as follows:

In general, the complete Work will provide the Owner with approximately 10,090 linear feet of 36-inch waterline, continuing from the end of the previously bid Celina Water Transmission Improvements – Project A, following FM 428 North to the intersection of FM 428 and CR 56, East to the BNSF railroad, and North to the Downtown Celina Pump Station. The complete Work will also include approximately 425 linear feet of 30-inch waterline, originating from the Downtown Celina Pump Station and running South before being capped prior to crossing East Ash Street.:

- 36-inch transmission main, including isolation valves;
- 30-inch transmission main, including isolation valves;
- Trenchless construction with steel casing under FM 428 and BNSF Railroad;
- Steel casing direct bury under downtown streets; and
- Restoring disturbed roadways and homeowner's property.

For further information, contact Beatriz Dongell, Garver Project Manager,
e-mail MBDongell@GarverUSA.com

INSTRUCTIONS TO CONTRACTORS

SUBMITTAL INFORMATION

Complete and submit Qualification Statement along with complete sealed bid no later than **3 pm on Monday, January 28th, 2019.**

PURPOSE

The purpose of the Qualification Statement is to provide OWNER and ENGINEER with the ability to quickly and efficiently evaluate and determine the Bidder offering the best value while conforming to the Specifications. Owner will consider the Base Bid and Alternates and base a decision on the best interest of the Owner.

TENTATIVE PROJECT TIMETABLE

The following is a tentative timetable of advertisement and opening of Bids:

Invitation for Bids	January 11, 2019
Pre-Bid Conference	January 22, 2019
Bid Opening	January 28, 2019
Notice of Award	February 13, 2019
Preconstruction Meeting	February 20, 2019
Notice to Proceed	February 20, 2019
Mobilization/Begin Construction	February 20, 2019
Substantial Completion	July 30, 2019

PROJECT BIDDING INFORMATION

The criteria which will be used to determine Bidder Qualifications are as follows:

- A. Responsive Bidder – A Bidder who has submitted a Bid, which conforms in all material respects to the Bidding Documents.
- B. Apparent Low Bidder—that Bidder whose Bids as offered in the Bid Form represents the lowest total as determined by the Base Bid.
- C. Responsible Bidder – A Bidder who has the capacity and capability in all respects to perform fully the contract requirements and who has the integrity and reliability to assure good faith performance. Among factors to be considered in determining whether the Bidder meets these standards, are:
 1. Financial, material, equipment, facility, personnel resources, and expertise necessary to meet contractual requirements;
 2. A record of integrity;
 3. A record of Successful Completion defined as: completion of a project within a reasonable time frame and budget including history of change orders;
 4. Qualified legally to contract with the OWNER; and
 5. Has not failed to supply any necessary information in connection with the inquiry concerning responsibility.

QUALIFICATIONS STATEMENT

**THE INFORMATION SUPPLIED IN THIS DOCUMENT IS CONFIDENTIAL TO THE EXTENT
PERMITTED BY LAWS AND REGULATIONS**

1. SUBMITTED BY:

Official Name of Firm:

Address:

2. SUBMITTED TO:**3. SUBMITTED FOR:**

Owner:

Project Name:

TYPE OF WORK:**4. CONTRACTOR'S CONTACT INFORMATION**

Contact Person:

Title:

Phone:

Email:

5. AFFILIATED COMPANIES:

Name:

Address:

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

6. TYPE OF ORGANIZATION:☐ SOLE PROPRIETORSHIP

Name of Owner: _____

Doing Business As: _____

Date of Organization: _____

☐ PARTNERSHIP

Date of Organization: _____

Type of Partnership: _____

Name of General Partner(s): _____

_____☐ CORPORATION

State of Organization: _____

Date of Organization: _____

Executive Officers:

- President: _____

- Vice President(s): _____

- Treasurer: _____

- Secretary: _____

☐ LIMITED LIABILITY COMPANY

State of Organization: _____

Date of Organization: _____

Members: _____

☐ JOINT VENTURE

State of Organization: _____

Date of Organization: _____

Form of Organization: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

_____**7. LICENSING**

Jurisdiction: _____

Type of License: _____

License Number: _____

Jurisdiction: _____

Type of License: _____

License Number: _____

Has firm listed in Section 1 ever been fined or suspended by a Contractor's licensing board?

☐ YES ☐ NO

If YES, attach as an Attachment details including where and why.

8. CERTIFICATIONS

CERTIFIED BY:

Disadvantage Business Enterprise: _____

Minority Business Enterprise: _____

Woman Owned Enterprise: _____

Small Business Enterprise: _____

Other (_____): _____

9. BONDING INFORMATION

Bonding Company: _____

Address: _____

Bonding Agent: _____

Address: _____

Contact Name: _____

Phone: _____

Aggregate Bonding Capacity: _____

Available Bonding Capacity as of date of this submittal: _____

10. FINANCIAL INFORMATION

Financial Institution: _____

Address: _____

Account Manager: _____

Phone: _____

Credit available: \$ _____

11. CONSTRUCTION EXPERIENCE:

Current Experience:

List on **Schedule A** all uncompleted projects currently under contract (If Joint Venture list each participant's projects separately).

Previous Experience:

List on **Schedule B** all projects completed within the last 5 Years (If Joint Venture list each participant's projects separately).

Has firm listed in Section 1 ever failed to complete a construction contract awarded to it?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Has any Corporate Officer, Partner, Joint Venture participant or Proprietor ever failed to complete a construction contract awarded to them in their name or when acting as a principal of another entity?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

Are there any judgments, claims, disputes or litigation pending or outstanding involving the firm listed in Section 1 or any of its officers (or any of its partners if a partnership or any of the individual entities if a joint venture)?

☐ YES ☐ NO

If YES, attach as an Attachment details including Project Owner's contact information.

12. SAFETY PROGRAM:

Name of Contractor's Safety Officer: _____

Include the following as attachments:

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) OSHA No. 300 - Log & Summary of Occupational Injuries & Illnesses for the past 5 years.

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) list of all OSHA Citations & Notifications of Penalty (monetary or other) received within the last 5 years (indicate disposition as applicable) - IF NONE SO STATE.

Provide as an Attachment Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) list of all safety citations or violations under any state all received within the last 5 years (indicate disposition as applicable) - IF NONE SO STATE.

Provide the following for the firm listed in Section V (and for each proposed Subcontractor furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) the following (attach additional sheets as necessary):

Workers' compensation Experience Modification Rate (EMR) for the last 5 years:

YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____

Total Recordable Frequency Rate (TRFR) for the last 5 years:

YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____

Total number of man-hours worked for the last 5 Years:

YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____

Provide Contractor's (and Contractor's proposed Subcontractors and Suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) Days Away From Work, Days of Restricted Work Activity or Job Transfer (DART) incidence rate for the particular industry or type of Work to be performed by Contractor and each of Contractor's proposed Subcontractors and Suppliers) for the last 5 years:

YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____

13. EQUIPMENT:

MAJOR EQUIPMENT:

List on **Schedule C** all pieces of major equipment available for use on Owner's Project.

I HEREBY CERTIFY THAT THE INFORMATION SUBMITTED HERewith, INCLUDING ANY ATTACHMENTS, IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME OF ORGANIZATION: _____

BY: _____

TITLE: _____

DATED: _____

NOTARY ATTEST:

SUBSCRIBED AND SWORN TO BEFORE ME

THIS _____ DAY OF _____, 20__

NOTARY PUBLIC - STATE OF _____

MY COMMISSION EXPIRES: _____

REQUIRED ATTACHMENTS

1. Schedule A (Current Experience).
2. Schedule B (Previous Experience).
3. Schedule C (Major Equipment).
4. Evidence of authority for individuals listed in Section 6 to bind organization to an agreement.
5. Resumes of officers and key individuals (including Safety Officer) of firm named in Section 1.
6. Required safety program submittals listed in Section 12.
7. Conflict of Interest Questionnaire
8. Certificate of Interested Parties

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SCHEDULE A

CURRENT EXPERIENCE

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line-

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SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line-

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SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line-

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SCHEDULE C - LIST OF MAJOR EQUIPMENT AVAILABLE

[illegible]

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CONFLICT OF INTEREST

Effective January 1, 2006, Chapter 176 of the Texas Local Government Code requires that persons, or their agents, who seek to contract for the sale or purchase of property, goods, or services with the City, shall file a completed conflict of interest questionnaire with the Engineering Department not later than the seventh (7th) business day after the date that the person: (1) begins contract discussions or negotiations with the City; or (2) submits to the City an application, response to a request for bid or proposal, correspondence, or another writing related to a potential agreement with the City. The Conflict of Interest questionnaire **form is available on the reverse side of this notice** or from the Texas Ethics Commission at www.ethics.state.tx.us.

The full text of the Local Government Code related to Conflict of Interest is available at <http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.171.htm>. Detailed information related to vendors is found in Section § 176.006 "DISCLOSURE REQUIREMENTS FOR VENDORS AND OTHER PERSONS; QUESTIONNAIRE".

SEE NEXT PAGE

CONFLICT OF INTEREST QUESTIONNAIRE**FORM CIQ****For vendor or other person doing business with local governmental entity**

This questionnaire reflects changes made to the law by H.B. 1491, 80th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

OFFICE USE ONLY

Date Received

1 Name of person who has a business relationship with local governmental entity.

2

☐ Check this box if you are filing an update to a previously filed questionnaire.

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 Name of local government officer with whom filer has employment or business relationship.

Name of Officer

This section (item 3 including subparts A, B, C & D) must be completed for each officer with whom the filer has an employment or other business relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the filer of the questionnaire?

☐ Yes ☐ No

B. Is the filer of the questionnaire receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?

☐ Yes ☐ No

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an OWNERSHIP of 10 percent or more?

☐ Yes ☐ No

D. Describe each employment or business relationship with the local government officer named in this section.

4

Signature of person doing business with the governmental entity

Date

Adopted 06/29/2007

Company Represented _____

CERTIFICATE OF INTERESTED PARTIES**FORM 1295**

Complete Nos. 1 - 4 and 6 if there are interested parties.
 Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the goods or services to be provided under the contract.

4 Name of Interested Party	City, State, Country (place of business)	Nature of Interest (check applicable)	
		Controlling	Intermediary

5 Check only if there is NO Interested Party. ☐

6 AFFIDAVIT

I swear, or affirm, under penalty of perjury, that the above disclosure is true and correct.

 Signature of authorized agent of contracting business entity

AFFIX NOTARY STAMP / SEAL ABOVE

Sworn to and subscribed before me, by the said _____, this the _____ day
 of _____, 20_____, to certify which, witness my hand and seal of office.

 Signature of officer administering oath

 Printed name of officer administering oath

 Title of officer administering oath

ADD ADDITIONAL PAGES AS NECESSARY

PART 2 CONTRACT FORMS

NOTICE OF AWARD

Date of Issuance:

Owner: **CITY OF CELINA**

Owner's Contract No.: 18-6206

Engineer: **GARVER**

Engineer's Project No.: 18088205

Project: Celina Water Transmission Improvements – Project B

Bidder:

Bidder's Address:

TO BIDDER:

You are notified that Owner has accepted your Bid dated [] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for: Constructing approximately 10,090 linear feet of 36-inch waterline originating at the completion of Project A at the intersection of FM 428 and CR 55 following CR55 east to the Downtown Pump Station and approximately 425-ft of 30-inch pipeline leaving the Downtown Pump Station and ending north of East Ash St.

The Contract Price of the awarded Contract is: \$ []

4 unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

☐ a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner 4 counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security [*e.g., performance and payment bonds*] and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

After you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner:

Authorized Signature

By:

Title:

Copy: Engineer

**AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)**

THIS AGREEMENT is by and between CITY OF CELINA ("Owner") and
____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

ARTICLE 2 – THE PROJECT

2.01 *The Project, of which the Work under the Contract Documents is a part, is generally described as follows:*

The Project consists of approximately 10,090 linear feet of 36-inch waterline originating at the completion of Project A at the intersection of FM 428 and CR 55 following CR55 east to the Downtown Pump Station and approximately 425 linear feet of 30-inch pipeline leaving the Downtown Pump Station and ending north of East Ash St. The project includes demolition and restoration of existing property to previous, or improved quality.

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by **Garver, LLC**.

3.02 The Owner has retained **Garver, LLC** ("Engineer") to act as Owner's representative, and to have the rights, responsibilities, duties, and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Days*

A. The Work will be substantially completed within the following number of days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within the following number of days after the date when the Contract Times commence to run.

Description	Substantial Completion	Final Completion
Celina Water Transmission Improvements – Project B	160 calendar days	180 calendar days

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the

actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner **\$1,500** for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.
2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner **\$2,000** for each day that expires after such time until the Work is completed and ready for final payment.
3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently. However, if the achieved substantial completion date falls after the specified final completion date, liquidated damages as specified in Completion of Remaining Work will immediately begin accruing from the date of substantial completion until final completion is achieved.

4.04 Special Damages

- A. In addition to the amount provided for liquidated damages, Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.
- B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment. If the achieved substantial completion date falls after the specified final completion date, these costs will begin accruing immediately from the date of achieved substantial completion.

ARTICLE 5 – CONTRACT PRICE

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraph 5.01.A:

- A. For all Work a Lump Sum of:

_____	\$	_____
(in words)		(in figures)

All specific cash allowances, unit price work totals, and bid alternatives are included in the above price in accordance with Article 13 of the General Conditions.

ARTICLE 6 – PAYMENT PROCEDURES

- 6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner may elect to make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 15th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments are monies advanced for the purpose of assisting the Contractor to expedite the work of construction. The Owner holds the right to withhold any payment in accordance with Paragraph 15.01 of the General Conditions. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.
 - 1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract
 - a. 95 percent of Work completed (with the balance being retainage); and
 - b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 125 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06, minus any damages as described in Paragraphs 4.03 and 4.04.

ARTICLE 7 – INTEREST

7.01 Not applicable.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:
 - A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
 - B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 - C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
 - D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

- E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.
- K. The Contractor hereby represents and warrants to and for the benefit of the Owner that:
 - 1. The Contractor has reviewed and understands the prevailing wage rate requirements and will provide any further verified information, certification or assurance of compliance as may be required by the Owner.
 - 2. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner to recover as damages against the Contractor any loss, expense or cost (including without limitation attorney's fees) incurred by the Owner resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Owner). While the Contractor has no direct contractual privity with the State, as a lender to the Owner for the funding of its project, the Owner and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

- A. The Contract Documents consist of the following:
 - 1. Executed Agreement
 - 2. Addenda (if any)
 - 3. Advertisement for Bids
 - 4. Contractor Qualification Package
 - 5. Instructions to Bidders
 - 6. Bid Form/Proposal
 - 7. COI Forms
 - 8. List of Proposed Subcontractors
 - 9. General Conditions

10. Supplementary Conditions
11. Approved Materials List
12. Division 01 General Requirements
13. Any other funding agency documentation required
14. Technical Specifications as listed in the Table of Contents
15. Drawings
16. Performance Bond
17. Payment Bond
18. Maintenance Bond
19. Certificates of Insurance
20. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid
21. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be

valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *Other Provisions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

OWNER:

CONTRACTOR:

By: _____

By: _____

Title: _____

Title: _____

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____

Attest: _____

Title: _____

Title: _____

Address for giving notices:

Address for giving notices:

License No.: _____
(where applicable)

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NOTICE TO PROCEED

Owner: CITY OF CELINA	Owner's Contract No.: 18-6206
Contractor:	Contractor's Project No.:
Engineer: GARVER	Engineer's Project No.: 18088205
Project: CELINA WATER TRANSMISSION IMPROVEMENTS – PROJECT B	Effective Date of Contract:

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [REDACTED], 20[REDACTED]. [see Paragraph 4.01 of the General Conditions]

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____.

Before starting any Work at the Site, Contractor must comply with the following:

[Note any access limitations, security procedures, or other restrictions]

Owner:

Authorized Signature

By:

Title:

Date Issued:

Copy: Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____
_____ this _____ day of _____, 20 ____.

BY

TITLE

EJCDC® C-550, Notice to Proceed. Prepared and published 2013 by the Engineers Joint Contract Documents Committee.

PERFORMANCE BONDCONTRACTOR *(name and address)*:SURETY *(name and address of principal place of business)*:OWNER *(name and address)*:**CITY OF CELINA****CONSTRUCTION CONTRACT**

Effective Date of the Agreement:

Amount:

Description *(name and location)*:**BOND**

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL**SURETY**_____
Contractor's Name and Corporate Seal_____
Surety's Name and Corporate SealBy: _____
SignatureBy: _____
Signature *(attach power of attorney)*_____
Print Name_____
Print Name_____
Title_____
TitleAttest: _____
SignatureAttest: _____
Signature_____
Title_____
Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

EJCDC® C-610, Performance Bond Copyright © 2013 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

PAYMENT BONDCONTRACTOR *(name and address)*:SURETY *(name and address of principal place of business)*:OWNER *(name and address)*:**CITY OF CELINA****CONSTRUCTION CONTRACT**

Effective Date of the Agreement:

Amount:

Description *(name and location)*:**BOND**

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL**SURETY**_____
(seal)

Contractor's Name and Corporate Seal

By: _____

Signature

Print Name_____
Title

Attest: _____

Signature

Title_____
(seal)

Surety's Name and Corporate Seal

By: _____

Signature *(attach power of attorney)*_____
Print Name_____
Title

Attest: _____

Signature

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
 - 5.1 Claimants who do not have a direct contract with the Contractor,
 - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety

shall promptly and at the Surety's expense take the following actions:

- 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
- 7.2 Pay or arrange for payment of any undisputed amounts.
- 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to

sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction

Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

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MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That _____, as Principal, and _____, a Corporation organized under the laws of the State of Texas and authorized to transact business in the State of Texas, as Surety, are held and firmly bound unto the **CITY OF CELINA**, (hereinafter called "OWNER"), in the penal sum of _____ Dollars (\$_____), lawful money of the United States of America, said sum being equal to one hundred percent (100%) of the contract price, for the payment of which, well and truly to be made, we bind ourselves and each of us, our heirs, executors, administrators, trustees, successors and assigns, jointly and severally, firmly by these presents.

Dated _____, day of _____, 20 ____.

The condition of this obligation is such that:

WHEREAS, said Principal entered into a Contract for the construction of

CELINA WATER TRANSMISSION IMPROVEMENTS – PROJECT B

all in compliance with the plans and specifications therefore, made a part of said Contract and on file in the office of the Owner.

NOW, THEREFORE, if the said Principal shall pay or cause to be paid to Owner all damage, loss, and expense which may result by reason of defective materials and/or workmanship in connection with said work, occurring within a period of two (2) years from and after final acceptance of said project by Owner and if Principal shall pay or cause to be paid all labor and materials, including the prime contractor and all subcontractors; and if Principal shall save and hold the Owner harmless from all damages, loss, and expense occasioned by or resulting from any failure whatsoever of said Principal, then this obligation shall be null and void; otherwise to be and remain in full force and effect.

It is further expressly agreed and understood by the parties hereto that no changes or alterations in said Contract and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, the said Principal has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its duly authorized officers, and the said Surety has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its attorney-in-fact, duly authorized so to do, the day and year first above written.

PRINCIPAL:

(SEAL)

BY: _____
TITLE:

ATTEST:

BY: _____
TITLE:

SURETY:

(SEAL)

BY: _____

Address for giving notices:

Phone No. _____

License No. _____

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	CITY OF CELINA	Owner's Contract No.:	18-6206
Contractor:		Contractor's Project No.:	
Engineer:	Garver	Engineer's Project No.:	18088205
Project:	Celina Water Transmission Improvements – Project B		

This **[preliminary]** **[final]** Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: **[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]**

Amendments to Owner's responsibilities: ☐ None ☐ As follows

Amendments to Contractor's responsibilities: ☐ None ☐ As follows:

The following documents are attached to and made a part of this Certificate: **[punch list; others]**

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:		RECEIVED:		RECEIVED:	
By:	_____	By:	_____	By:	_____
	(Authorized signature)		Owner (Authorized Signature)		Contractor (Authorized Signature)
Title:	_____	Title:	_____	Title:	_____
Date:	_____	Date:	_____	Date:	_____

EJCDC® C-625, Certificate of Substantial Completion. Copyright © 2013 National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers. All rights reserved.

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

SAMPLE CERTIFICATE OF INSURANCE

Owner: **CITY OF CELINA** Owner's Contract No.: 18-6206
 Contractor: Contractor's Project No.:
 Engineer: **Garver** Engineer's Project No.: 18088205
 Project: Celina Water Transmission Improvements – Project B

ACORD®		CERTIFICATE OF LIABILITY INSURANCE		DATE (MM/DD/YYYY) (must be dated)			
THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.							
IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).							
PRODUCER Agency Name Agency Address www.stephens.com		CONTACT NAME: Agency contact PHONE (A/C, No, Ext): Agency ph# FAX (A/C, No): E-MAIL ADDRESS: Agency contact email address INSURER(S) AFFORDING COVERAGE INSURER A: Carrier Name (AM Best Rating) INSURER B: INSURER C: INSURER D: INSURER E: INSURER F:					
INSURED Named Insured on the policies		NAIC #					
COVERAGES		CERTIFICATE NUMBER:		REVISION NUMBER:			
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.							
INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY ☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY ☒ PROJECT ☐ LOC	X	X	XXXXXXXXXX			EACH OCCURRENCE \$ 5,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 5,000,000 PRODUCTS - COM/PROP AGG \$ 5,000,000
	AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☒ HIRED AUTOS ☒ NON-OWNED AUTOS	X	X	XXXXXXXXXX			COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$ \$
	UMBRELLA LIAB ☒ EXCESS LIAB ☐ DED ☐ RETENTION \$ XXXXX ☒ OCCUR ☐ CLAIMS-MADE	X	X	XXXXXXXXXX Umbrella / Excess only if needed to meet the required underlying General Liability limit			EACH OCCURRENCE \$ AGGREGATE \$ \$ \$ \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N/A	X	XXXXXXXXXX			☒ WC STATUTORY LIMITS ☐ OTHER E.L. EACH ACCIDENT \$ 500,000 E.L. DISEASE - EA EMPLOYEE \$ 500,000 E.L. DISEASE - POLICY LIMIT \$ 500,000
				XXXXXXXXXX			
DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)							
Owner & Garver, LLC shall be included as an Additional Insured by endorsement #CG2010(11/85) on the General Liability and #CA2048 on the Automobile and Umbrella or substitute endorsement providing equivalent coverage. Coverage shall be Primary and non-contributory with respect to any other insurance or self-insurance programs afforded to the Owner and Garver LLC. Waiver of Subrogation applies in favor of the Owner and Garver LLC on all policies. 60 day notice will be provided to the Owner and Garver LLC in the event of cancellation, non-renewal and/or impairment of the Contractor's policies.							
CERTIFICATE HOLDER Owner and Garver LLC				CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE (must be signed by the Contractor's Insurance Agent)			

ACORD 25 (2010/05)

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INSURANCE POLICIES IN FORCE

INSURANCE AFFORDED ONLY FOR HAZARDS INDICATED BY (X)

Type of Policy	X	Limits of Liability	Policy Number	Policy Term
(a) Standard Workmen's Compensation & Employer's and Occupational Disease Liability		Statutory W. C. Each Occurrence \$ _____ Aggregate Disease \$ _____		From: To: From: To:
(b) Longshoremen's & Harbor Workers Compensation		Statutory		From: To:
(c) General Liability <u>Bodily Injury</u> Premises – Operation Contractor's Protective Products & Completed Operations Contractual <u>Property Damage</u> Contractual Explosion, Collapse & Underground Damage (X.C.U.)		Each Person \$ _____ Each Occurrence \$ _____ Aggregate Products \$ _____ & Completed Operations Each Occurrence \$ _____ Aggregate Prem. Oper. \$ _____ Aggregate Protective \$ _____ Aggregate Products & \$ _____ Completed Operations Aggregate Contractual \$ _____ Aggregate X.C.U. \$ _____		From: To:
(d) Automobile Liability <u>Bodily Injury</u> Owned Automobiles Hired Automobiles Non-Owned Automobiles <u>Property Damage</u> Owned Automobiles Hired Automobiles Non-Owned Automobiles		Each Person \$ _____ Each Occurrence \$ _____ Each Occurrence \$ _____		From: To:
(e) <u>Other Insurance</u>				

CONTRACTUAL LIABILITY

Subject to policy terms, conditions and exclusions, specific Contractual Liability coverage is provided as follows:

- ☐ For liability assumed by the Insured under its Contract with _____ (Owner) for the operations described herein.
- ☐ All Contracts between the Insured and _____ (Owner).

Insurance Company

By: _____
Authorized Representative

Address

Date: _____

EQUAL EMPLOYMENT OPPORTUNITY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The Contractor shall implement affirmative action steps at least as extensive as described herein.

1.2 WORKING ENVIRONMENT

- A. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two (2) or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

1.3 ON-THE-JOB TRAINING

- A. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs.

1.4 REVIEW

- A. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

1.5 DISSEMINATION

- A. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

1.6 RECRUITMENT

- A. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one (1) month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

1.7 INVENTORY

- A. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

1.8 MONITORING

- A. Ensure that seniority practices, job classifications, work assignments, and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

1.9 FACILITIES

- A. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

1.10 RECORDS

- A. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

1.11 ADHERENCE

- A. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

END OF SECTION

PART 3

CONDITIONS OF THE CONTRACT

General Conditions

The General Conditions, Section 00 72 00, have not been modified or amended in any way from the original publication of the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). Any modifications to these General Conditions have been made in the Supplementary Conditions, Section 00 73 00.

Supplementary Conditions

The Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition), Section 00 72 00. All provisions that are not so amended or supplemented remain in full force and effect.

The address system used in the Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.
 11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and

Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.
35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives*:
 1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day*:
 1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective*:
 1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or

- b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
- c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. *Furnish, Install, Perform, Provide:*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. *Bonds:* When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor's Insurance:* When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner's Insurance:* After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:
1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 2. a preliminary Schedule of Submittals; and
 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

- A. Standards Specifications, Codes, Laws and Regulations
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

- A. *Reporting Discrepancies:*
 - 1. **Contractor's Verification of Figures and Field Measurements:** Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 2. abnormal weather conditions;
 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.
- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

- A. *Limitation on Use of Site and Other Areas:*
 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility

for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
 - D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and

procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
2. is of such a nature as to require a change in the Drawings or Specifications; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments:*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
 - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

- A. **Contractor's Responsibilities:** The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
 - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. **Notice by Contractor:** If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.
- C. **Engineer's Review:** Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground

Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
 - 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
 - d. Contractor gave the notice required in Paragraph 5.05.B.
 - 2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
 - 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
 - 2. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2)

was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 Insurance—General Provisions

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 Contractor's Insurance

- A. **Workers' Compensation:** Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
 4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
 2. claims for damages insured by reasonably available personal injury liability coverage.
 3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
 - a. Such insurance shall be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Broad form property damage coverage.
 4. Severability of interest.
 5. Underground, explosion, and collapse coverage.
 6. Personal injury coverage.
 7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
 8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability:* Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
- E. *Umbrella or excess liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
1. include at least the specific coverages provided in this Article.
 2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
 3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
 4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
 5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible

amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
6. extend to cover damage or loss to insured property while in transit.
7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
8. allow for the waiver of the insurer's subrogation rights, as set forth below.
9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
10. not include a co-insurance clause.
11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
12. include performance/hot testing and start-up.
13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

- B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 Receipt and Application of Property Insurance Proceeds

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 Supervision and Superintendence

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 Labor; Working Hours

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. **Contractor's Expense:** Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. **Engineer's Evaluation and Determination:** Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be

evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 Substitutes

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
 - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 - 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and
 - 3) be suited to the same use as that specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from that specified, and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.
- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the

replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

- G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- O. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
 - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention,

design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during

construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
- G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 Hazard Communication Programs

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 Emergencies

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 Shop Drawings, Samples, and Other Submittals

A. Shop Drawing and Sample Submittal Requirements:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. Shop Drawings:

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. Samples:

- a. Contractor shall submit the number of Samples required in the Specifications.
- b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as

Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
 5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
 6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
 7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.
 8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.
- E. *Resubmittal Procedures:*
1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
 2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal;
 6. the issuance of a notice of acceptability by Engineer;
 7. any inspection, test, or approval by others; or
 8. any correction of defective Work by Owner.
- D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform

any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. an itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. the extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to

Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

- C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.
- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the

progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 - 1. *Change Orders:*
 - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
 - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
 - 2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.
 - 3. *Field Orders:* Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes

cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
 - 1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
 - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
 - 1. a mutually acceptable fixed fee; or
 - 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.
 - 1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
 - 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 - 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and
 4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal

and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns

from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:
 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers,

architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.
- E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances:* Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance:* Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 Access to Work

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 Tests, Inspections, and Approvals

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
3. by manufacturers of equipment furnished under the Contract Documents;
4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 Defective Work

- A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 Acceptance of Defective Work

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the

Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will

include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications:*
1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
 2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

- c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
 - 3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
 - 4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
 - 5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
 - 6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.
- D. *Payment Becomes Due:*
- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.
- E. *Reductions in Payment by Owner:*
- 1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from

workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. the Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. the Contract Price has been reduced by Change Orders;
 - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
 - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - l. there are other items entitling Owner to a set off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider

the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
 - 2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all disputes that Contractor believes are unsettled; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in

writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

- C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.
- D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 1. correct the defective repairs to the Site or such other adjacent areas;
 2. correct such defective Work;
 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may

thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 Owner May Terminate For Convenience

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 Contractor May Stop Work or Terminate

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 Methods and Procedures

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this Article:
1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

- B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
 2. agree with the other party to submit the dispute to another dispute resolution process; or
 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 Headings

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SUPPLEMENTARY CONDITIONS

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SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition), Section 00 72 00. All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01.A Delete paragraph 1.01.A.5 and insert the following in lieu thereof:

5. Bidder - Any individual, partnership, corporation, joint venture, or other combination thereof who submits a Bid to Owner for the Work contemplated, acting directly or through an authorized representative. As used in the Contract Documents, masculine pronouns refer to both masculine and feminine genders.

Delete paragraph 1.01.A.16 and insert the following in lieu thereof:

1. Contractor – Person or entity identified as such in the Agreement and the Contractor's authorized representative who is referred to throughout the Contract Documents as if singular in number.

Delete paragraph 1.01.A.20 and insert the following in lieu thereof:

20. Engineer – Person or entity identified as such in the Agreement and the Engineer's authorized representative who is referred to throughout the Contract Documents as if singular in number.

Delete paragraph 1.01.A.28 and insert the following in lieu thereof:

28. Owner – The individual, entity, public body or authority identified as such in the Agreement and the Owner's authorized representatives who are referred to throughout the Contract Documents as if singular in number.

Add the following statements to paragraph 1.01.A.40:

Substantial completion shall still require the Contractor to complete the punch list items unless waived by Owner.

Add the following subparagraphs immediately after subparagraph 1.01.A.48:

49. *Award* – The formal acceptance of the Bid by Owner.
50. *Bid Guarantee (Bid Bond)* – The security furnished with a Bid to guarantee that the Bidder will enter into the contract if Bidder's Bid is accepted by Owner.
51. *Design Engineer* – Garver, LLC.
52. *Equipment (Construction)* – All machinery and equipment, together with the necessary supplies for upkeep and maintenance, including tools and apparatus necessary for the proper construction and acceptable completion of the Work contemplated. (Installation) – All material or articles used in equipping a facility or apparatus required to fulfill a functional design.

53. *Execution* – Field or site performance, workmanship, installation, erection, application, field fabrication, quality control, and protection of installed products on the site.
54. *Materials* – All materials incorporated into the Project, including equipment and all other materials consumed or to be consumed in the performance of the Work contemplated.
55. *Product Data* – Type of Shop Drawing comprised of standard illustrations, schedules, performance charts, instructions, brochures, diagrams, catalog cuts, and other information assembled by or for the Contractor and submitted by the Contractor to illustrate materials or equipment for some portion of the Work.
56. *Products* – Materials, equipment, systems, shop fabrications, mixtures, and source controls.
57. *Utility* – Any public or private fixed works for the transportation of fluids, gases, electricity, signals, or communications.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.03.A *Before starting construction: Add the following to paragraph 2.03.A:*

4. A preliminary schedule of payments showing projected cash flow.

SC-2.04.A *Delete paragraph 2.04.A and insert the following in lieu thereof:*

- A. Before the Contract Times start to run, but after Notice to Proceed is given, a conference attended by Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.03.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

SC-2.05.A *Add the following subparagraph to paragraph 2.05.A.*

4. Contractor's schedule of payments will be acceptable if it provides a reasonable projection of payments in relationship to the progress schedule and schedule of values.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.01.A *Add the following sentence and subparagraphs to paragraph 3.01.A:*

The Contract Document higher in precedence shall control and supersede the Contract Documents lower in precedence in accordance with the following listing arranged from the highest to the lowest in precedence:

1. Addenda, if any; Supplemental Agreements; and Change Order(s); the one dated later having precedence over another dated earlier.
2. Agreement.
3. General Requirements (DIVISION 01).
4. Other Specifications (DIVISION 02 and other DIVISIONS following it).
5. Drawings.
6. Standard Details.
7. Supplementary Conditions.
8. General Conditions.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.02 *Add the following paragraph 4.02.B:*

- B. All Site visits and all work at the Site shall be governed by the Owner's safety program if applicable. The Contractor shall be required to obtain a copy of the Owner's safety program. The Contractor's efforts shall be consistent with and achieve the requirements of the Owner's safety program throughout the project. This does not alleviate the Contractor from the responsibility to develop and implement their own safety program.

SC-4.04.A *Add the following subparagraph to paragraph 4.04.A:*

- 1. If, in the opinion of Engineer, Contractor falls behind the accepted Construction Schedule due to actions or neglect of Contractor or Contractor's agents, servants, employees, officers, subcontractors, directors, or any party contracting to perform part or all of the Work or to supply any equipment or materials, Contractor shall take steps, including, but not limited to, increasing the number of personnel, shifts, and/or overtime operations, days of work, and/or amount of construction equipment until such time as the Work is back on schedule. Contractor shall also submit for review not later than the time of submittal of the next request for partial payment, such supplementary schedule or schedules as may be necessary to demonstrate the manner in which the acceptable rate of progress will be regained, all without additional cost to Owner.

SC-SC-4.05 *Add the following paragraph as paragraph 4.05.H:*

- H. The time allowed for the completion of the work will be as specified in the contract as Fixed Completion Date or Calendar Day. It is understood and agreed by and between the Owner and the Contractor that the time of completion herein set out is a reasonable time. The Contractor shall perform fully, entirely, and in an acceptable manner, the work contracted for within the contract time stated in the Contract.
 - 1. FIXED COMPLETION DATE: When the contract time is specified as a fixed date, it will be the date on which all work on the project shall be substantially complete without exception.
 - 2. CALENDAR DAY: Calendar day contract time includes delays for all holidays, weekends including Saturday and Sunday, and normal weather-related events, such as rain, snow, and freezing temperatures that may affect the progress of the construction on a per-month basis as hereinafter set out. Only weather-related delays in excess of these amounts will be considered for time extensions if requested by the Contractor. Time extensions due to weather delays will only be considered if the work was impeded by those conditions. Days Included in Contract Times for Normal Weather-Related Events and holidays are:

Month	Normal Weather-Related Events	Holidays
January	11	2
February	10	1
March	6	0
April	7	0
May	7	1
June	4	0
July	4	1
August	2	0
September	3	1
October	4	1
November	4	3
December	7	2

Saturdays and holidays which may be declared in writing by the Owner for certain special or unusual circumstances will be optional to the Contractor as working days and time will not be assessed unless work is performed that requires observation. Sunday work shall not be permitted.

Holidays that shall be observed are the following: New Year's Day (January 1); Dr. Martin Luther King Jr.'s Birthday (3rd Monday in January); President's Day (3rd Monday in February); Memorial Day (last Monday in May); Independence Day (July 4); Labor Day (1st Monday in September); Columbus Day (2nd Monday in October); Veterans Day (November 11); Thanksgiving Day (4th Thursday in November); Day after Thanksgiving (Friday following Thanksgiving); Christmas Eve (December 24); and Christmas Day (December 25). If a holiday falls on a Saturday or Sunday, the observed day shall be the Friday preceding the Saturday or the Monday following the Sunday.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.01 Add the following paragraph 5.01.D immediately following paragraph 5.01.C:

- D. Any Work performed in public rights-of-way, in addition to conforming to the Contract Documents, shall be done in accordance with the requirements of the permit issued by the public agency in whose right-of-way the Work is located.

SC-5.03.A.1 Delete paragraph SC-5.03.A.1 and insert the following in lieu thereof:

1. The following report(s) of exploration and tests of subsurface conditions at or contiguous to the site used by Design Engineer in preparing the Contract Documents. are available upon 48 hours' notice to Owner. Samples taken from bore holes are available for inspection at EST, Inc., 3522 Sam Rayburn Hwy, Melissa, TX 75454, phone no. 469-907-5500.

- a. Report dated October 30, 2018, prepared by EST, Inc. entitled "Geotechnical Engineering Services Report, Celina Water Transmission Line Improvements, Celina, Texas, EST Project No.: 6008617".

SC-5.03.B In paragraph 5.03.B, delete the words "Technical Data expressly identified in the Supplementary Conditions" and insert "Technical data is limited to data provided in the reports and drawings listed in paragraph SC-5.03.A" in lieu thereof. Add the following subparagraph to 5.03.B:

4. Contractor's interpretation of the character and condition of the materials between test hole locations.

SC-5.05.A Add the following subparagraphs to paragraph 5.05.A:

1. Generally, service connections are not indicated on the Drawings. Contractor shall be responsible for discovery of existing underground installations, in advance of excavating or trenching, by contacting all local utilities and by prospecting through hydro-excavation or potholing.
2. All information relative to Underground Facilities shall be recorded and incorporated into the record documents required by paragraph 7.11.
3. Contractor will be held responsible for any unauthorized interruption in the operation of Underground Facilities as a result of Contractor's operations. Unless the owner of the damaged facility elects to perform the repair and restoration work, Contractor shall repair and fully restore any damaged Underground Facility to a condition at least equal to that which existed just prior to the time of damage. All repair and restoration work shall be done to the satisfaction of the facility owner and Engineer.
4. Contractor shall arrange for any inspection of repaired or reconditioned Utility facilities required by authorities having jurisdiction. All inspection fees shall be paid by Contractor. If the facility owner elects to perform the repair and restoration work, Contractor shall render all assistance required. Contractor shall be responsible for all just and reasonable expenses incurred by the facility owners for such work.

SC-5.06.A Delete paragraph 5.06.A and insert the following in lieu thereof:

A. Reports and Drawings:

1. No reports of exploration and tests of hazardous environmental conditions at or contiguous to the site have been used by Design Engineer in preparing the Contract Documents.
2. No drawings of hazardous environmental conditions at or contiguous to the site have been used by Design Engineer in preparing the Contract Documents.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.02.B Delete the last sentence of paragraph 6.02.B and insert the following sentence in lieu thereof:

Contractor shall maintain at all times during the life of this contract policies of insurance from an insurance company that has a rating of or equivalent to A-VIII by A.M. Best & Company.

SC-6.02 Add the following paragraph immediately after paragraph 6.02.J:

- K. Deliver all certificates of insurance required by the Contract Documents to Owner with executed Agreement.

SC-6.03 Add the following paragraphs immediately after paragraph 6.03.J:

- K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

State:	<u>Statutory (or \$500,000 minimum)</u>
Federal, if applicable (e.g., Longshoreman's):	<u>Statutory (or \$500,000 minimum)</u>
Employer's Liability:	
Bodily injury, each accident	\$ <u>1,000,000</u>
Bodily injury by disease, each employee	\$ <u>1,000,000</u>
Bodily injury/disease aggregate	\$ <u>2,000,000</u>

If Contractor leases its employees, the alternate employer endorsement (WC 00 03 01 A) shall be attached showing Owner in the schedule as the alternate employer.

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate	\$ <u>5,000,000</u>
Products - Completed Operations Aggregate	\$ <u>5,000,000</u>
Personal and Advertising Injury	\$ <u>5,000,000</u>
Each Occurrence (Bodily Injury and Property Damage)	\$ <u>5,000,000</u>

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:	
Each person	\$ <u>1,000,000</u>
Each accident	\$ <u>2,000,000</u>
Property Damage:	
Each accident	\$ <u>1,000,000</u>
[or]	
Combined Single Limit of	\$ <u>5,000,000</u>

4. Excess or Umbrella Liability (if needed):

Per Occurrence	\$ <u>5,000,000</u>
General Aggregate	\$ <u>5,000,000</u>

5. Contractor's Pollution Liability:

Each Occurrence	\$	<u>N/A</u>
General Aggregate	\$	<u>N/A</u>

- ☒ If box is checked, Contractor is not required to provide Contractor's Pollution Liability insurance under this Contract

6. Contractor's Professional Liability:

Each Claim	\$	<u>N/A</u>
Annual Aggregate	\$	<u>N/A</u>

7. Railroad Protective Liability:

Per Occurrence	\$	<u>N/A</u>
General Aggregate	\$	<u>N/A</u>

SC-6.03.G Add the following subparagraph immediately after subparagraph 6.03.G:

9. Owner and Garver, LLC shall be included as an additional insured under the CGL, (using ISO Additional Insured Endorsement CG 20 10 11 85 or a substitute providing equivalent coverage), and under the commercial automobile liability (using ISO Additional Insured Endorsement CA 2048 or a substitute providing equivalent coverage), and commercial umbrella, if any. This insurance, including insurance provided under the commercial umbrella, if any, shall apply as primary and non-contributory insurance with respect to any other insurance or self-insurance programs afforded to, or maintained by, Owner.

SC-6.03.I Add the following subparagraphs to paragraph 6.03.I:

6. Contain a cross liability or severability of interest clause or endorsement. Insurance covering the specified additional insureds shall be primary insurance, and all other insurance carried by the additional insureds shall be excess insurance; and
7. With respect to workers' compensation and employer's liability, comprehensive automobile liability, commercial general liability, and umbrella liability insurance, Contractor shall require Contractor's insurance carriers to waive all rights of subrogation against Owner, Engineer, Engineer's Consultants, and their respective officers, directors, partners, employees, and agents.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

SC-7.02.B Add the following subparagraphs immediately after paragraph 7.02.B:

1. No Work shall be done between 6:00 p.m. and 7:00 a.m. without permission of Owner. However, emergency work may be done without prior permission.
2. Night Work may be undertaken as a regular procedure with the permission of Owner; such permission, however, may be revoked at any time by Owner if Contractor fails to maintain adequate equipment and supervision for the proper prosecution and control of the Work at night.

SC-7.03 *Add the following paragraphs immediately after paragraph 7.03.C:*

- D. Interfaces to Equipment, Instruments, and Other Components:
 - 1. The drawings, specifications, and overall design are based on preliminary information furnished by various equipment manufacturers which identify a minimum scope of supply from the manufacturers. This information pertains to, but is not limited to, instruments, control devices, electrical equipment, packaged mechanical systems, and control equipment provided with mechanical systems.
 - 2. Provide all material and labor needed to install the actual equipment furnished, and include all costs to add any additional conduit, wiring, terminals, or other electrical hardwired to the work, which may be necessary to make a complete, functional installation based on the actual equipment furnished:
 - a. Make all changes necessary to meet the manufacturer's wiring requirements.
 - 3. Submit all such changes and additions to the Engineer for acceptance in accordance with the General Conditions.
 - 4. Review the complete set of drawings and specifications in order to ensure that all items related to the electrical power and control systems are completely accounted for. Include any such items that appear on drawings or in specifications from another discipline in the scope of Work.
- E. Until Substantial Completion of the Work is acknowledged by Owner, Contractor shall have the responsible charge and care of the Work and of materials to be used herein, including materials for which Contractor has received partial payment or materials which have been furnished by Owner, and shall bear the risk of injury, loss, or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the nonexecution of the Work.
- F. Contractor shall rebuild, repair, restore, and make good all injuries, losses, or damages to any portion of the Work or the materials occasioned by any cause before the Work's completion and acceptance and shall bear the expense thereof. Where necessary to protect the Work or materials from damage, Contractor shall, at Contractor's own expense, provide suitable drainage and erect such temporary structures or rent such structures as are necessary to protect the Work or materials from damage. The suspension of the Work or the granting of an extension of time from any cause whatever shall not relieve Contractor or Contractor's responsibility for the Work and materials as specified herein.
- G. When the quality of a material, process, or article is not specifically set forth in the Contract Documents, the best available quality of the material, process, or article shall be provided.
- H. Delivery and Inspection:
 - 1. Deliver products in undamaged condition, in manufacturer's original container or packaging with identifying labels intact and legible. Include date of manufacture on label.

SC-7.04.A *Delete paragraph 7.04.A and insert the following in lieu thereof:*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. If the specification or description contains the words, "or equal" or "or equal allowed", or "or equal item is permitted", Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below. Unless these words are specifically written in the description of such item, no substitution is allowed per this Contract. If the item's description is followed by words reading that "no like", "no equivalent", or "no or equal" item is permitted, then no substitution of like items or like manufacturers is allowed as part of this Contract.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

SC-7.05.A Delete paragraph 7.05.A and insert the following in lieu thereof:

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that, "or equal" or "or equal allowed", or "or equal item is permitted", then no substitution of like items is permitted. If the item's description includes the words "no substitution is permitted", "no like", "no equivalent", or "no or equal" item is permitted, then no substitution of like items or like manufacturers is allowed as part of this Contract. If the words, "or equal is permitted", "or equal", or "like items are permitted", Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and
 - 3) be suited to the same use as that specified.
 - b. will state:

- 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
- c. will identify:
- 1) all variations of the proposed substitute item from that specified, and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
- d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

SC-7.06.D Delete paragraph 7.06.D and insert the following in lieu thereof, and add subparagraph 7.06.D.1:

- B. Contractor shall submit to the Owner a list of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner as stipulated in the Bidding Documents. Owner's acceptance (either in writing or by failing to make written objection thereto within two weeks of submittal of the list) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation.
1. Subcontracting: Contractor shall perform with Contractor's own organization work amounting to not less than 51 percent of the combined value of all items of the Work covered by the Contract.

SC-7.06.F Delete paragraph 7.06.F and insert the following in lieu thereof:

- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall not be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement.

SC-7.08.A Delete paragraph 7.08.A. and insert the following in lieu thereof:

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work, with the exception of the following, which will be the Contractor's responsibility:
1. All permits shall be the Contractor's responsibility.

SC-7.08 Add the following paragraph immediately after paragraph 7.08.A:

- B. Owner will provide the following permits:
1. No permits have been agreed to being provided by Owner.

SC-7.09.A Delete the word "use."

SC-7.09 Add the following paragraph immediately after paragraph 7.09.A:

- B. Owner is exempt from payment of sales taxes of the State of Texas and of cities and counties thereof on all materials to be incorporated into the Work. The CONTRACTOR'S attention is directed to Texas House Bill 11 (72nd legislature, 1st C.S.) which amended the Texas Tax Code Section 151.311. This amendment provides that by the CONTRACTOR entering into a separate contract, the CONTRACTOR will become a seller of materials purchased for the project, which will obviate paying taxes on materials incorporated into the project.

As a seller, the CONTRACTOR purchases materials and issues a resale certificate in lieu of paying the sales tax at the time of purchase. The OWNER, as an exempt entity, will provide the CONTRACTOR with an exemption certificate at the time of the "sale" of the materials to the OWNER, thereby precluding the OWNER and the CONTRACTOR, from paying the sales tax on the materials. A copy of a sample of the OWNER'S Texas Sales Tax Exemption Certificate can be provided to the CONTRACTOR.

Services are not tax exempt. The CONTRACTOR will be required to pay all appropriate taxes for all services as set forth herein.

For purposes of these Contract Documents, the following definitions are provided for Materials and Services:

Materials: Materials are those items which are tax exempt and are physically incorporated into the facility constructed for the OWNER. Materials include, but are not limited to, purchased items such as embedment, concrete, grout, asphalt, roadbase and subbase, etc.

Services: Services are those items that are not tax exempt and are items used by the CONTRACTOR but which are not physically incorporated into the OWNER'S facility and/or are items which are consumed by construction. Services include, but are not limited to, items such as supplies, tools, concrete forms, sheeting and shoring, temporary storage buildings, the purchase or rental or lease of equipment, skill and labor, etc.

For further information concerning taxes as they relate to materials and services, the CONTRACTOR shall refer to House Bill 11 and/or contact the Texas Comptroller of Public Accounts, Austin, Texas.

SC-7.10 Delete paragraph 7.10.A and insert the following paragraph 7.10.A in lieu thereof, and add the following paragraphs:

- A. Contractor shall give all notices required by and comply with all Laws and Regulations applicable to furnishing and performance of the Work and shall cause all Contractor's agents, employees, Subcontractors, and Suppliers to observe and comply with all such laws, ordinances, and regulations.
- D. Employment Requirements: Contractor shall comply with employment requirements stipulated in the attached exhibits.

SC-7.11 Add the following paragraph 7.11.B immediately following paragraph 7.11.A:

- B. Prior to submitting each request for progress payment, request Engineer's review and approval of current status of record documents. Failure to properly maintain, update, and submit record documents may result in a deferral by Engineer to recommend whole or any part of Contractor's Application for Payment, either partial or final.

SC-7.12 Add the following paragraphs immediately after paragraph 7.12.G.

- H. Contractor shall prepare, implement, and maintain a safety and health program or plan in accordance with Section 01 32 90 of the General Requirements.

- I. Contractor shall make reasonable efforts to detect and abate any violations of safety standards of which Contractor is aware and to which Contractor's employees are exposed, despite the fact that Contractor did not commit the violation.
- J. Trench and Excavation Safety System:
 - 1. This section covers trench and excavation safety system required for constructing improvements that necessitate open excavations on the project. All work under this item shall be in accordance with the current edition of the "Occupational Safety and Health Administration Standard for Excavation and Trenches Safety System, 29 CFR 1926, Subpart P.
 - 2. The Contractor, prior to beginning any excavation, shall notify the State Department of Labor (Safety Division) that work is commencing on a project with excavations greater than five feet.
 - 3. The Contractor shall notify all Utility Companies and Owners in accordance with OSHA Administration 29 CFR 1926.651(b) (2) for the purpose of locating utilities and underground installations.
 - 4. Where the trench or excavation endangers the stability of a building, wall, street, highway, utilities, or other installation, the Contractor shall provide support systems such as shoring, bracing, or underpinning to ensure the stability of such structure or utility.
 - 5. The Contractor may elect to remove and replace or relocate such structures or utilities with the written approval of the Owner of the structure or utility and the Project Owner.
 - 6. The work required by this item will be paid for at the price bid for "Trench and Excavation Safety Systems". After award of the Contract, the Contractor shall submit to the Engineer a breakdown of cost for work involved in the price bid for "Trench and Excavation Safety Systems" and shall, with each periodic payment request, submit a certification by the Contractor's "competent person" as defined in Subpart "P" 1926.650(b) that the Contractor has complied with the provisions of "Occupational Safety and Health Administration Standard for Excavation and Trenches Safety System" 29 CFR 1926 Subpart P for work for which payment is requested.

SC-7.16.A Add the following subparagraphs immediately after paragraph 7.16.A.3:

- 4. The Contractor shall prepare and submit information in accordance with Specification section 01 33 00, Submittal Procedures, as required by the individual Specification sections sufficiently in advance of the related work to allow an appropriate review time by the Engineer. The types of submittals are indicated in the individual Specification sections.

ARTICLE 8 – OTHER WORK AT THE SITE

SC-8.02 Delete paragraphs 8.02.A and 8.02.B and insert the following paragraphs in lieu thereof:

- A. Owner intends to contract with others for the performance of other work on the Project at the Site. Contractor shall coordinate the Contract and separate contracts with the following duties, responsibilities, and limitations of authority:
 - 1. Coordinating Contractor shall coordinate the scheduling of work between this Contract and other concurrent contracts so that interference with operations and conflicts with interfacing work will be minimized. Particular attention shall be paid to maintaining suitable traffic patterns and adequate access to the existing facilities. Whenever construction activities conflict with operations, Owner shall decide which activity shall be given priority.
 - 2. Coordinating Contractor shall be responsible for coordinating work by Coordinating Contractor's own forces, by other contractors, by all subcontractors, and work by Owner's staff. Coordinating Contractor shall exert full control over the actions of all

employees and other persons with respect to the use and preservation of property and existing facilities, except such control as may be specifically reserved to Owner or others. Coordinating Contractor has the right to exclude from the site all persons who have no purpose related to the Work or the Work's inspection, and may require all persons on the site (except Owner's employees) to observe the same regulations as Coordinating Contractor requires of Coordinating Contractor's own employees.

SC-8.03.A *Delete the first sentence in paragraph A. and replace with the following:*

If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction then Contractor *may* be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

SC-9.02.A *Delete the following text in the first sentence of paragraph 9.02.A: "provided Contractor makes no reasonable objection to the replacement Engineer."*

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 *Add the following new paragraph immediately after paragraph 10.03.A:*

- B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.

SC-10.08 *Add the following paragraphs immediately after paragraph 10.08.E:*

- F. Observers and Resident Project Representatives shall have no authority to permit any deviation from the plans and specifications except on written order from the Engineer.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

SC-11.05 *Add the following paragraphs 11.05.C and 11.05.D:*

- C. Use of Float:
 - 1. A claim for an adjustment of Contract Times (or Milestones), otherwise allowable under the Contract Documents, shall be granted only when the time lost or gained exceeds the float for the activity at the time of the event giving rise to the claim. Float, the amount of time between the early start date and the late start date, or the early finish date and the late finish date, is jointly owned by both Owner and Contractor whether expressly disclosed or implied in any manner.
 - 2. Contractor shall not use float suppression techniques (including, but not limited to, preferential sequencing caused by late starts of follow-up trades, unreasonably small crews, extended durations, or imposed dates) in information provided to Engineer.
- D. The Contract Time includes weather day allowances as calculated by SC-4.05. Extension of Contract Time will be allowed for each month's days that are in excess of each month's anticipated weather days as identified in SC-4.05.

ARTICLE 12 – CLAIMS

No modifications.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-13.01.B.5.c Insert the following after paragraph 13.01.B.5.c:

- 1) Rental rates will be determined as follows:
 - a) The base rates shall be those established in the cost guide, entitled “Rental Rate Blue Book,” and revisions thereto.
 - b) Attachments (e.g. tractor with ripper and dozer or tractor with loader and backhoe) will be included in the hourly rental rate only when deemed essential to the Work as determined by Engineer.
 - c) The total established rental rate per hour shall be rounded to the nearest \$0.10.
 - d) Rental rates shall not be adjusted for regional differences.
 - e) No compensation shall be allowed for shop tools having a daily rental rate less than \$10.00 as set forth in the cost guide.
- 2) If deemed necessary by Engineer to use equipment not listed in the aforementioned publications, a suitable rental rate for such equipment will be mutually established by Contractor and Engineer. Contractor may furnish any cost data that might establish a suitable rental rate for such equipment. Rental payment will be made for the actual time that such equipment is in operation on the Work and for 20 percent of the actual standby time on the Work.

SC-13.02.A Delete “allowances so named in the Contract Documents” in the first sentence of 13.02.A and insert “allowances so named in Section 01 29 00 of the General Requirements” in lieu thereof.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

SC-14.02.B Insert “Contractor” in lieu of “Owner” in paragraph 14.02.B to designate the payor of independent testing laboratory services. Insert “including but not limited to the following” in lieu of “except that”.

SC-14.03 Add the following paragraph immediately following paragraph 14.03.F:

G. System Startup:

1. Replace or modify equipment, software, and materials that do not achieve design requirements after installation in order to attain compliance with the design requirements:
 - a. Following replacement or modification, retest the system and perform additional testing to place the complete system in satisfactory operation and obtain compliance acceptance from the Engineer.

SC-14.05.C In the first sentence of subparagraph 14.05.C.2, delete the word “shall” and replace with the word “may”.

ARTICLE 15 – PAYMENTS TO CONTRACTOR AND COMPLETION

SC-15.01.B Delete “At least twenty days before the date established for each progress payment (but not more than once a month)” in the first sentence of paragraph 15.01.B and insert “On the last

day of each calendar month" in lieu thereof and add the following subparagraphs at the end of 15.01.B:

4. Stored Materials and Equipment: Payments for stored materials and equipment shall be based only upon the actual cost of the materials and equipment to Contractor and shall not include any overhead or profit to Contractor. Partial payments will not be made for undelivered materials or equipment, except for payments associated with procurement contracts initiated by Owner and assigned to Contractor.
5. Schedules and Data: During the progress of the Work, each Application for Payment shall be accompanied by Contractor's updated schedule of operations, or progress report, with such shop drawings schedules, procurement schedules, value of material on hand included in application, and other data specified in Section 01 33 00 of the specifications or reasonably required by Engineer.
6. Payment for material delivered to the work site or stored under Owner's control will be based on the vendors' paid invoices or the bill of lading showing date of delivery and the work site where the delivery took place, a copy of which shall be furnished by Contractor to Engineer with each request for progress payment. Only those materials which have been incorporated into the Project or are stored under Owner's control may be included in the progress payment as material stored.
7. In addition to the amounts which Owner may retain as provided elsewhere in the Contract Documents, Owner may withhold a sufficient amount or amounts from any payment otherwise due Contractor as in Owner's judgment may be necessary to cover:
 - a. Payments which may be due and payable for properly filed claims against Contractor or any Subcontractor for labor or materials furnished in or about the performance of the Contract.
 - b. Estimated or actual costs for correcting defective work not remedied.
 - c. Amounts claimed by Owner as forfeiture due to delays or other offsets. Owner may apply such withheld amount or amounts to the payment of such claim at Owner's discretion. In doing so, Owner shall be deemed the agent of Contractor and any payments so made by Owner shall be considered as a payment made under the Contract by Owner to Contractor, and Owner shall not be liable to Contractor for such payment made in good faith. Such payments may be made without prior judicial determination of the claim or claims. Owner shall render to Contractor a proper account of any such funds disbursed in or on behalf of Contractor.
8. Contractor shall disburse money paid to him, including any interest Contractor receives, to Subcontractors and Suppliers within 15 days after Contractor receives the money, in direct proportion to the Subcontractors' and Suppliers' basis in the total Contract between Contractor and Owner. Any money which is payable to a Subcontractor pursuant to this section accrues interest at the legal rate. Contractor may withhold 10 percent from the amount of any partial payment under a subcontract which is made before 50 percent of the Work has been completed under the subcontract. Thereafter Contractor shall pay any additional funds if, in the opinion of Contractor, satisfactory progress is being made in the work under the subcontract, and the payment must be equal to that paid by Owner to Contractor for the Work performed by the Subcontractor.
 - a. The Contractor may retain the amount withheld under the subcontract until the subcontract is satisfactorily completed.
 - b. The amount withheld under the subcontract is due within 15 days after the acceptance of the subcontract work by Contractor.
 - c. Whenever Contractor receives a payment of interest earned on the amount withheld from the Contract, Contractor shall within 15 days pay to each Subcontractor that portion of the interest received from the state which is attributable to the amount of money withheld from the Subcontractor.

SC-15.01.D Delete paragraph 15.01.D.1 and insert the following paragraph in lieu thereof:

1. Sixty (60) days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended less amounts due to Owner and other amounts which are authorized to be reserved or retained by state law will (subject to the provisions of paragraph 15.01) become due and when due will be paid by Owner to Contractor.

SC-15.03.A Add the following subparagraphs immediately after paragraph 15.03.A:

1. A phase of the Work shall be Substantially Complete when the Work associated with that phase can treat wastewater to the quality and in the quantity in accordance with the Contract Documents. All process equipment, associated facilities, and controls associated with a phase of the work shall be installed and operational or temporary arrangements satisfactory to Owner shall have been made. Not all performance testing need be completed prior to the date of Substantial Completion.
2. For the work to be considered substantially complete, all portions of the work must be operational and ready for Owner's continuous use.

SC-15.06.D In the first sentence of paragraph 15.06.D, delete the word "Thirty" and replace with "Sixty".

SC-15.06.E Final Payments: Add the following subparagraphs immediately after paragraph 15.06.D:

- E. *Final Payments:* At the project's completion, the Contractor shall execute a Release and Lien Waiver to release all claims against the Owner arising under and by virtue of his Contract. The date of the Release shall be that agreed to for the final acceptance of the project with the Owner. The Release form and Contractor's Affidavit form are included at the end of these Supplementary Conditions.

SC-15.08.A Delete "Substantial Completion" and insert "final acceptance" in lieu thereof.

SC-15.08.B Delete "Substantial Completion" and insert "final acceptance" in lieu thereof.

SC-15.08 Add the following paragraphs immediately after paragraph 15.08.E:

- F. Contractor's obligation under this paragraph includes also providing a correction period from the substantial completion of any early completion items until the project's final completion and the beginning and completion of the 2-year completion's period as defined in paragraph 15.08.A.
- G. Remedying Defects: If, at any time before expiration of the correction period under 15.08.A, Owner determines that the goods are defective, Contractor shall either correct the defects or remove the goods and replace them with non-defective goods.
- H. Owner May Remedy: If Contractor fails to take action as required by Owner in accordance with paragraph 15.08.B, Owner may, after ten days' written notice to Contractor, remedy any such deficiency, instead of requiring removal or replacement. In an emergency where delay would cause serious risk of loss or damage, Owner may take such action without notice to or waiting for action by Contractor.
- I. Correction Period: Contractor's responsibility for remedying defects will extend for a period of two (2) years after date of final acceptance, or for such longer period of time as may be prescribed by law or by provisions of manufacturer's warranty or guarantee in conformance with the Contract Documents.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

SC-16.01 Delete paragraph 16.01.A and insert the following in lieu thereof:

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer.

Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. At the discretion of the Owner, the Contractor may be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

SC-16.02 Delete paragraphs 16.02.A through 16.02.D and insert the following in lieu thereof:

- A. If Contractor refuses or fails to prosecute the Work or any separable part thereof with such diligence as will ensure the completion of the Work within the Contract Times, or any extension thereof, or fails or refuses to complete such Work within such extension, or if Contractor should be adjudged bankrupt, or if Contractor should make assignment for the benefit of Contractor's creditors, or if Contractor files a petition to take advantage of any debtor's act, or if a receiver should be appointed on account of Contractor's insolvency, or if Contractor or any Subcontractor should violate any provision of the Contract, or if Contractor should persistently refuse or should fail to supply enough properly skilled workmen or proper materials to complete the Work in the time specified, or if Contractor should fail to make prompt payment to Subcontractors or for materials or labor, or if Contractor should disregard laws, ordinances, or instructions given by Owner, Engineer, or Owner's Operating Agent or disregard in any substantial way any provisions of the Contract Documents; Owner may without prejudice to any other right or remedy, serve written notice upon Contractor and Contractor's surety of Owner's intention to terminate the Contract. Such notice will contain the reasons for Owner's intention to terminate the Contract and unless such violations shall cease and satisfactory arrangements for the corrections thereof have been accepted by Owner in writing within 10 days after the service of such notice, the Contract shall upon the expiration of said 10 days cease and terminate. In the event of such termination, the Owner shall immediately serve written notice upon the Surety and Contractor, and Contractor shall be liable for all costs necessary to complete the Work.
- B. The Surety shall, after receipt of notification from Owner of termination of the Contract, take over and perform the Work, utilizing a contractor which qualified under the prequalification criteria and which is acceptable to Engineer. The Surety shall, within 10 days after receipt of the notice of termination, provide Owner with written notice of Surety's intent to take over and complete the Work in accordance with the Contract Documents, and shall commence the Work within 10 days thereafter.
- C. If the Surety does not reply to the notice of termination, or fails to perform the Work in compliance with the Contract Documents, or provides the Owner with written notice that Surety does not intend to take over and perform the Work to completion, Owner may without prejudice on the part of the Surety, take over the Work and prosecute the same to completion by any method Owner may deem advisable for the account at the expense of Contractor, and the Surety shall be liable to Owner for any excess cost or other damage occasioned Owner thereby. In such event Owner may, without liability for so doing, take possession of and utilize in completing the Work such materials, appliances, plant, and other property belonging to Contractor that may be on the work sites and be necessary therefor. Contractor shall turn over to Owner's Operating Agent all materials and equipment in Contractor's possession that is to be incorporated into the Project, and shall make arrangements with Owner to turn over any materials or equipment in which Owner has made payment or partial payment but is not in Owner's possession.
- D. Upon completion of the Work, if the unpaid balance of the Contract Price exceeds the direct and indirect cost of completing the Work, including, but not limited to, all costs incurred by Owner from professional services and attorneys' fees and all costs generated to insure or bond the Work of substituted contractors or subcontractors used to complete the Work, such excess shall be paid to Contractor. If such costs exceed the unpaid balance, Contractor shall pay the difference to Owner within 30 days upon demand; on failure of Contractor to pay, the Surety shall promptly pay the difference to Owner upon written notice of Contractor's failure of payment. Such difference or any portion thereof not paid by the Contractor or the Surety within the 30 days following the date of mailing of the demand for payment, shall earn interest

at the rate of 10 percent per annum or the maximum rate authorized by state law, whichever is lower.

SC-16.04 Delete paragraph 16.04 in its entirety.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

SC-17.02 Arbitration

- A. All matters subject to final resolution under this Article will be decided by arbitration in accordance with the rules of Construction Arbitration Rules & Mediation Procedures of the American Arbitration Association in effect as of the effective date of the Agreement, subject to the conditions and limitations of this paragraph. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.
- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations. The demand for arbitration should include specific reference to Paragraph SC-17.02.D below.
- C. No arbitration arising out of or relating to the Contract shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
 - 1. The inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and
 - 2. Such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.
- D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include a concise breakdown of the award, and a written explanation of the award specifically citing the Contract provisions deemed applicable and relied on in making the award.
- E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
- F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

SC-17.03 Add the following new paragraph immediately after Paragraph 17.02.

SC-17.03 Attorneys' Fees: For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys' fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties' initial demand or defense positions in comparison with the final result.

ARTICLE 18 – MISCELLANEOUS

No modifications.

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RELEASE

FROM: Contractor's Name _____

Address _____

TO: Owner's Name _____

Address _____

DATE OF CONTRACT:

Upon receipt of the final payment and in consideration of that amount, the undersigned does hereby release the Owner and its agents from any and all claims arising under or by virtue of this Contract or modification thereof occurring from the undersigned's performance in connection with the _____ project.

Contractor's Signature_____
Title

Subscribed and sworn to before me this _____ day of _____, 20____.

Notary Public

My Commission Expires:

CONTRACTOR'S AFFIDAVIT

FROM: Contractor's Name _____

Address _____

TO: Owner's Name _____

Address _____

DATE OF CONTRACT: _____

I hereby certify that all claims for material, labor, and supplies entered into contingent and incident to the construction or used in the course of the performance of the work on the _____ project have been fully satisfied.

Contractor's Signature_____
Title

Subscribed and sworn to before me this _____ day of _____, 20____.

Notary Public

My Commission Expires:

The Surety Company consents to the release of the retained percentage on this project with the understanding that should any unforeseen contingencies arise having a right of action on the bond that the Surety Company will not waive liability through the consent to the release of the retained percentage.

Dated _____
Surety CompanyBy _____
Resident Agent, State of TX

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

CITY OF CELINA SPECIAL PROVISIONS

APPENDIX A – DRUG-FREE JOBSITE ON CITY CONSTRUCTION PROJECTS

APPENDIX B – CONTRACTOR’S AFFIDAVIT OF FINAL PAYMENT

APPENDIX C – APPROVED MATERIALS LIST

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

APPENDIX “A”
DRUG-FREE JOBSITE ON CITY CONSTRUCTION PROJECTS

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

**DRUG-FREE JOBSITE
ON CITY CONSTRUCTION PROJECTS**

- I. In the interest of job safety and to protect the general public, other CONTRACTORS and the OWNER'S employees from the consequences of accidents that are caused by worker abuse of controlled substances on City construction projects, the bidder certifies by submission of its bid that it will make a good faith effort to maintain a drug-free jobsite, and also certifies that to further this objective it will:
- (a) Establish a controlled substance abuse program that will test for controlled substance use by:
 - (1) Employees utilized by the bidder on this project, as listed in the Prevailing Wage Rate for Municipal Construction, if performance by a person impaired by the effects of a controlled substance, would or could: (i) pose a serious risk of death or personal injury to the employee, fellow employees or other persons in the vicinity; or (ii) compromise the quality of construction in such manner as would impose a significant public safety risk in the use or operation of the City improvement in question;
 - (2) Employees when there is a reasonable suspicion that an employee is using a controlled substance on the jobsite, or off the jobsite in a manner that affects jobsite performance;
 - (3) Employees as part of a voluntary drug testing program; or
 - (4) Employees as part of or as a follow-up to counseling for or rehabilitation from abuse of a controlled substance;
 - (b) Establish a program that will test an employee utilized by the bidder on this project on any position listed in the Prevailing Wage Rate when there is a reasonable suspicion that the employee is impaired by the effects of alcohol on the jobsite;
 - (c) Publish a statement notifying employees that the unlawful manufacture, distribution, selling, dispensing, possession or use of a controlled substance is prohibited on the jobsite and specifying the actions that will be taken against employees for violations of such prohibitions;
 - (d) Establish a drug-free awareness program to inform employees about the dangers of drug abuse on the jobsite, about the bidder's policy regarding a drug-free jobsite, about available counseling and rehabilitation programs, and about the penalties that may be imposed upon employees for drug abuse violations occurring on the jobsite; and
 - (e) Provide a copy of the statement required by subsection (c) to all employees of the bidder who will be involved in performance of the Contract.
- II. Employees who test positive for controlled substance use in one of the tests conducted pursuant to paragraph I.(a), or who are impaired by the effects of alcohol on the jobsite pursuant to paragraph I.(b), shall be considered unfit for purposes of Item 108.4 (Employees) of the N.C.T.C.O.G.

Standard Specifications for Public Works Construction, Latest Edition, as amended.

- III. For purposes of Section I. above, the term "controlled substance" means a drug, substance or immediate precursor listed in Schedules I through V of Subchapter A of the Texas Controlled Substances Act, Tex. Rev. Civ. Stat. Ann. Articles 481.032 - 481.036. These substances include, but are not limited to, marijuana, heroin, LSD, concentrated cannabis or cannabinoids, hashish or hash oil, morphine or its derivatives, mescaline, peyote, phencyclidene (PCP, Angel Dust), opium, opiates, methodone, cocaine, qualudes, amphetamines, "exotic/designer" drugs, benzodiazepines, seconal, codeine, barbiturates, phenobarbital, or valium.
- IV. The bidder shall be solely responsible for the maintenance and administration of the program required in Section I. above. Nothing in these provisions shall be construed on the OWNER'S part as authorizing, permitting or requiring the bidder to engage in conduct that is in violation of the United States or Texas constitutions, that is otherwise illegal or that otherwise constitutes an unreasonable or unlawful invasion of privacy under Texas or federal law.

APPENDIX "A" ATTACHMENT A

Drug-Free Workplace Program Certification

- A. By submission of its offer, the offeror certifies and agrees that, with respect to the offeror and all employees of the offeror to be utilized in the performance of any contract resulting from this solicitation, it will establish a drug-free workplace program that complies with the provisions of the clause of the General Provisions entitled "Drug-Free Workplace Program."
- B. Failure of the offeror to have the drug-free workplace program complying with this certification and the clause of the General Provisions entitled "Drug-Free Workplace Program available for City's review and approval as part of City's pre-award responsibility survey will be deemed a lack of responsibility rendering the offeror unqualified and ineligible for award.

APPENDIX "A" ATTACHMENT B
DRUG-FREE WORKPLACE PROGRAM

A. As used in this clause:

- (1) "Alcohol" means ethyl alcohol and any beverage containing ethyl alcohol.
- (2) "Controlled substance(s)" means a substance, including a drug and an immediate precursor listed in Schedules I through V of Subchapter A of the Texas Controlled Substances Act, Tex. Rev. Civ. Stat. Ann. Articles 481.032 - 481.036. These substances include, but are not limited to, marijuana, heroin, LSD, concentrated cannabis or cannabinoids, hashish or hash oil, morphine or its derivatives, mescaline, peyote, phencyclidine (PCP, Angel Dust), opium, opiates, methadone, cocaine, quaaludes, amphetamines, "exotic/designer" drugs, benzodiazepines, seconal, codeine, barbiturates, phenobarbital, or valium.
- (3) "Drug-free workplace" means a site for the performance of work done in connection with a City construction contract at which employees are prohibited from using alcohol or from engaging in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance.
- (4) "Employee" means an employee of a CONTRACTOR or SUBCONTRACTOR who may be directly engaged in the performance of work under a City construction contract.
- (5) "Reasonable suspicion" means the presence or absence of specific criteria identified in the CONTRACTOR'S drug free workplace program (indicating the possibility that a person is under the influence of alcohol or a controlled substance) as observed by the CONTRACTOR'S supervisory personnel with reasonable training in the identification of such criteria.

B. The program may, at the CONTRACTOR'S discretion, include mandatory employee drug testing under the following circumstances:

- (1) As part of or as a follow-up to counseling or rehabilitation for controlled substance use; or
- (2) As part of a voluntary employee drug testing program.

C. A random testing procedure to detect the use of alcohol or a controlled substance by employees performing tasks on the project maybe required as part of the CONTRACTOR'S program for the purpose of preventing or deterring hazardous performance.

D. All testing by or on behalf of the CONTRACTOR because of a requirement in a City contract shall be conducted only for employees engaged (or to be engaged) in tasks on the project and only for use of alcohol or a controlled substance and shall be conducted in a manner and under written policies that minimize the intrusion on the employee's privacy and personal dignity. This provision shall not preclude the CONTRACTOR from adding its own additional testing requirements.

- E. The CONTRACTOR shall publish a statement notifying employees that the use of alcohol at the workplace or the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance by employees at any time is prohibited and specifying the actions that will be taken against employees for violations of such prohibition.
- F. The program must require each employee who will perform a task on the project, prior to working under a City contract to (i) acknowledge in writing the CONTRACTOR'S drug-free workplace program and (ii) give advance written consent to any drug testing that may be conducted under the CONTRACTOR'S program and the use of test results for decisions related to employment, disciplinary action, or continued employment. The CONTRACTOR will agree, in connection with the employee's consent, that the results of testing for alcohol and controlled substances will not be voluntarily referred to any law enforcement agency. If the CONTRACTOR is subject to a collective bargaining agreement (i) the procedure for obtaining the individual employees' acknowledgment and consent must be consistent with the CONTRACTOR'S obligations under the collective bargaining agreement, and (ii) employees shall have the right to be accompanied by a union representative when any specimen is obtained for testing.
- G. The CONTRACTOR will establish a drug-free awareness program to inform its employees about:
- (1) The dangers of drug abuse in the workplace;
 - (2) The CONTRACTOR'S policy of maintaining a drug-free workplace;
 - (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
 - (4) The penalties that may be imposed upon employees who refuse to submit to required testing and for other violations of the drug-free workplace program including, but not limited to, being unable to remain employed at the workplace until approval to return is obtained from City.
- H. The CONTRACTOR'S drug-free workplace program shall, at a minimum, include:
- (1) Policies and procedures for specimen collection, chain of custody for specimens, laboratory qualification standards laboratory analysis procedures, quality control requirements, and test result reporting procedures which substantially conform to the material requirements of the Mandatory Guidelines for Federal Workplace Drug testing Programs promulgated by the U.S. Department of Health and Human Services in effect on the date of award of the City construction contract.

Procedures for the CONTRACTOR'S employees to report their use of prescription drugs used in the course of medical treatment or which have been prescribed and authorized for use by a licensed medical practitioner.
 - (3) The criteria the CONTRACTOR will use for "reasonable suspicion" testing.
 - (4) The levels of alcohol or controlled substances which will be used in conjunction with a determination that an employee is "under the influence" or is impaired by the effects of "alcohol or controlled substance(s)".
- I. The CONTRACTOR shall display a notice, prominently placed near each entrance to the

workplace, stating that, by entering the premises, persons are consenting to an inspection of themselves and their property including, but not limited to, their clothing, vehicles, briefcases, lunch boxes, tool boxes, purses, and packages.

- J. The CONTRACTOR agrees to use its best efforts to establish and maintain a work environment free of use by employees of alcohol or controlled substances through implementation of subparagraphs "B" through "I" of this clause. The CONTRACTOR shall prepare and maintain records in sufficient detail to demonstrate compliance with the requirements of this clause including, but not limited to, certifications from SUBCONTRACTORS and records of drug or alcohol tests conducted during performance of the contract. Such records shall be subject to inspection and audit by City.
- K. A Drug-Free Workplace Program Clause identical to this clause (except for changes appropriate for designation of the parties), including this subparagraph "I", will be included in every subcontract entered into in connection with this contract.

APPENDIX “B”
CONTRACTOR’S AFFIDAVIT OF FINAL PAYMENT AND RELEASE

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

CONTRACTOR'S AFFIDAVIT OF FINAL PAYMENT AND RELEASE FOR: CELINA WATER**TRANSMISSION IMPROVEMENTS****W.O. NO. _____****THE STATE OF TEXAS §****COUNTY OF COLLIN §**

BEFORE ME, the undersigned authority, on this day personally appeared ("Affiant"), who, after being by duly sworn, deposes and says that he is _____ of a
 - (corporation, partnership, trade name)

_____ of Collin County, State of Texas (the "CONTRACTOR"), which said CONTRACTOR was awarded the contract dated the day of , for the construction of , -

W.O.# _____ (The "Work") for a total consideration of \$ _____

_____ () to be paid to the said CONTRACTOR (the "Contract"), and that Affiant has full power of authority to make this affidavit.

That THE CITY OF CELINA, TEXAS (the "OWNER") has approved the final estimate on said Work, and that the said CONTRACTOR has fully satisfied and paid any and all claims that may be covered by Chapter 53 of the State of Texas, or any other applicable statutes or charter provisions, and that all just bills for labor and materials have been paid and discharged by said CONTRACTOR insofar as they pertain to the Work in question.

That in addition to any funds which may have been previously paid by the OWNER, the CONTRACTOR hereby accepts the amount of \$ () as FULL AND FINAL PAYMENT under the aforementioned Contract, and hereby waives and releases any right Affiant and/or the CONTRACTOR may have to pursue claims of any nature against the OWNER arising out of or in any manner connected with the performance of the work and/or the Contract, including but not limited to claims of third parties that supplied material and/or labor for the Work for or through the CONTRACTOR ("SUBCONTRACTORS"), as well as claims for delay, additional compensation or for recovery of liquidated damages which may have been withheld by the OWNER. The CONTRACTOR shall defend, hold harmless and indemnify the OWNER from any such claims of such SUBCONTRACTORS. The CONTRACTOR further releases the OWNER from any claim or liability arising from any act or neglect of the OWNER related to or connected with the Contract. This affidavit is given pursuant to the final payment provisions of the Contract, and shall not be deemed to alter or modify the terms and provisions of said Contract.

CONTRACTOR'S AFFIDAVIT OF FINAL PAYMENT AND RELEASE FOR: CELINA WATER**TRANSMISSION IMPROVEMENTS****C.I.P. #**_____By: _____
(Affiant)_____
(Printed Name)**SUBSCRIBED AND SWORN TO BEFORE ME,** this the _____ day of _____, A.D., 20____._____
(Notary Public, in and for the
State of Texas)By: _____
(Printed Name of Notary)

My Commission Expires _____

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

Attachment "1"**City of Celina**

Check List for Partial & Final Pay Estimates

Project Title: CELINA WATER TRANSMISSION IMPROVEMENTS

Project Work Order No:

CONTRACTOR Name: _____

CONTRACTOR's Representative: _____

Representative Contact Information: _____

Please check where applicable:

		Partial Pay Estimate No. _____
		Final Pay Estimate
		Updated Construction Schedule
		SWPPP Report (_____ Not Applicable)
		As-built Drawing Update
		Proof of current certificate of insurance.
		Test Reports (Please Specify Below)
		Density and Moisture Tests (_____ Not Applicable)
		Water Samples (_____ Not Applicable)
		Pressure Tests (_____ Not Applicable)
		Concrete Compressive Strength (_____ Not Applicable)
		TV Inspection (_____ Not Applicable)

Submitted by: _____

Date: _____

Reviewed by: _____

(City Inspector)

Recommended for Processing

Rejected as noted Above

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

Attachment 2

INSPECTION REPORT – Erosion Control

DATE: _____ PROJECT FILE NO.: _____

INSPECTOR: _____ TITLE: _____

REASON FOR INSPECTION: 14 day period/ ½" Rain
(Circle one) 7 day period

PROJECT NAME: _____

SITE CONDITIONS:

EROSION AND SEDIMENTATION CONTROLS	IN CONFORMANCE ?	EFFECTIVE ?
Construction Entrance and Exit	YES / NO / NA	YES / NO
Sediment Traps	YES / NO / NA	YES / NO
Rock Filter Dams	YES / NO / NA	YES / NO
Inlet Protection	YES / NO / NA	YES / NO
Stabilization	YES / NO / NA	YES / NO
Silt Fence	YES / NO / NA	YES / NO
Erosion Control Blankets	YES / NO / NA	YES / NO
Hay Bales	YES / NO / NA	YES / NO
Vegetative Buffer Strips	YES / NO / NA	YES / NO
Other	YES / NO / NA	YES / NO

VIOLATIONS NOTED:

RECOMMENDED REMEDIAL ACTIONS:

COMMENTS:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

INSPECTOR: _____ DATE: _____

Signature: _____

COPY: _____

ATTACHMENT "3"



TO: Project Engineer _____

FROM: Chief Engineering Inspector _____

DATE: _____

SUBJECT: Change Order Request # _____ Project # _____ Plan # _____

LOCATION: _____ STA: _____

PROJECT NAME: _____

PROJECT CONTRACTOR: _____

Please submit a Change Order for the Following Items:

Reason for Change Order: _____

Inspector: _____

Chief Engineering Inspector: _____

ATTACHMENT "4"

**Project****Title and W.O****#**

Request for information Form (RFI)

Date: RFI No:		Project Name location:	
To:	Design Engineer (engineer of records)	Consulting firm or City	(Phone Number)
cc:	Project manager, Chief inspector, project inspector	City of Celina	(Phone Number)
From:	CONTRACTOR/Superintendent	CONTRACTOR	(Phone Number)

Requests for Information will be addressed within 24-48 hours and CONTRACTOR will be notified in writing of the decision made or progress underway.

INFORMATION REQUESTED**UTILITY AND LOCATION:**

Example: Waterline D Sta 32 + 30

DRAWING/SPECIFICATION PAGE NO.:

Example: 23

EXISTING CONDITION:

Example: Gas line not shown on plans at south end of bore under road.

STATEMENT OF CONCERN:

Example: Gas line in the way

PROPOSED SOLUTION:

Example: Extend the bore 5' to the south

RESPONSE:

Example: Agree with solution. We will prepare a change order

By: _____

APPENDIX “C”
APPROVED MATERIALS LIST

Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line- Project B)

APPROVED MATERIALS LIST

- I. The CONTRACTOR shall refer to the City's approved materials list before making any material selections. For any conflicts between materials listed herein and materials that are identified in the contract drawings or specifications, the approved materials list should govern. Refer to the following attached document for the approved materials list.

**City of Celina Approved Materials List
July, 2018**

DESIGN REFERENCE	AWWA OR ASTM	PRODUCT	DESCRIPTION	TYPE / STYLE / MODEL	SIZE	MANUFACTURER
WATER						
2.1.6.A	C900	PIPE MAIN	PVC WATER	DR14 BLUE	4" - 8"	DOMESTIC
2.1.6.A	C900	PIPE MAIN	PVC WATER	DR18 BLUE	10"-12"	DOMESTIC
2.1.6.A	C900-16	PIPE MAIN	PVC WATER	DR18 BLUE	16" AND LARGER	DOMESTIC
		TRACER WIRE	OPEN CUT	1430B - SF		COPPERHEAD
		TRACER WIRE	DIRECTIONAL DRILLING	1245B - EHS		COPPERHEAD
		TRACER WIRE	PIPE BURST	PBX-50B		COPPERHEAD
		TRACER WIRE TEST STATION	SNAKEPIT	RB14BTP		COPPERHEAD
2.1.6.B	ANSI/AWWA C151 / A21.50	PIPE MAIN	DUCTILE	CL51 / ENGINEER APPROVAL	4"-64"	DOMESTIC
	PE4710	PIPE SERVICE	HDPE	SDR9 POLY	1" - 2"	DOMESTIC
	A-36 A-568 A-135 / AWWA C-210	PIPE CASING	STEEL ENCASEMENT	0.25 WALL W/RED OXIDE PRIMER	4" -24"	
	A-36 A-568 A-135 / AWWA C-210	PIPE CASING	STEEL ENCASEMENT	0.375 WALL W/ RED OXIDE PRIMER	27" - 42"	
	AWWA C105	POLY WRAP	POLYETHYLENE ENCASEMENT	8MILS		
		ADHESIVE TAPE		SCOTCHRAP NO.50	2" WIDE	POLYKEN
	ISO 9001:2000	CASING SPACER	HDPE	CASING SPACER	VARIOUS	RACI OR APPROVED EQUAL
2.1.6.C	ANSI/AWWA C153/A21.53 / NSF 61	FITTING WATER	MECHANICAL JOINT	C153 COMPACT	2" - 48"	DOMESTIC - TYLER UNION OR APPROVED EQUAL

**City of Celina Approved Materials List
July, 2018**

DESIGN REFERENCE	AWWA OR ASTM	PRODUCT	DESCRIPTION	TYPE / STYLE / MODEL	SIZE	MANUFACTURER
WATER						
2.1.6.	ANSI/AWWA C153/A21.53	FITTING RESTRAINT	EBAA MEGALUG	PV1100 FOR DUCTILE IRON	2" - 48"	EBAA IRON
2.1.6.	ANSI/AWWA C153 UL/FM ISO 9001-2008	FITTING RESTRAINT	TYLER TUFF GRIP	SERIES 100 FOR DUCTILE IRON	2" - 48"	DOMESTIC - TYLER UNION
2.1.6.	ANSI/AWWA C153 UL/FM ISO 9001-2008	FITTING RESTRAINT	TYLER TUFF GRIP	SERIES 2000 FOR PVC	2" - 48"	DOMESTIC - TYLER UNION
2.1.7.	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	SADDLE	202B X CC THREAD	1" - 2" TAP	FORD
		METER SERVICE	SADDLE	BR2B X CC THREAD	1" - 2" TAP	MUELLER
2.1.7.	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	CORPORATION STOP	F10003GNL / F10004GNL / FB10006GNL / FB10007GNL	1" - 2"	FORD
2.1.7.	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	CORPORATION STOP	G15008/ B25008	1" - 2"	MUELLER
2.1.7.	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	SETTER	VBHH74-10W-41-44-GNL	1"	FORD
		METER SERVICE	SETTER	G2577N-2A	1"	MUELLER
	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	SETTER	VBHC77-12W-41-77-GNL	2"	FORD
		METER SERVICE	SETTER	G2422N-6A	2"	MUELLER
	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	NIPPLE		1"X12" /2"/12"	DOMESTIC

**City of Celina Approved Materials List
July, 2018**

DESIGN REFERENCE	AWWA OR ASTM	PRODUCT	DESCRIPTION	TYPE / STYLE / MODEL	SIZE	MANUFACTURER
WATER						
2.1.7.	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	COUPLING	C44-44G NL / C44-66G NL / C44-77G NL	1" - 2"	FORD
		METER SERVICE	COUPLING	G15403	1" - 2"	MUELLER
2.1.7.	C800 ANSI/NSF 61 NO LEAD	METER SERVICE	INSERT / SS STIFFNER	52 / 54 / 55	1" - 2"	FORD
		METER SERVICE	INSERT / SS STIFFNER	528705 / 528706 / 528707	1" - 2"	MUELLER
		METER BOX	PLASTIC METER BOX	DFW37A-14-1SFDEEP CELINA	1" METER	DFW PLASTICS
		METER BOX	PLASTIC METER BOX	DFW65C-14-1DSFDEEP CELINA	2" METER	DFW PLASTICS
		METER VAULT	LARGE METER	ENGINEER APPROVAL	3" AND LARGER	PARK, TURNER, OLDCASTLE, OR APPROVED EQUAL
2.1.8.	C-515	VALVE MAIN	GATE VALVE	RESILIENT WEDGE	2" - 16"	MUELLER OR APPROVED EQUAL
2.1.8.	C-515	VALVE MAIN	GATE VALVE	RESILIENT WEDGE WITH SPUR GEAR	18" AND LARGER	MUELLER OR APPROVED EQUAL
2.1.8.	C-504	VALVE MAIN	BUTTERFLY VALVE	150B FLANGED OR MECHANICAL JOINT	20" AND LARGER	PRATT, MUELLER, OR APPROVED EQUAL
2.1.8. B	MANUAL M51	VALVE AIR	AIR RELEASE VALVE	RBX	2" AND LARGER	VENT O MAT, VENT TECH
2.1.18.B	MANUAL M51	VALVE AIR	AIR RELEASE VALVE	SERIES WAR 02	2" AND LARGER	PRATT
	A-48 AASHTO	VALVE BOX	THREE PIECE VALVE BOX	6850 WITH LID	2" AND LARGER	DOMESTIC- TYLER UNION OR APPROVED EQUAL



**City of Celina Approved Materials List
July, 2018**

DESIGN REFERENCE	AWWA OR ASTM	PRODUCT	DESCRIPTION	TYPE / STYLE / MODEL	SIZE	MANUFACTURER
WATER						
2.1.9.		FIRE HYDRANT	HYDRANT WITH INTEGRAL STORZ FITTING	MA423 SUPER CENTURION- CELINA	6" LEAD	MUELLER
		FIRE HYDRANT	HYDRANT WITH INTEGRAL STORZ FITTING	K-81-D GUARDIAN- CELINA	6" LEAD	KENNEDY
		FIRE HYDRANT	HYDRANT WITH INTEGRAL STORZ FITTING	MEDALLION- F2545-CELINA	6" LEAD	CLOW
		FIRE HYDRANT	HYDRANT WITH INTEGRAL STORZ FITTING	WATERMASTER 5CD250-CELINA	6" LEAD	EAST JORDON
		FIRE RISER	IN-BUILDING RISER	SERIES IBR WITH FLANGED END CONNECTION ON THE OUTLET		AMES FIRE AND WATER WORKS
2.1.10	C-207	TAP MAIN	TAPPING SLEEVE	665 316 ALL STAINLESS/ H304SS		SMITH BLAIR, MUELLER OR EQUAL
2.1.11.		VALVE FLUSHING	AUTO FLUSHING VALVE	9800	DEAD END MAIN	ECLIPSE
		VALVE FLUSHING	AUTO FLUSHING VALVE	HG4	DEAD END MAIN	MUELLER

**City of Celina Approved Materials List
July, 2018**

DESIGN REFERENCE	AWWA OR ASTM	PRODUCT	DESCRIPTION	TYPE / STYLE / MODEL	SIZE	MANUFACTURER
SANITARY SEWER						
2.2.6.A	D3034	PIPE MAIN	PVC SEWER	SDR35	4" - 15"	
2.2.6.A	F679	PIPE MAIN	PVC SEWER	SDR26 HEAVY WALL	4" - 15"	
2.2.6.A	F679	PIPE MAIN	PVC SEWER	PS46 / PS115	18" AND LARGER	
2.2.6.A	D2241	PIPE FORCE MAIN	PVC SEWER	SDR26 CLASS 160	4" - 12"	
2.2.6.A	C900-16	PIPE FORCE MAIN	PVC SEWER	DR25 CLASS 165 GREEN	14" AND LARGER	
		TRACER WIRE(FORCE MAIN)	OPEN CUT	1430G - SF		COPPERHEAD OR APPROVED EQUAL
		TRACER WIRE (FORCE MAIN)	DIRECTIONAL DRILLING	1245G - EHS		COPPERHEAD OR APPROVED EQUAL
		TRACER WIRE	PIPE BURST	PBX-50G		COPPERHEAD OR APPROVED EQUAL
		TRACER WIRE TEST STATION	SNAKE PIT	RB14GTP		COPPERHEAD OR APPROVED EQUAL
	ISO 9001:2000	CASING SPACER	HDPE	CASING SPACER	VARIOUS	RACI OR APPROVED EQUAL
	A-36 A-568 A-135 / AWWA C-210	PIPE CASING	STEEL ENCASEMENT	0.25 WALL W/RED OXIDE PRIMER	4" -24"	
	A-36 A-568 A-135 / AWWA C-210	PIPE CASING	STEEL ENCASEMENT	0.375 WALL W/ RED OXIDE PRIMER	27" - 42"	
	ASTM D3212	GRAVITY FLOW PIPE ADAPTOR	SEWER TAP (REHAB)	INSERTA TEE		INSERTA FITTING CO.
2.2.6.C	D3034 / F679 / F170 / ISO 9000	FITTING SEWER	GASKETED	SDR35 / SDR26 TO MATCH MAIN	4" - 18"	
		VALVE AIR	AIR RELEASE VALVE	WWAR 01	2" AND LARGER	PRATT,ARI D-025 NYLON COMBINATION AIR VALVE OR APPROVED EQUAL
2.2.8. D	C-478	MANHOLE SAN SEWER	MANHOLE WITH ANTIMICROBIA L ADDITIVE	CONSHIELD PRECAST	48" AND LARGER	HANSON (FORTERRA) AND TURNER



Revised-July, 2018

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Attachment: Contract and Specifications- Water Transmission Project B (Water Transmission Line-

**City of Celina Approved Materials List
July, 2018**

SANITARY SEWER						
		MANHOLE SAN SEWER	MANHOLE WITH ANTIMICROBIAL ADDITIVE	CONSHIELD CAST IN PLACE	48" AND LARGER	REDI MIX
		PATCHING MATERIAL	MANHOLE	CONSHIELD JOINT SET		CONSHIELD
		MANHOLE SAN SEWER	MANHOLE	GATOR WRAP	6" WIDE	INFI-SHIELD
		MANHOLE SAN SEWER	MANHOLE	I & I BARRIER		STRIKE PRODUCTS
		MANHOLE SAN SEWER	HDPE	MANHOLE INSERT	30" OD	S.S.I SEALING SYSTEMS INC.
		MANHOLE SAN SEWER	GRADE RING	INFRA-RISER IC3340F	33" I.D x 40" O.D.	EAST JORDON
		MANHOLE SAN SEWER	MANHOLE RING COVER	1480 30" NEW CONSTRUCTION	30" CLEAR OPENING	BASS HAYES, EAST JORDAN IRON WORKS
		MANHOLE SAN SEWER	WATERTIGHT MANHOLE RING COVER	1432 30" NEW CONSTRUCTION WATERTIGHT	30" CLEAR OPENING	BASS HAYES, EAST JORDAN IRON WORKS
STREET SIGNS AND LIGHT						
		SIGN POLE	FLUTED	SP4X 12	4" OD	BRANDON INDUSTRIES OR APPROVED EQUAL
		POLE BASE	SLIP-OVER	SB94	4" OD	BRANDON INDUSTRIES OR APPROVED EQUAL
		POLE FINIAL		FIN- CS4	4" OD	BRANDON INDUSTRIES OR APPROVED EQUAL

**City of Celina Approved Materials List
July, 2018**

**City of Celina
Approved Materials List for Grass in Detention Ponds, Swales, Bio-retention Areas**

GRASS/TURF			
COMMON NAME	SCIENTIFIC NAME	ACCEPTABLE FORM	REMARKS
PRAIRIE CORDGRASS	<i>SPARTINA PECTINATA</i>	CONTAINER/ SEED	BOTTOM
BUSHY BLUESTEM	<i>ANDROPOGON GLOMERATUS</i>	CONTAINER/ SEED	BOTTOM
CROWFOOT CARIC SEDGE	<i>CAREX CRUS-CORVI</i>	CONTAINER/ SEED	BOTTOM
EASTERN GRAMAGRASS	<i>TRIPSACUM DACTYLOIDES</i>	CONTAINER/ SEED	BOTTOM
LOWLAND SWITCHGRASS	<i>PANICUM VIRGATUM L</i>	CONTAINER/ SEED	BOTTOM
ALAMO SWITCHGRASS	<i>PANICUM VIRGATUM 'ALAMO'</i>	CONTAINER/ SEED	BOTTOM
LOMETA INDIANGRASS	<i>SORGHASTRUM NUTANS 'LOMETA'</i>	CONTAINER/ SEED	SLOPE
EARL BIG BLUESTEM	<i>ANDROPOGON GERARDII 'EARL'</i>	CONTAINER/ SEED	SLOPE
LITTLE BLUESTEM	<i>SCHIZACHYRIUM SCOPARIUM</i>	CONTAINER/ SEED	SLOPE
CANADA WILDRYE	<i>ELYMUS CANADENSIS</i>	CONTAINER/ SEED	SLOPE
SPRING OBEDIENT PLANT	<i>PHYSOSTEGIA INTERMEDIA</i>	CONTAINER/ SEED	SLOPE
MAXIMILIAN SUNFLOWER	<i>HELIANTHUS MAXIMILIANA</i>	CONTAINER/ SEED	SLOPE
HALBERD-LEAF HIBISCUS	<i>HIBISCUS LAEVIS</i>	CONTAINER/ SEED	SLOPE
HASKELL SIDEOATS GRAMA	<i>BOUTELOUA CURTIPENDULA</i>	CONTAINER/ SEED	SLOPE
BUFFALOGRASS	<i>BOUTELOUA DACTYLOIDES</i>	SOD	NATIVE
BERMUDAGRASS	<i>CYNODON DACTYLON</i>	SOD OR HYDRO-MULCH	ADAPTED

Common Name	Scientific Name	Container Size to be Planted	Maximum Mature Size	Remarks
TREES (LARGE SHADE)				
OAK, CHINQUAPIN	<i>QUERCUS MUEHLENBERGII</i>	SEE PLANS	80' H 80' W	NATIVE
TREES (MEDIUM SHADE)				
BALD CYPRESS	<i>TAXODIUM DISTICHUM</i>	SEE PLANS	80' H 50' W	NATIVE
ELM, CEDAR	<i>ULMUS CRASSIFOLIA</i>	SEE PLANS	90' H 80' W	NATIVE
PISTACHIO, CHINESE	<i>PISTACIA CHINENSIS</i>	SEE PLANS	70' H 50' W	ADAPTED
TREES (LIVING SCREEN)				
HOLLY, FOSTER	<i>ILEX X ATTENUATA 'FOSTERI'</i>	SEE PLANS	20' H 10' W	ADAPTED
HOLLY, NELLIE R.STEVENS	<i>ILEX X 'NELLIE STEVENS'</i>	SEE PLANS	25' H 15' W	ADAPTED
SHRUBS				
DWARF CRAPE MYRTLE	<i>LAGERSTROEMIA INDICA</i>	SEE PLANS	3' H 3' W	DWARF
DWARF NANDINA	<i>NANDINA DOMESTICA</i>	SEE PLANS	3' H 3' W	DWARF



**City of Celina Approved Materials List
July, 2018**

SHRUBS				
DWARF YAUPON HOLLY	<i>ILEX VOMITORIA 'NANA'</i>	SEE PLANS	3' H 3' W	DWARF
HAWTHORN, INDIAN	<i>RHAPHIOLEPSIS INDICA</i>	SEE PLANS	3' H 4' W	ADAPTED
RED YUCCA	<i>HESPERALOE PARVIFLORA</i>	SEE PLANS	3' H 3' W	NATIVE
TEXAS SAGE, SILVERADO	<i>LEUCOPHYLLUM FRUTESCENS 'SILVERADO'</i>	SEE PLANS	3' H 3' W	NATIVE

Approved Materials List for Irrigation

BASIC PRODUCT CATEGORY	SUBCATEGORY	MANUFACTURER	MODEL, TYPE, OR STYLE APPROVED	SPECIFICATION	NOTES	NSF 61 CERTIFIED
ROTORS		HUNTER, RAINBIRD, TORO	HIGH EFFICIENCY			
SPRAY NOZZELS (TURF AREAS)		HUNTER, RAINBIRD, TORO	HIGH EFFICIENCY			
SHRUB NOZZLE ADAPTER (PLANT BED AREAS)		RAINBIRD				
SHRUB NOZZLES (PLANT BED AREAS)		RIGGS	SN8-24			
BRASS GATE VALVE, DOMESTIC MANUFACTURER		NIBCO	T-113			
DRIP IRRIGATION		NETAFIM	UNITECHLINE OR TECHLINE			
SOLENOID VALVE W/ DC LATCHING SOLENOID		RAIN BIRD	PEB-PRS-B SERIES			
QUICK COUPLING VALVES		RAIN BIRD	MODEL 44RC			
PVC BALL VALVES		SPEARS OR APPROVED EQUAL	COMPACT UNIT			
BACKFLOW PREVENTER		FEBCO	DOUBLE CHECK VALVE			
DOUBLE CHECK BOX			PLASTIC "JUMBO" DCA			



TECHNICAL SPECIFICATIONS

DIVISION 1

GENERAL REQUIREMENTS

SECTION 01 11 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of:
 - 1. Work covered by Contract Documents.
 - 2. Activities of others within Project area.
 - 3. Coordination of Work required by Contractor.
 - 4. Provisions for future Work.
- B. Work covered by Contract Documents: The completed Work will provide Owner with water transmission improvements. More specifically, the Project includes, but is not limited to, construction of the following:
 - 1. The project includes furnishing the labor, materials, and equipment for installing approximately 10,760 linear feet of 36-inch diameter transmission main, complete with two connections to existing pipelines, retrained joints, valves, fittings and appurtenances. A portion of the pipe will be installed within a 48-inch steel casing with open-cut construction to account for future road development. Additional work will include dewatering, protection of existing utilities, construction surveying and staking, removal and replacement of existing unpaved roads and driveways, installation and removal of temporary construction fencing, testing and disinfection and flushing of the completed pipeline.
- C. Except as specifically noted otherwise, provide and pay for:
 - 1. Insurance and bonds.
 - 2. Labor, materials, and equipment.
 - 3. Tools, equipment, and machinery required for construction.
 - 4. Utilities required for construction.
 - 5. Temporary facilities including sheeting and shoring.
 - 6. Traffic control and dust control measures.
 - 7. Other facilities and services necessary for proper execution and completion of the Work.
- D. Secure and pay for all permits including all City of Celina permits, OSHA excavation permits, Department of Transportation permits, and any other government fees and licenses.
 - 1. It is the Contractor's responsibility to maintain the required controls and record keeping to comply with the SWPPP and associated stormwater permit.
- E. Comply with codes, ordinances, regulations, orders, and other legal requirements of public authorities having bearing on the performance of the Work.

1.2 ACTIVITIES BY OTHERS

- A. Owner, utilities, and others may perform activities within Project area while the Work is in progress.
 - 1. Schedule the Work with Owner, utilities, and others to minimize mutual interference.
- B. Cooperate with others to minimize interference and delays.
 - 1. When cooperation fails, submit recommendations and perform Work in coordination with work of others as directed.
- C. Other on-going and potential projects that parallel the schedule of this project:
 - 1. Celina Road Pump Station Improvements
 - 2. Celina Water Transmission Improvements – Project A
 - 3. Celina Water Transmission Improvements – Project B

4. Celina Water Transmission Improvements – Project C

1.3 COORDINATION OF WORK

- A. Maintain overall coordination of the Work.
- B. Obtain construction schedules from each subcontractor, and require each subcontractor to maintain schedules and coordinate modifications.
- C. Alternates: Alternates, if included, are specified in detail in the Bid Form and only those alternates that were selected by the Owner, as evidenced in the Agreement, are made a part of this Contract.

1.4 PROVISIONS FOR FUTURE WORK

- A. Provisions for future construction are as shown as detailed on drawings and in the specifications.

1.5 LOCATION OF WORK

- A. The Project is located in the City of Celina, paralleling FM 428 from the end of the previously bid Celina Water Transmission Improvements – Project A, following FM 428 North to the intersection of FM 428 and CR 56, East to the BNSF railroad, and North to the Celina Downtown Pump Station. The Project will also include waterline originating from the Celina Downtown Celina Pump Station and running South before being capped prior to crossing East Ash Street.

1.6 OWNER FURNISHED EQUIPMENT

- A. For this project's delivery, the Owner shall not be providing and/or delivering any associated equipment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 11 60 – PROJECT MANUAL LANGUAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes description and requirements of:
 - 1. Explanation of Project Manual arrangement.
 - 2. Explanation of Project Manual language.
 - 3. Reference standards.
 - 4. Method of resolving conflicts of referenced standards between Contract Documents.
- B. Related Documents and Sections:
 - 1. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.
 - 2. It is the CONTRACTOR's responsibility for scheduling and coordinating the Work of subcontractors, suppliers, and other individuals or entities performing or furnishing any of CONTRACTOR's Work.

1.2 REFERENCES

- A. Construction Specifications Institute (CSI):
 - 1. Manual of Practice - MasterFormat™.
 - 2. Manual of Practice - SectionFormat™.
 - 3. Manual of Practice - PageFormat™.

1.3 PROJECT MANUAL ARRANGEMENT

- A. Document and Section numbers used in Project Manual, and Project Manual arrangement are in accordance with CSI MasterFormat™, except where departures have been deemed necessary.
- B. Sections are written in accordance with CSI SectionFormat™, Three-Part Section Format, except where departures have been deemed necessary.
- C. Page format for Sections in the Project Manual is in accordance with CSI Page Format, except where departures have been deemed necessary.

1.4 PROJECT MANUAL LANGUAGE

- A. Specification Section Paragraphs entitled "Section Includes" summarizes briefly what is generally included in the section. Requirements of Contract Documents are not limited by "Section Includes" paragraphs. Specifications have been partially streamlined by intentionally omitting words and phrases, such as "the CONTRACTOR shall," "in conformity therewith," "shall be" following "as indicated," "a," "an," "the" and "all". Assume missing portions by inference.
- B. Phrase "by ENGINEER" modifies words such as "accepted," "directed," "selected," "inspected," and "permitted," when they are unmodified.
- C. Phrase "to ENGINEER" modifies words such as "submit," "report," and "satisfactory," when they are unmodified.
- D. Colons (:) are used to introduce a list of particulars, an appositive, an amplification, or an illustrative quotation:
 - 1. When used as an appositive after designation of product, colons are used in place of words "shall be."

- E. Word "provide" means to manufacture, fabricate, deliver, furnish, install, complete, assemble, erect in place, test, render ready for use or operation, including necessary related material, labor, appurtenances, services, and incidentals.
- F. Words "CONTRACTOR shall" are implied when direction is stated in imperative mood.
- G. Term "products" includes materials and equipment as specified in Section 01 60 00.

1.5 REFERENCE STANDARDS

- A. Use only applicable portions of referenced standards, ignoring payment stipulations and other provisions which change the duties of the ENGINEER or OWNER.
- B. Equate terms relating to designer to "ENGINEER."
- C. Notify ENGINEER when referenced standard, code, or specification conflicts with Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 14 00 – WORK RESTRICTIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of:
 - 1. General constraints for sequencing and scheduling the Work.
 - 2. Work affected by existing site and facility.
 - 3. Work restrictions and coordination between construction operations and plant operations, including:
 - a. Access to site.
 - b. Use of site and premises.
 - c. Utilities.
 - d. Work by Others.
 - e. Work Sequence.
- B. Related sections:
 - 1. Section 01 11 00 - Summary of Work.
 - 2. Section 01 26 00 - Contract Modification Procedures.
 - 3. Section 01 50 00 - Temporary Facilities and Controls.

1.2 GENERAL CONSTRAINTS ON SEQUENCE AND SCHEDULING OF WORK

- A. Work Sequence and Constraints:
 - 1. Utilize description of critical events in work sequence in this Section as a guideline for scheduling and undertaking the Work.
 - 2. Work sequence and constraints presented do not include all items affecting completion of the Work, but are intended to describe critical events necessary to minimize disruption of the existing facilities and to ensure compliance to the water quality standards as mandated by the Texas Department of State Health.

1.3 OPERATIONS AND MAINTENANCE ACCESS

- A. Provide safe, continuous access to equipment for operations and maintenance personnel.

1.4 UTILITIES

- A. Provide advance notice to and utilize services of Texas811 for location and marking of underground utilities operated by utility agencies other than the OWNER. Contact information: Texas811, 11880 Greenville Ave., Suite 120, Dallas, TX 75243, phone number 800-344-8377, website: <https://www.texas811.org>.
- B. Maintain electrical, telephone, water, gas, sanitary facilities, and other utilities within existing facilities in service. Provide temporary utilities when necessary.

1.5 WORK BY OTHERS

- A. Where proper execution of the Work depends upon work by others, inspect and promptly report discrepancies and defects.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 22 00 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section stipulates the method of measurement and payment for items of Work for which Unit Prices and Lump Sum Prices are stated in the Bid Form.
- B. Payment for submittals shall be described in this section.
- C. Related sections:
 - 1. Section 00 41 00 – Bid Form.

1.2 SCOPE OF PAYMENT

- A. Units of measurement of items of Work for which Unit and/or Lump Sum Prices are stated will be as herein subsequently defined.
- B. The estimated quantities for items of Work for which Unit Prices are given in the Bid Form are subject to variation, and payment shall be based upon the final measurement of the items of work actually installed and approved by the Owner for payment.
- C. All work not specifically set forth as a pay item shall be considered as a subsidiary obligation of the Contractor, and costs of these items is included in the overall cost of the project.
- D. The unit price and lump sum prices shall include all costs in connection with the proper and successful completion of the Work, including:
 - 1. Furnishing all materials, equipment, supplies, and appurtenances, providing all construction, equipment, and tools and performing all necessary labor and supervision to complete the work

1.3 CONTRACTOR'S COSTS AND OVERHEADS

- A. Contractor shall include in the Work Offer, all costs and overheads, including home office overhead, for continuous, full time management of the Contract as described in the Contract Documents, covering a period of time not less than from Administrative Notice to Proceed through the entire duration of the project.

1.4 LUMP SUM OR UNIT PRICE ITEMS

- A. The total work offer price indicated by the sum of the unit price and lump sum items shall be payment for the complete Project as set forth in the Contract Documents
 - 1. A general description of the Work involved is given for each item
 - 2. Work items not specifically named or otherwise described in this schedule shall be considered appurtenant to the Project and the cost associated with such Work shall be considered in Contractor's work offer.
- B. The quantities shown for unit price items are estimated and are for the purpose of comparing work offers.
 - 1. Owner is not obligated to use the total quantities or any quantity of the unit price or lump sum items listed in the Work Offer Form

2. Owner may request deletion of all or any portion of the quantities estimated in the respective items and the Contractor shall not be entitled to payment for these items unless specifically authorized in writing
 3. Contractor agrees that the Contractor will make no claim for damages, anticipated profits, or otherwise on account of any difference between the amounts of Work actually performed and materials actually furnished and the estimated amounts thereof.
 4. Payments will be based on actual quantities furnished and installed, complete, in full conformance with these Contract Documents.
- C. Contractor agrees that the lump sum and Unit Prices represent a true measure of the labor and materials required to perform the Work, including all allowances for overhead and profit for each type and unit of Work called for in these Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PROVIDE AND INSTALL 36-INCH AWWA C900-16 PVC DR 21 WATERLINE (ITEM NO. 1)

A. Description and Measurement

1. Description
 - a. This item shall include all necessary labor, materials, and equipment to install the 36-inch diameter PVC DR 21 Pipe. This includes, but not limited to, survey layout, excavation, hauling and disposal, backfill, compaction, final grading, including transportation, bedding, surface repair, acquisition, delivery and storage of the pipe, DIP-PVC transition pipe fittings, warning tape and tracer wire, end caps, and other incidental items as described in the specifications and shown on the plans. This item includes all testing and quality control as described in the specifications.
2. Measurement
 - a. Measurement will be made per linear foot of pipe installed. Footage will be from connection point with restrained joint pipe to connection point with restrained joint pipe. This will include all testing and quality control.
3. Payment
 - a. Payment will be based upon linear footage of pipe installed.

3.2 PROVIDE AND INSTALL 36-INCH CL 150 RESTRAINED JOINT DUCTILE IRON PIPE WITH POLYWRAP (ITEM NO. 2)

A. Description and Measurement

1. Description
 - a. This item shall include all necessary labor, materials, and equipment to install the 36-inch diameter polywrapped restrained joint ductile iron pipe. This includes, but is not limited to, survey layout, excavation, hauling and disposal, backfill, compaction, final grading, including transportation, bedding, surface repair, acquisition, delivery and storage of the pipe and polywrap material, installation of the pipe with the polywrap material, warning tape, and other incidental items as described in the specifications and shown on the plans. This item includes all testing and quality control as described in the specifications.
2. Measurement
 - a. Measurement will be made per linear foot of pipe installed. Footage will be from connection point to non-restrained pipe to connection point of non-restrained pipe,

including fittings and valves, or to centerline of fitting. This will include all testing and quality control.

3. Payment
 - a. Payment will be based upon linear footage of pipe installed.

3.3 PROVIDE AND INSTALL 30-INCH CL 150 RESTRAINED JOINT DUCTILE IRON PIPE WITH POLYWRAP (ITEM NO. 3)

A. Description and Measurement

1. Description

- a. This item shall include all necessary labor, materials, and equipment to install the 30-inch diameter polywrapped restrained joint ductile iron pipe. This includes, but is not limited to, survey layout, excavation, hauling and disposal, backfill, compaction, final grading, including transportation, bedding, surface repair, acquisition, delivery and storage of the pipe and polywrap material, installation of the pipe with the polywrap material, warning tape, and other incidental items as described in the specifications and shown on the plans. This item includes all testing and quality control as described in the specifications.

2. Measurement

- a. Measurement will be made per linear foot of pipe installed. Footage will be from connection point to non-restrained pipe to connection point of non-restrained pipe, including fittings and valves, or to centerline of fitting or valve. This will include all testing and quality control.

3. Payment

- a. Payment will be based upon linear footage of pipe installed.

3.4 PROVIDE AND INSTALL 36-INCH BUTTERFLY VALVE (DIRECT BURY) (ITEM NO. 4)

A. Description and Measurement

1. Description

- a. This item shall include acquisition, storage, delivery and installation of 36-inch butterfly valve (direct bury) assembly, complete in place per City of Celina standard details and shall include any valve extension stem, box and cover per details. This item shall include offsite water main markers per City of Celina details. This item includes quality control as described in the specifications.

2. Measurement

- a. Measurement will be made per each valve assembly installed.

3. Payment

- a. Payment will be based upon each valve assembly installed.

3.5 PROVIDE AND INSTALL 30-INCH BUTTERFLY VALVE (DIRECT BURY) (ITEM NO. 5)

A. Description and Measurement

1. Description

- a. This item shall include acquisition, storage, delivery and installation of 36-inch butterfly valve (direct bury) assembly, complete in place per City of Celina standard details and shall include any valve extension stem, box and cover per details. This item shall include offsite water main markers per City of Celina details. This item includes quality control as described in the specifications.

2. Measurement

- a. Measurement will be made per each valve assembly installed.

3. Payment

- a. Payment will be based upon each valve assembly installed.

3.6 PROVIDE AND INSTALL DUCTILE IRON FITTINGS (ITEM NO. 6)

A. Description and Measurement

1. Description
 - a. This item shall include acquisition, storage, delivery and installation of ductile iron fittings. This item includes quality control as described in the specifications.
2. Measurement
 - a. Measurement will be made per ton of fittings installed.
3. Payment
 - a. Payment will be based upon tons of fittings installed.

3.7 PROVIDE AND INSTALL 4-INCH AIR RELEASE/VACUUM VALVE AND VAULT (ITEM NO. 7)

A. Description and Measurement

1. Description
 - a. This item shall include all necessary labor, materials, and equipment to install the 4-inch air release/vacuum valve and vault complete in place per details. This includes, but not limited to, survey layout, excavation and backfill, bedding, surface repair, concrete pad, acquisition, delivery, and storage of the air release and gate valve, valve box and cover, vault, and other incidental items as described in the specifications and shown on the plans. This item includes installation of the air release/vacuum valve assembly complete in place per detail including, but not limited to: 36-inch x 12-inch tee, 4-inch tapped threaded cap, 4-inch flexible coupling, 4-inch flanged ductile iron pipe, 4-inch gate valve, vault, polywrap of DIP and fittings and 4-inch air release/vacuum valve per City of Celina Approved Product List, offsite water main markers, and all other items necessary to install necessary to install the air release/vacuum valve per the details and specifications. This item includes all testing and quality control as described in the specifications.
2. Measurement
 - a. Measurement will be made per each air release/vacuum valve assembly installed.
3. Payment
 - a. Payment will be based upon each air release/vacuum valve assembly installed.

3.8 PROVIDE AND INSTALL 6-INCH AIR BLOWOFF ASSEMBLY (ITEM NO. 8)

A. Description and Measurement

1. Description
 - a. This item shall include all necessary labor, materials, and equipment to install the 6-inch blowoff assembly per plans, details and specifications. This includes, but not limited to, survey layout, excavation and backfill, bedding, surface repair, acquisition, delivery and storage of the gate valve, valve box and cover. This item includes installation of the blowoff assembly including all items described in the plans and details, and other incidental items necessary for installation of the blowoff assembly. This item includes all testing and quality control as described in the specifications.
2. Measurement
 - a. Measurement will be made per each blowoff assembly installed.
3. Payment
 - a. Payment will be based upon each blowoff assembly installed.

3.9 PROVIDE AND INSTALL 1" WATER SERVICE CONNECTION OTHER THAN OPEN CUT (ITEM NO. 9)

A. Description and Measurement

1. Description

- a. This item shall include all necessary labor, materials, and equipment to install 1" water service connection assembly per plans, details and specifications. This includes, but is not limited to the existing meter box piping and fittings as shown on the details, couplings, tapping saddle, survey layout, surface repair, acquisition, delivery and storage of materials and all work required complete and in place,. This item includes installation of the water service connection assembly including all items described in the plans and details, and other incidental items necessary for installation of a complete service connection assembly. This item includes all testing and quality control as described in the specifications.

2. Measurement

- a. Measurement will be made per each service connection assembly installed.

3. Payment

- a. Payment will be based upon each service connection assembly installed.

3.10 RELOCATE EXIST 6-INCH AIR BLOWOFF ASSEMBLY (ITEM NO. 10)

A. Description and Measurement

1. Description

- a. This item shall include all necessary labor, materials, and equipment to relocate existing blowoff assembly per plans, details and specifications. This includes, but not limited to, removal and reinstallation of existing blow-off, survey layout, excavation and backfill, bedding, surface repair, this item includes all items described in the plans and details, and other incidental items necessary for the relocation of the blowoff assembly. This item includes all testing and quality control as described in the specifications.

2. Measurement

- a. Measurement will be made per lump sum for blowoff assembly relocation.

3. Payment

- a. Payment will be based upon each blowoff assembly relocation.

3.11 RELOCATE EXIST FIRE HYDRANT ASSEMBLY (ITEM NO. 11)

A. Description and Measurement

1. Description

- a. This item shall include all necessary labor, materials, and equipment to relocate existing fire hydrant assembly per plans, details and specifications. This includes, but is not limited to, removal and reinstallation of existing fire hydrant, installation of anchor coupling, concrete pad and base, concrete thrust block, piping modification, fittings, survey layout, excavation and backfill, bedding and surface repair, This item includes all items described in the plans and details, and other incidental items necessary for the relocation of an existing fire hydrant assembly complete and in place. This item includes all testing and quality control as described in the specifications.

2. Measurement

- a. Measurement will be made per lump sum for fire hydrant assembly relocation.

3. Payment

- a. Payment will be based upon each fire hydrant assembly relocation.

3.12 PROVIDE AND INSTALL 48-INCH STEEL CASING PIPE (DIRECT BURY) (ITEM NO. 12)

A. Description and Measurement

1. Description

- a. This item shall include all necessary labor, materials, and equipment to furnish and install the steel casing pipe per plans, details, and specifications. Excavation and backfill for the steel casing pipe shall be included in the unit price bid for the 36-inch diameter polywrapped restrained joint ductile iron pipe. This item shall include installation of the carrier pipe into the casing pipe, casing spacers, grouting the annular space, and other items necessary for the installation of the casing pipe not currently defined herein. This item includes all testing and quality control as described in the specifications.

2. Measurement

- a. Measurement will be made per linear foot of steel casing pipe.

3. Payment

- a. Payment will be based upon linear footage of steel encasement pipe installed.

3.13 PROVIDE AND INSTALL 48-INCH STEEL CASING PIPE (OTHER THAN OPEN-CUT) (ITEM NO. 13)

A. Description and Measurement

1. Description

- a. This item shall include all necessary labor, materials, and equipment to furnish and install steel casing pipe by method other than open cut per plans, details, and specifications including but not limited to all boring operations (pit excavation, shoring, pilot hole drilling, reaming, pullback, backfilling, etc). This item shall include installation of the carrier pipe into the casing pipe and connections to open cut portions, casing spacers, grouting the annual space end caps and seals, cathodic protection, and other items necessary for the installation of the casing pipe not currently defined herein. This item includes all testing and quality control as described in the specifications. This item does not include the casing pipe for the Railway right-of-way crossing as described in the project plans which shall be included in item no. 21 – Railway right-of-way crossing.

2. Measurement

- a. Measurement will be made per linear foot of steel casing pipe.

3. Payment

- a. Payment will be based upon linear footage of steel encasement pipe installed.

3.14 REMOVE AND REPLACE ASPHALT PAVEMENT/DRIVEWAY (ITEM NO. 14)

A. Description and Measurement

1. Description

- a. This item shall include the replacement of asphaltic concrete pavement of driveways and other access roads including but not limited to sawcut full depth, removed, and disposed of off-site and the final subgrade leveling, placement of asphalt, tack coat application, finishing, curing and testing of asphalt pavement and other incidental items as described in the specifications and shown on the plans. This item includes all testing and quality control as described in the specifications.

2. Measurement

- a. Measurement will be made per square footage of asphalt pavement placed.

3. Payment

- a. Payment will be based upon square footage of asphalt pavement placed.

3.15 REMOVE AND REPLACE CONCRETE PAVEMENT (ITEM NO. 15)

A. Description and Measurement

1. Description
 - a. This item shall include the demolition, removal and disposal of reinforced concrete pavement, drive, apron, street header, and integral curb associated with the pavement regardless of the thickness of the portion, furnishing and installing reinforced concrete pavement including but not limited to placement of concrete, pavement joints sealing, finishing, curing and testing of pavement and other incidental items as described in the specifications and shown on the plans. This item includes all testing and quality control as described in the specifications.
2. Measurement
 - a. Measurement will be made per square footage of concrete pavement placed.
3. Payment
 - a. Payment will be based upon square footage of concrete pavement placed.

3.16 REMOVE AND REPLACE GRAVEL DRIVEWAY (ITEM NO. 16)

A. Description and Measurement

1. Description
 - a. This item shall include the removal and replacement of gravel driveway at any location where the gravel needs to be removed to install proposed pipe. This item includes the mobilization, excavation, hauling, disposal of excess material, placement and compaction of gravel, all clean up required to install driveway and other incidental items as described in the specifications and shown on the plans.
2. Measurement
 - a. Measurement will be made per square footage of gravel driveway placed.
3. Payment
 - a. Payment will be based upon square footage of gravel driveway placed.

3.17 REMOVE AND REPLACE EXISTING FENCING (ITEM NO.17)

A. Description and Measurement

1. Description
 - a. This item shall include all necessary labor, materials, and equipment to remove and replace existing fencing within Old Celina Ltd. or as determined by the City of Celina. This item include furnishing, preparing, hauling and installing all fencing material; excavation, backfilling and disposal of surplus materials; clearing of rocks and debris and removal and trimming of brush and tree limbs; and removal after construction including labor, equipment, tools and incidental items as described in the specifications and shown on the plans.
2. Measurement
 - a. Measurement will be made per linear foot for fence.
3. Payment
 - a. Payment will be based upon linear foot of fence installed.

3.18 PROVIDE AND INSTALL TEMPORARY CONSTRUCTION FENCE (ITEM NO.18)

A. Description and Measurement

1. Description
 - a. This item shall include all necessary labor, materials, and equipment to provide and install temporary 6-strands steel/woven wire boundary fence, braced with metal T-

posts spaced 10-ft on center along Old Celina Ltd. or as determined by the City of Celina. This item include furnishing, preparing, hauling and installing all fencing material; excavation, backfilling and disposal of surplus materials; clearing of rocks and debris and removal and trimming of brush and tree limbs; and removal after construction including labor, equipment, tools and incidental items as described in the specifications and shown on the plans.

2. Measurement
 - a. Measurement will be made per linear foot for fence.
3. Payment
 - a. Payment will be based upon linear foot of fence installed.

3.19 PROVIDE AND INSTALL TEMPORARY BOUNDARY FENCE (ITEM NO.19)

A. Description and Measurement

1. Description
 - a. This item shall include all necessary labor, materials, and equipment to provide and install temporary boundary construction fence wherever it is deemed necessary, as per the plan or as determined by the City of Celina. This item include furnishing, preparing, hauling and installing fence material; excavation, backfilling and disposal of surplus materials; clearing of rocks and debris and removal and trimming of brush and tree limbs; and removal after construction including labor, equipment, tools and incidental items as described in the specifications and shown on the plans.
2. Measurement
 - a. Measurement will be made per linear foot for fence.
3. Payment
 - a. Payment will be based upon linear foot of fence installed. 70-percent payment upon installment and 30-percent after removal.

3.20 PROVIDE AND INSTALL HYDROMULCH SEEDING (ITEM NO.20)

A. Description and Measurement

1. Description
 - a. This item shall include the placement of Hydromulch Seeding per Specification Section 32 91 13 SODDING, SEEDING, FERTILIZING, AND MULCHING. This item include water for bed preparation, hydroseeding and hydromulching operations, mowing, labor, equipment, tools and incidental items as described in the specifications and shown on the plans.
2. Measurement
 - a. Measurement will be made per acre of the hydromulch seeding completed.
3. Payment
 - a. Payment will be at the conclusion of the hydromulch seeding.

3.21 PROVIDE AND INSTALL PROJECT SIGN (ITEM NO.21)

A. Description and Measurement

1. Description
 - a. This item shall include all necessary labor, materials, and equipment to install, maintain, and remove Project Sign per requirement of City of Celina details and specifications. The Project Sign shall be maintained throughout the duration of the project. Placement of the Sign will be per direction of the Owner and Engineer.
2. Measurement
 - a. Measurement will be made per lump sum for Project Sign.

3. Payment
 - a. The overall cost of the Project Sign will be paid upon installation of the sign.

3.22 PERFORM CLEARING AND GRUBBING (ITEM NO.22)

A. Description and Measurement

1. Description
 - a. This item shall include the removal of existing materials necessary for the installation of the improvements identified on the plans as defined in Specification Section 31 11 00 SITE PREPARATION including but not limited to the remove and offsite disposal of ALL obstructions not otherwise provided for in the plans and specifications such as trees (all diameters), brush, debris, fences, gates, etc. This includes any demolition required as defined in Specification Section 02 41 00 DEMOLITION. Any fences, gates signs, markers, monuments, or landscaping disturbed shall be stored and reinstalled or replaced in-kind and installed prior to project final acceptance as a part of this item.
2. Measurement
 - a. Measurement will be made per lump sum for the clearing and grubbing for the duration of the project.
3. Payment
 - a. Payment will be based upon a percentage of 36-inch pipeline installed.

3.23 DESIGN AND IMPLEMENT STORMWATER POLLUTION PREVENTION PLAN (SWPPP) (ITEM NO.23)

A. Description and Measurement

1. Description
 - a. This item shall include all necessary labor, materials, and equipment to prepare and provide SWPPP for the duration of the project. This includes all fees associated with, but not limited to, preparation of the SWPPP, review and permitting fees, installation, maintenance, removal and proper offsite disposal of devices and measures in the proposed SWPPP, fines, and other incidental items as described in the specifications. If project duration changes due to changes by the Owner, no additional payment will be made to the Contractor.
2. Measurement
 - a. Measurement will be made per lump sum.
3. Payment
 - a. Payment will be based upon a percentage of the 36" water pipe installation.

3.24 DESIGN AND IMPLEMENT TRAFFIC CONTROL PLAN (ITEM NO.24)

A. Description and Measurement

1. Description
 - a. This item shall include all necessary labor, materials, and equipment to provide traffic control for the duration of the project. This includes all fees associated with, but not limited to, preparation of the traffic control plan, review and permitting fees, installation and maintenance of the traffic control devices, temporary signs and barricades, fines, and other incidental items as described in the specifications throughout construction; and removal of devices at the completion of the project. If project duration changes due to changes by the Owner, no additional payment will be made to the Contractor.
2. Measurement

- a. Measurement will be made per lump sum.
 - 3. Payment
 - a. Payment will be based upon a percentage of the 36" water pipe installation.
- 3.25 TRENCH SAFETY SYSTEM DEVELOPMENT, DESIGN, AND IMPLEMENTATION AS REQUIRED BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION AND THE ASSUMPTION OF RESPONSIBILITY FOR SYSTEM COMPLETE AND IN PLACE (ITEM NO.25)
 - A. Description and Measurement
 - 1. Description
 - a. This item shall include the development, design, and implementation of a trench safety plan and shoring system signed and sealed by an Engineer licensed to practice by the state of Texas as required by the Occupational Safety and Health Administration and the assumption of responsibility for the system.
 - 2. Measurement
 - a. Measurement will be made per lump sum for the design and implementation of the system for the duration of the project.
 - 3. Payment
 - a. Payment will be based upon a percentage of 36-inch pipeline installed.
- 3.26 RAILWAY RIGHT-OF-WAY CROSSING (ITEM NO. 26)
 - A. Description and Measurement
 - 1. Description
 - a. This item shall include all necessary labor, materials, and equipment to furnish and install steel casing pipe jack and bore or method approved by railroad per plans, details, and specifications complete and in place including but not limited to all operations (pit excavation, shoring, pilot hole drilling, reaming, pullback, backfilling, etc). This item shall include all coordination and training requirements by franchise owner, installation of carrier pipe into the casing pipe and connections to open cut portions, casing spacers, grouting the annular space between pipe and casing, seal end caps and seals, cathodic protection per specifications section 13 47 13. Flagging services and special inspections, required by the railroad are incidental to this bid item. This item includes the removal and replacement of affected utilities (including 6-inch gate valve and pipe) and all testing and quality control as described in the contract documents and per the applicable codes and regulations.
 - 2. Measurement
 - a. Measurement will be made per linear foot
 - 3. Payment
 - a. Payment will be based upon a percentage of the 36" water pipe installation.
- 3.27 REMOVE EXISTING CAP AND CONNECT TO EXISTING 36-INCH WATER LINE (ITEM NO.27)
 - A. Description and Measurement
 - 1. Description
 - a. This item includes the removal of the existing cap and connection to the existing 36-inch water line by the pump station. This item includes any survey, coordination during construction, shutoffs, and all other items necessary for this connection to be completed. This item includes quality control.
 - 2. Measurement
 - a. Measurement will be made per each connection including the removal of the existing cap and connection to the water line.

3. Payment
 - a. Payment will be at the conclusion of the connection to the existing water line including all testing required.
- 3.28 REMOVE EXISTING CAP AND CONNECT TO EXISTING 30-INCH WATER LINE (ITEM NO.28)
- A. Description and Measurement
 1. Description
 - a. This item includes the removal of the existing cap and connection to the existing 30-inch water line by the pump station. This item includes any survey, coordination during construction, shutoffs, and all other items necessary for this connection to be completed. This item includes quality control.
 2. Measurement
 - a. Measurement will be made per each connection including the removal of the existing cap and connection to the water line.
 3. Payment
 - a. Payment will be at the conclusion of the connection to the existing water line including all testing required.
- 3.29 MOBILIZATION, DEMOILIZATION, BONDS AND INSURANCE A MAXIMUM OF 5% OF TOTAL CONTRACT AMOUNT (ITEM NO. 29)
- A. Description and Measurement
 1. Description
 - a. This item shall include the movement of personnel, equipment, and supplies to project site for the Contractor to begin work. This item also includes all costs associated with bonding and insurance.
 2. Measurement
 - a. Measurement will be made per lump sum for Mobilization/Demobilization.
 - b. The maximum bid for this item shall be 5% of the total amount of the project.
 3. Payment
 - a. When 1% of the adjusted contract amount for construction items is earned, 25% of the item lump sum will be paid.
 - b. When 50% of the adjusted contract amount for construction items is earned, 50% of the item lump sum will be paid. Previous payments under this Item will be deducted from this amount.
 - c. When 100% of the adjusted contract amount for construction items is earned, 100% of the item lump sum will be paid. Previous payments under this Item will be deducted from this amount.
- 3.30 CONTINGENCY ALLOWANCE 1 FOR WORK CHANGE DIRECTIVES (MISCELLANEOUS WORK ON A CHANGE AUTHORIZATION BASIS) REQUIRED DURING COMPLETION OF THE PROJECT TO BE USED SOLELY AT THE DISCRETION OF OWNER AND ENGINEER (ITEM NO. 30)
- A. Description and Measurement
 1. Description
 - a. This item includes items currently not identified in the field or on the plans.
 - b. This item includes installation of temporary boundary fence by others.
 - c. This item includes other works by others instructed by the Owner.
 2. Measurement
 - a. Measurement will be determined based on the item.

- b. Measurement of temporary fence installation by others will be by linear foot of fence installed, and based on invoices received from others.
 - c. Measurement of other works by others will be based on work items completed.
3. Payment
- a. Payment will be based on the completion of the contingency item.
 - b. Payment for the temporary fence by others will be based on invoices received by others. No markup allowed.
 - c. Payment for other works by others will be based on invoices received by others. No markup allowed.

3.31 BID ALTERNATE

- A. The following items are alternatives that may be used in lieu of ITEM NO. 1 - PROVIDE AND INSTALL 36-INCH AWWA C900-16 PVC DR 21 WATERLINE. The Contractor shall provide unit and total bid prices for Alternate A so the City can compare items.
- B. PROVIDE AND INSTALL 36-INCH CL 150 PUSH-ON JOINT DUCTILE IRON PIPE WITH POLYWRAP (ALTERNATE A.1)
- 1. Description and Measurement
 - a. Description
 - 1) This item shall include all necessary labor, materials, and equipment to install the 36-inch diameter polywrapped push-on joint ductile iron pipe. This includes, but not limited to, survey layout, excavation, hauling and disposal, backfill including transportation, bedding, surface repair, acquisition, delivery and storage of the pipe and polywrap material, installation of the pipe with the polywrap material, warning tape, and tracer wire, and other incidental items as described in the specifications and shown on the plans. This item includes all testing and quality control as described in the specifications.
 - b. Measurement
 - 1) Measurement will be made per linear foot of pipe installed. Footage will be from connection point with restrained joint pipe to connection point with restrained joint pipe. This will include all testing and quality control.
 - c. Payment
 - 1) Payment will be based upon linear footage of pipe installed.
- C. PROVIDE AND INSTALL CATHODIC PROTECTION FOR 36-INCH CL 150 PUSH-ON JOINT DUCTILE IRON PIPE AT EXISTING GAS LINE CROSSINGS (ALTERNATE A.2)
- 1. Description and Measurement
 - a. Description
 - 1) This item shall include all necessary labor, materials, and equipment to design and install cathodic protection for the 36-inch diameter polywrapped push-on joint ductile iron pipe at the existing gas line. This includes, but not limited to, survey layout, excavation and backfill, bedding, surface repair, acquisition, delivery and storage of the materials, installation of the materials, and other incidental items as described in the specifications and shown on the plans. This item includes all testing and quality control as described in the specification section 13 47 13.
 - b. Measurement
 - 1) Measurement will be made per lump sum for the design and implementation of Cathodic Protection. This will include all testing and quality control.

c. Payment

- 1) The overall cost of the Cathodic Protection will be paid upon installation.

END OF SECTION

SECTION 01 26 00 – CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes description and requirements of:
 - 1. Proposal Requests.
 - 2. Claims.
 - 3. Change Orders and Written Amendments.
 - 4. Field Order Procedures.

1.2 PROPOSAL REQUEST

- A. Owner may, in anticipation of ordering an addition, deletion, or revision to the Work, request Contractor to prepare a detailed proposal of cost and times to perform contemplated change.
- B. Proposal request will include reference number for tracking purposes and detailed description of and reason for proposed change, and such additional information as appropriate and as may be required for Contractor to accurately estimate cost and time impact on the Project.
- C. Proposal request is for information only; Contractor is neither authorized to execute proposed change nor to stop Work in progress as result of such request.
- D. Contractor's written proposal shall be transmitted to Engineer promptly, but not later than 14 days after Contractor's receipt of Owner's written request. Proposal shall remain firm for a maximum period of 45 days after receipt by Engineer.
- E. Owner's request for proposal or Contractor's failure to submit such proposal within the required time period will not justify a claim for an adjustment in Contract Price or Contract Times (or Milestones).

1.3 CLAIMS

- A. Include, at a minimum:
 - 1. Specific references including:
 - a. Drawing numbers.
 - b. Specification section and article/paragraph number.
 - c. Submittal type, Submittal number, date reviewed, Engineer's comment, as applicable, with appropriate attachments.
 - 2. Stipulated facts and pertinent documents, including photographs and statements.
 - 3. Interpretations relied upon.
 - 4. Description of:
 - a. Nature and extent of claim.
 - b. Who or what caused the situation.
 - c. Impact to the Work and work of others.
 - d. Discussion of claimant's justification for requesting a change to price or times or both.
 - 5. Estimated adjustment in price claimant believes it is entitled to with documentation and justification.
 - 6. Requested Change in Contract Times: Include at least;
 - a. Progress schedule documentation showing logic diagram for request.
 - b. Documentation that float times available for Work have been used.
 - c. Revised activity logic with durations including sub-network logic revisions, duration changes, and other interrelated schedule impacts, as appropriate.

7. Documentation as may be necessary as set forth below for Work Change Directive, and as Engineer may otherwise require.

1.4 WORK CHANGE DIRECTIVES

A. Procedures:

1. Upon completion of Work covered by the Work Change Directive or when final Contract Times and Contract Price is determined, Contractor shall submit documentation for inclusion in a Change Order via **Email**.
2. Engineer will:
 - a. Initiate, including a description of the Work involved and any attachments.
 - b. Affix signature, demonstrating Engineer's recommendation.
 - c. Engineer will update Owner monthly on the status of the Work Change Directives.
3. Owner will:
 - a. Affix signature, demonstrating approval of the changes involved.
 - b. Return one electronic copy to Engineer. Engineer will retain one electronic copy, send one electronic copy to the Resident Project Representative or other field representative, and forward one electronic copy to Contractor.
4. Contractor's documentation shall include but not be limited to:
 - a. Appropriately detailed records of Work performed to enable determination of value of the Work.
 - b. Full information required to substantiate resulting change in Contract Times and Contract Price for Work. On request of Engineer, provide additional data necessary to support documentation.
 - c. Support data for Work performed on a unit price or Cost of the Work basis with additional information such as:
 - 1). Dates Work was performed, and by whom.
 - 2). Time records, wage rates paid, and equipment rental rates.
 - 3). Invoices and receipts for materials, equipment, and subcontracts, all similarly documented.
 - d. Claim for additional cost must be made within 10 days of the directive by the Engineer. Claims on work made after 10 days will not be considered.

- B. Effective Date of Work Change Directive: Date of signature by Owner, unless otherwise indicated thereon.

1.5 CHANGE ORDERS OR WRITTEN AMENDMENTS

A. Procedure:

1. Engineer will prepare the proposed Change Order or Written Amendment and transmit an electronic copy of such with Engineer's written recommendation (Change Order only) and request to Contractor for signature.
2. Contractor shall, upon receipt, either:
 - a. Promptly execute the document, retaining one electronic copy for its file, and return one electronic copy via **Email** to Engineer for Owner's signature, or
 - b. Return unsigned one electronic copy with written justification via **Email** for not executing Change Order or Written Amendment.
3. Engineer will, upon receipt of Contractor-executed copy, promptly forward Engineer's written recommendation and partially executed copy for Owner's signature, or if Contractor fails to execute the Change Order or Written Amendment, Engineer will promptly so notify Owner and transmit Contractor's justification to Owner.
4. Upon receipt of Contractor-executed Change Order or Written Amendment, Owner will promptly either:
 - a. Execute Change Order or Written Amendment, retaining one copy for its file and returning one electronic copy to Engineer, or

- b. Return to Engineer unsigned copy with written justification for not executing Change Order or Written Amendment.
- 5. Upon receipt of Owner-executed Change Order or Written Amendment, Engineer will transmit one electronic copy to Contractor, one copy to Resident Project Representative or other field representative, and retain one electronic copy, or if Owner fails to execute the Change Order or Written Amendment, Engineer will promptly so notify Contractor and transmit Owner's justification to Contractor.
- 6. Upon receipt of Owner-executed Change Order, Contractor shall:
 - a. Perform Work covered by Change Order or Written Amendment.
 - b. Revise Schedule of Values to adjust Contract Price and submit with next Application for Payment.
 - c. Revise progress schedule to reflect changes in Contract Times, if any, and to adjust times for other items of Work affected by change.
 - d. Enter changes in Project record documents after completion of change related Work.
- B. In signing a Change Order or Written Amendment, Owner and Contractor acknowledge and agree that:
 - 1. Stipulated compensation (Contract Price or Contract Times, or both) set forth includes payment for:
 - a. The Cost of the Work covered by the Change Order or Written Amendment.
 - b. Contractor's fee for overhead and profit.
 - c. Interruption of progress schedule.
 - d. Delay and impact, including cumulative impact, on other Work under the Contract Documents, and
 - e. Extended overheads.
 - 2. Change Order or Written Amendment constitutes full mutual accord and satisfaction for the change to the Work.
 - 3. Unless otherwise stated in the Change Order or Written Amendment, all requirements of the original Contract Documents apply to the Work covered by the Change Order or Written Amendment.

1.6 FIELD ORDER PROCEDURES

- A. Engineer will issue Field Orders, with one electronic copy to Contractor.
- B. Effective date of the Field Order shall be the date of signature by Engineer, unless otherwise indicated thereon.
- C. Contractor shall acknowledge receipt by signing and returning one electronic copy to Engineer.
- D. Field Orders will be incorporated into subsequent Change Orders, as a no-cost change to the Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 29 00 – PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of:
 - 1. Submittals Related to Payment Procedures.
 - 2. Schedule of Values.
 - 3. Schedule of Estimated Progress Payments.
 - 4. Payment.
 - 5. Nonpayment for Rejected or Unused Products.
 - 6. Partial Payment for Stored Materials and Equipment.
 - 7. Partial Payment for Undelivered, Project Specific Manufactured or Fabrication Equipment.
- B. Related sections:
 - 1. Section 01 50 00 – Temporary Facilities and Controls.

1.2 SUBMITTALS

- A. Informational Submittals:
 - 1. Schedule of Values: Submit on Contractor's standard form.
 - 2. Schedule of Estimated Progress Payments:
 - a. Submit with initially acceptable Schedule of Values.
 - b. Submit adjustments thereto with Application for Payment.
 - 3. Application for Payment.
 - 4. Final Application for Payment.

1.3 CONTINGENCY ALLOWANCES

- A. Consult with Engineer in selection of products or services. Obtain proposals from Suppliers and installers and offer recommendations.
- B. Contingency allowances will be administered in accordance with the General Conditions and as specified herein.
- C. Expenditure of any portion of Contingency Allowances shall only be done with authorization by Owner and Engineer. Contingency Allowances are estimated amounts and final payment shall be based on actual costs as authorized by Change Order and the Contract Price shall be correspondingly adjusted. The Contingency Allowances are specifically for the purpose of the following items: Work Change Directives.
- D. Submit, with application for payment, invoice showing date of purchase, from which the purchase was made, the date of delivery of the product or service, and the price, including delivery to the Site and applicable taxes.

1.4 SCHEDULE OF VALUES

- A. Prepare a separate Schedule of Values for each schedule of the Work under the Agreement.
- B. Upon request of Engineer, provide support documentation to support the accuracy of the Schedule of Values.
- C. Unit Price Work: Reflect unit price quantity and price breakdown from conformed Bid Form.

- D. Lump Sum Work:
 1. Reflect Schedule of Values format included in conformed Bid Form, specified allowances, alternates, and equipment selected by Owner, as applicable.
 2. List bonds and insurance premiums, mobilization, demobilization, preliminary and detailed progress schedule preparation, facility startup, and contract closeout separately.
 3. Break down by Division 2 through 44 with appropriate subdivision of each Specification for each Project facility. The apparent "low bidder" is required to deliver a Bid breakdown by specification within 2 working days after Bid opening.

E. An unbalanced or front-end loaded schedule will not be acceptable.

F. Summation of the complete Schedule of Values representing all the Work shall equal the Contract Price.

G. Submit Schedule of Values in a spreadsheet format compatible with latest version of Excel.

1.5 SCHEDULE OF ESTIMATED PROGRESS PAYMENTS

A. Show estimated payment requests throughout Contract Times aggregating initial Contract Price.

B. Base estimated progress payments on initially acceptable progress schedule. Adjust to reflect subsequent adjustments in progress schedule and Contract Price as reflected by modifications to the Contract Documents.

1.6 APPLICATION FOR PAYMENT

A. Transmittal Summary Form: Attach one Summary Form with each detailed Application for Payment for each schedule and include Request for Payment of Materials and Equipment on Hand as applicable. Execute certification by authorized officer of Contractor.

B. Use detailed Application for Payment Form suitable to Engineer.

C. Provide separate form for each schedule as applicable.

D. Include accepted Schedule of Values for each schedule or portion of Work, the unit price breakdown for the Work to be paid on unit price basis, a listing of Owner-selected equipment, if applicable, and allowances, as appropriate.

E. Preparation:

1. Round values to nearest dollar.
2. List each Change Order executed prior to date of submission as separate line item. The totals will equal those shown on the Transmittal Summary Form for each schedule as applicable.
3. Submit Application for Payment, including a Transmittal Summary Form and detailed Application for Payment Form(s) for each schedule as applicable, a listing of materials on hand for each schedule as applicable, and such supporting data as may be requested by Engineer.
4. Prior to submitting each request for progress payment, request Engineer's review and approval of current status of record documents as required by SC-7.11.B. Failure to properly maintain, update, and submit record documents may result in a deferral by Engineer to recommend whole or any part of Contractor's Application for Payment, either partial or final.

1.7 PAYMENT

- A. General:
 - 1. Progress payments will be made monthly.
 - 2. The date for Contractor's submission of monthly Application for Payment shall be established at the Preconstruction Conference.
 - 3. Progress payment is contingent upon applications and Contractor progress, which is subject to withholdings by Owner.
- B. Payment for all the Work shown or specified in Contract Documents is included in the Contract Price. No measurement or payment will be made for individual items.
- C. Payment for Lump Sum Work covers all Work specified or shown in the Contract Documents.

1.8 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

- A. Payment will not be made for following:
 - 1. Loading, hauling, and disposing of rejected material.
 - 2. Quantities of material wasted or disposed of in manner not called for under Contract Documents.
 - 3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of Contract Documents.
 - 4. Material not unloaded from transporting vehicle.
 - 5. Defective Work not accepted by Owner.
 - 6. Material remaining on hand after completion of Work.

1.9 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Partial Payment: No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings and preliminary operation and maintenance manuals are accepted by Engineer. Thereafter, partial payment for materials and equipment delivered and stored, but not yet incorporated in work, shall not exceed 90% of the equipment or material value.
- B. Final Payment: Will be made only for products incorporated in Work and following approval of final operations and maintenance manuals; remaining products, for which partial payments have been made, shall revert to Contractor unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

1.10 PARTIAL PAYMENT FOR UNDELIVERED, PROJECT-SPECIFIC MANUFACTURED OR FABRICATED EQUIPMENT

- A. Notwithstanding above provisions, partial payments for undelivered (not yet delivered to Site or not stored in the vicinity of Site) products specifically manufactured for this Project, excluding off the shelf or catalog items, will be made for products listed below when all following conditions exist:
 - 1. Partial payment request is supported by written acknowledgment from Suppliers that invoice requirements have been met.
 - 2. Equipment is adequately insured, maintained, stored, and protected by appropriate security measures.
 - 3. Each equipment item is clearly marked and segregated from other items to permit inventory and accountability.
 - 4. Authorization has been provided for access to storage Site for Engineer and Owner.
 - 5. Equipment meets applicable Specifications of these Contract Documents.

B. Applicable Items:

<u>Specification Section</u>	<u>Specific Product</u>
<u>Not Applicable</u>	<u>Not Applicable</u>

- C. Payment shall not exceed 15% of the equipment value, not including shipping and handling charges for undelivered, Project-specific manufactured equipment and will only be made following Shop Drawing approval.
- D. Failure of Contractor to continue compliance with above requirements shall give cause for Owner to withhold payments made for such equipment from future partial payments.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 31 00 – PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of:
 1. Submittals Related to Project Management and Coordination.
 2. Utility Notification and Coordination.
 3. Work Sequencing /Constraints.
 4. Facility Operations.
 5. Adjacent Facilities and Properties.
 6. Owner's Occupancy.
 7. Partial Utilization by the Owner.
 8. Physical Conditions.
 9. Construction Photographs.
 10. Audio-Video Recordings.
 11. Cutting, Fitting and Patching.
- B. Related sections:
 1. Section 01 32 00 – Construction Progress Documentation.

1.2 SUBMITTALS

- A. Informational:
 1. Statement of Qualification (SOQ) for land surveyor or civil engineer.
 2. Photographs and other records of examination.
 3. Video Recordings: Submit one copy, including updated copy of project video log, within 5 days of being taken.

1.3 UTILITY NOTIFICATION AND COORDINATION

- A. Coordinate the Work with various utilities within Project limits. Notify applicable utilities prior to commencing Work, if damage occurs, or if conflicts or emergencies arise during Work.
- B. Before excavation, contact Texas811 (800) 344-8377 to arrange for field location of known utilities.

1.4 WORK SEQUENCING/CONSTRAINTS

- A. Include the following work sequences in the Progress Schedule required under Section 01 32 00, CONSTRUCTION PROGRESS DOCUMENTATION.
- B. This Section identifies several construction constraints that must be reflected in the Contractor project coordination. An overall outline is presented in this Section for the Construction coordination, demolition, and seasonal/process constraints that shall be considered during construction. The sequence of Work for this Project must reflect the constraints identified herein.
- C. Definitions:
 1. Dry weather periods shall, in general, be from June 15 through October 1. Actual dry weather periods shall be as determined by the Owner based on weather, flows entering plant, and plant operation requirements.
 2. Wet weather periods shall be any time period which is not within the defined dry weather periods.

3. Low flow period shall be from 2:00 a.m. to 6:00 a.m.
4. Shutdown: Any shutdown requiring the City to shut off service to any customers or to turn off any existing pipelines.

D. Incorporate the Following Construction Constraints into the Work:

1. Driveway access shall be maintained at all times. Temporary access may be required during construction. Contractor shall coordinate with homeowner to maintain access.

1.5 FACILITY OPERATIONS

- A. Continuous operation of Owner's facilities is of critical importance. Schedule and conduct activities to enable existing facilities to operate continuously, unless otherwise specified, and to minimize the number of shutdowns of the existing facilities and pipelines.
- B. Perform Work continuously during critical connections and changeovers, as required, to prevent interruption of Owner's operations.
- C. Conduct Work outside regular working hours on prior written consent of Owner to meet Project schedule and avoid undesirable conditions.
- D. Shutdowns should be conducted at night within 4 hours. Minimize time required to complete connections to the existing facilities by verifying all pipe lengths and fittings are correct prior to cut-in.
- E. Be responsible for planning, designing, and providing various temporary services, utilities, connections, temporary piping, bypass facilities and temporary connections, and similar items to maintain continuous operations of Owner's facility. Sequences other than those specified will be considered upon written request to Owner and Engineer, provided they afford equivalent continuity of operations.
- F. Do not close lines, open or close valves, or take other action which would affect the operation of existing systems, except as specifically required by the Contract Documents and after authorization by Owner and Engineer. Such authorization will be considered within 48 hours after receipt of Contractor's written request.
- G. Any tanks or pipelines requiring drainage prior to construction will be drained by the Owner's staff to the maximum extent possible utilizing existing piping and drains where they exist. Contractor shall provide temporary pumping and effort to complete drainage of tank or pipeline as required. Provide minimum 7 days' notice to Engineer and Owner of need to drain a facility, unless otherwise specified.
- H. Power outages will be considered upon 48 hours written request to Owner and Engineer. Describe the reason, anticipated length of time, and areas affected by the outage in the written request. Provide temporary provisions for continuous power supply to critical existing facility components, is requested by Owner.
- I. Coordinate proposed work with Engineer and Owner before implementing unit shutdowns. Under no circumstances shall Work end if such actions may inadvertently cause a cessation of any facility operation. In such cases, remain onsite until necessary repairs are complete and facility is brought back online.
- J. Relocation of Existing Facilities:
 1. During construction, it is expected that minor relocations of Work will be necessary.

2. Provide complete relocation of existing structures and Underground Facilities, including piping, utilities, equipment and structures, electrical conduit wiring, electrical duct bank, and other necessary items.
3. Use only new materials for relocated facility. Match materials of existing facility, unless otherwise shown or specified.
4. Perform relocations to minimize downtime of existing facilities.
5. Install new portions of existing facilities in their relocated position prior to removal of existing facilities, unless otherwise accepted by Engineer.

1.6 ADJACENT FACILITIES AND PROPERTIES

- A. Examination:
 1. After Effective Date of the Agreement and before Work at Site is started Contractor, Engineer, and affected property owners and utility owners shall make a thorough examination of pre-existing conditions including existing buildings, structures, and other improvements in vicinity of Work, as applicable, which could be damaged by construction operations.
 2. Periodic reexamination shall be jointly performed to include, but not limited to, cracks in structures, settlement, leakage, and similar conditions.
- B. Documentation:
 1. Record and submit documentation of observations made on examination inspections for signature of Engineer and Contractor and in accordance with paragraph Construction Photographs and Audio-Video Recordings.
 2. Upon receipt, Engineer will review, sign, and return one record copy of documentation to Contractor to be kept on file in field office. Such documentation shall be used as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of Contractor's operations, and is for the protection of adjacent property owners, Contractor, and Owner.

1.7 OWNER'S OCCUPANCY

- A. Owner will occupy the premises during the period of construction for the conduct of its normal operations. Cooperate with Owner in all construction operations to minimize conflict and to facilitate Owner usage.

1.8 PARTIAL UTILIZATION BY THE OWNER

- A. Schedule operations for completion of portions of the Work, as designated under Work Sequence/Constraints, herein, for Owner's occupancy or separate operation prior to Substantial Completion of the entire Work.
- B. Unless agreed in writing prior to Owner's use, the following conditions shall apply:
 1. Contractor's Responsibilities:
 - a. Allow access for Owner's personnel.
 - b. Allow operation of ventilation and electrical systems.
 - c. All other responsibilities as specified in the General Conditions.
 2. Owner's Responsibilities:
 - a. Operate ventilating systems and pay cost of same.
 - b. Assume responsibility of power requirements.
 - c. Assume responsibility for security and fire protection in utilized areas, but not extending to Contractor's materials and equipment in utilized areas.
 - d. Assume responsibility for property insurance of utilized areas.
 3. Other Conditions of Owner's Use: The correction period for the occupied or separately operated portion of Work shall commence at the date of Substantial Completion for that separate part.

1.9 PHYSICAL CONDITIONS

- A. Exercise reasonable care to verify locations of existing subsurface facilities and utilities.
- B. Areas immediate and adjacent to planned excavations shall be thoroughly checked by means of visual examination and with electronic metal and pipe detection equipment for indications of underground utilities and facilities.
- C. Make exploratory excavation where existing underground facilities or utilities may potentially conflict with proposed excavations and facilities or where there is reasonable cause to verify the presence or absence of, or to obtain physical information regarding underground facilities or utilities. Conduct exploratory excavations as acceptable to and in the presence of Engineer prior to proceeding with major excavation in the area and sufficiently in advance of construction to avoid possible delays to Contractor's Work. Promptly take measurements, photographs, and obtain survey data.

1.10 CONSTRUCTION PHOTOGRAPHS

- A. Photographically document all phases of the project including preconstruction, construction progress, and post-construction.
- B. Engineer shall have the right to select the subject matter and vantage point from which photographs are to be taken.
- C. Photograph Format: Reference Section 01 34 00 for photograph requirements.
- D. Preconstruction and Post-Construction:
 - 1. After Effective Date of the Agreement and before Work at Site is started, and again upon issuance of Substantial Completion, take photographs of all areas of the Construction Site and property adjacent to perimeter of Construction Site.
 - 2. Particular emphasis shall be directed to structures both inside and outside the Site.
- E. Construction Progress Photos:
 - 1. Photographically demonstrate progress of construction, showing every aspect of Site and adjacent properties as well as interior and exterior of new or impacted structures.
 - 2. Take photos as frequent as required to document all major aspects of construction. Coordinate with Engineer.

1.11 AUDIO-VIDEO RECORDINGS

- A. Prior to beginning Work on Construction Site or of a particular area of the Work, and again within 10 days following date of Substantial Completion, video-graph Construction Site and property adjacent to Construction Site.
- B. In the case of preconstruction recording, no Work shall begin in the area prior to Engineer's review and approval of content and quality of video for that area.
- C. Particular emphasis shall be directed to physical condition of existing vegetation, structures, and pavements within Construction Site and areas adjacent to and within the right-of-way or easement, and on Contractor storage and staging areas.
- D. Engineer shall have right to select subject matter and vantage point from which videos are to be taken.
- E. Video Format and Quality:

1. Video:
 - a. Produce bright, sharp, and clear images with accurate colors, free of distortion and other forms of picture imperfections. Make sure sound is clear and free of distortion.
 - b. Electronically, and accurately display the month, day, year, and time of day of the recording.
2. Audio:
 - a. Audio documentation shall be done clearly, precisely, and at a moderate pace.
 - b. Indicate date, project name, and a brief description of the location of taping, including:
 - 1). Facility name.
 - 2). Street names or easements.
 - 3). Addresses of private property.
 - 4). Direction of coverage, including engineering stationing, if applicable.
3. Documentation:
 - a. Electronic File Name:
 - 1). Date of coverage in year-month-day-time format followed by a short description of video coverage.
4. Transmission of Files:
 - a. Transmit electronic files via Email, or;
 - b. Place electronic files on flash drive with enough storage size to hold all videos being transmitted and deliver to Engineer via acceptable method to Engineer.
5. Project Video Log: Maintain an ongoing log that incorporates above noted information for videos on Project.
6. Reference specification Section 01 34 00 for additional requirements.

1.12 REFERENCE POINTS AND SURVEYS

- A. Location and elevation of benchmarks are shown on Drawings.
- B. Dimensions for lines and elevations for grades of structures, appurtenances, and utilities are indicated on the Drawings, together with the other pertinent information required for laying out Work. If conditions vary from those indicated, immediately notify Engineer.
- C. Any existing survey points or other control markers destroyed without proper authorization will be replaced by Owner of the survey points or control markers at the Contractor's expense.
- D. Contractor's Responsibilities:
 1. Provide additional survey and layout required to layout the Work.
 2. Locate and protect reference points prior to stating site preparation.
 3. Check and establish exact location of existing facilities prior to construction of new facilities and any connections thereto.
 4. In event of discrepancy in data or staking provided by Owner, request clarification before proceeding with Work.
 5. Retain professional land surveyor or civil engineer registered in state of Project who shall perform or supervise engineering surveying necessary for additional construction staking and layout.
 6. Maintain complete accurate log of survey Work as it progresses as a Record Document.
 7. On request of Engineer, submit documentation.
 8. Provide competent employee(s), tools, stakes, and other equipment and materials as Engineer may require to:
 - a. Establish control points, lines, and easement boundaries.
 - b. Check layout, survey, and measurement Work performed by others.

1.13 GPS SURVEYING

- A. Contractor shall provide Owner GPS data at all water installation attributes including, but not limited to the following:
 - 1. Each bend and fitting. Payment incidental to Bid Item 6.
 - 2. Each mid-point of any span of straight run of pipe that exceeds 100 feet. Payment incidental to Bid Item 1, 2, or 3.
 - 3. 25 feet before and after deflection points. Payment incidental to Bid Item 1 or 2.
 - 4. Each end of encasement pipes. Payment incidental to Bid Item 12 or 13.
 - 5. Each bell of the start of a series of pulled joints, at each pulled joint and at the end of the series of pulled joints. Payment incidental to Bid Item 1, 2, or 3.
 - 6. Each butterfly valve. Payment incidental to Bid Item 4 or 5.
 - 7. Each air release valve. Payment incidental to Bid Item 7.
 - 8. Each blow off valve. Payment incidental to Bid Item 8.
- B. Horizontal and vertical data shall be based on survey control provided in the plans. Coordinates shall be NAD 83, North Central Zone (4204) grid coordinates, corrected using the scale factor provided in the plans. The coordinates shall be sub-foot accurate in the horizontal and no more than 3 times that accurate in the vertical. Each point collected must have a description field that includes a general description of that feature.
- C. All survey GPS shots shall be taken at the top and centerline of pipes and/or appurtenances and prior to backfilling the pipe and/or appurtenances.
- D. The GPS data collected shall be provided to Owner on a CD in Excel format and in an ESRI shape file or geodatabase format ready to be imported into ArcGIS. The GPS data shall be provided to the Owner at a minimum of a monthly basis.
- E. Payment for this work shall be considered incidental to payment of the bid item corresponding to the installation of the attribute. The Owner will need to review and approve the data before payment can be made on each item.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CUTTING, FITTING, AND PATCHING

- A. Cut, fit, adjust, or patch Work and work of others, including excavation and backfill as required, to make Work complete.
- B. Obtain prior written authorization of Engineer and Owner before commencing work to cut or otherwise alter:
 - 1. Structural or reinforcing steel, structural column or beam, elevated slab, trusses, or other structural member.
 - 2. Weather- or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Work of others.
- C. Refinish surfaces to provide an even finish.
 - 1. Refinish continuous surfaces to nearest intersection.
 - 2. Refinish entire assemblies.
 - 3. Finish restored surfaces to such planes, shapes, and textures that no transition between existing work and Work is evident in finished surfaces.

- D. Restore existing work, Underground Facilities, and surfaces that are to remain in completed Work including concrete-embedded piping, conduit, and other utilities as specified and as shown.
- E. Make restorations with new materials and appropriate methods as specified for new Work of similar nature; if not specified, use recommended practice of manufacturer or appropriate trade association.
- F. Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces and fill voids.
- G. Remove specimens of installed Work for testing when requested by Engineer.

END OF SECTION

SECTION 01 31 19 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Requirements for conducting conferences and meetings for the purposes of addressing issues related to the Work, reviewing and coordinating progress of the Work and other matters of common interest, and includes the following:
 1. General Requirements.
 2. Qualifications of Meeting Participants.
 3. Preconstruction Conference.
 4. Progress Meetings.
 5. Pre-Installation Meetings.
 6. Post Construction Meeting.

1.2 GENERAL REQUIREMENTS

- A. Contractor will schedule physical arrangements for meetings throughout progress of Work, prepare meeting agenda with regular participant input and distribute with written notice of each meeting, preside at meetings, record minutes to include significant proceedings and decisions, and reproduce and distribute copies of minutes within 5 days after each meeting to participants and parties affected by meeting decisions.

1.3 QUALIFICATIONS OF MEETING PARTICIPANTS

- A. Representatives of entities participating in meetings shall be qualified and authorized to act on behalf of entity each represents.

1.4 PRECONSTRUCTION CONFERENCE

- A. Contractor shall be prepared to discuss the following subjects, as a minimum:
 1. Required schedules.
 2. Status of Bonds and insurance.
 3. Sequencing of critical path work items.
 4. Progress payment procedures.
 5. Project changes and clarification procedures.
 6. Use of site, access, office and storage areas, security and temporary facilities.
 7. Major product delivery and priorities.
 8. Contractor's safety plan and representative.
- B. Attendees will include:
 1. Owner's representatives.
 2. Contractor's office representative.
 3. Contractor's resident superintendent.
 4. Contractor's quality control representative.
 5. Subcontractor's representatives whom Contractor may desire or Engineer may request to attend.
 6. Engineer's representatives.
 7. Others as appropriate.
- C. Upon issuance of Notice to Proceed, or earlier when mutually agreeable, Engineer will arrange a preconstruction conference in a convenient place for most persons invited, in accordance with the General Conditions.

- D. Attending Preconstruction Conference: Contractor's superintendent, Owner, Engineer, representatives of utilities, major subcontractors and others involved in performance of the Work, and others necessary to agenda.
- E. Engineer will preside at conference.
- F. Purpose of conference: To establish working understanding between parties and to discuss Construction Schedule, shop drawing and other submittals, cost breakdown of major lump sum items, processing of submittals and applications for payment, and other subjects pertinent to execution of the Work.
- G. Agenda will include:
 - 1. Adequacy of distribution of Contract Documents.
 - 2. Distribution and discussion of list of major subcontractors and suppliers.
 - 3. Proposed progress schedules and critical construction sequencing.
 - 4. Major equipment deliveries and priorities.
 - 5. Project coordination.
 - 6. Designation of responsible personnel.
 - 7. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.
 - c. Submittals.
 - d. Change Orders.
 - e. Applications for Payment.
 - f. Record Documents.
 - 8. Use of premises:
 - a. Office, construction, and storage areas.
 - b. Owner's requirements.
 - 9. Construction facilities, controls, and construction aids.
 - 10. Shoring requirements and submittal of Contractor's geotechnical report.
 - 11. Temporary utilities.
 - 12. Safety and first aid procedures.
 - 13. Security procedures.
 - 14. Housekeeping procedures.
- H. Engineer will record minutes of meeting and distribute copies of minutes within 5 days of meeting to participants and interested parties.

1.5 PROGRESS MEETINGS

- A. Contractor will schedule regular progress meetings at site, conducted weekly, to review the Work progress, progress schedule, Shop Drawing and Sample submissions schedule, Application for Payment, contract modifications, and other matters needing discussion and resolution. At one meeting each month the Contractor's updated narrative progress report and overall schedule will be a topic of discussion.
- B. Attendees will include:
 - 1. Owner's representative(s), as appropriate.
 - 2. Contractor, Subcontractors, and Suppliers, as appropriate.
 - 3. Engineer's representative(s).
 - 4. Others as appropriate.
- C. Contractor shall:
 - 1. Conduct progress meetings at least once every week in Contractor's field office, Engineer's field office, or other mutually agreed upon place.

2. Distribute to each anticipated participant written notice and agenda of each meeting at least 2 days before meeting.
 3. Require attendance of Contractor's superintendent and subcontractors who are or are proximate to be actively involved in the Work, or who are necessary to agenda.
 4. Invite Owner, Engineer, utility companies when the Work affects their interests, and others necessary to agenda.
 5. Complete and bring Application for Payment and Progress Schedule to progress meeting.
 6. Prepare and distribute agenda.
- D. Engineer will preside at meetings.
- E. Purpose of progress meetings:
1. To expedite work of subcontractors or other organizations that are not meeting scheduled progress, resolve conflicts, and coordinate and expedite execution of the Work.
 2. Review progress of the Work, Progress Schedule, narrative report, Application for Payment, record documents, and additional items of current interest that are pertinent to execution of the Work.
 3. Verify:
 - a. Actual start and finish dates of completed activities since last progress meeting.
 - b. Durations and progress of activities not completed.
 - c. Reason, time, and cost data for Change Order Work that will be incorporated into Progress Schedule and application for payment.
 - d. Percentage completion of items on Application for Payment.
 - e. Reasons for required revisions to Progress Schedule and their effect on Contract Time and Contract Price.
- F. Discuss potential problems that may impede scheduled progress and corrective measures.
- G. Contractor will record minutes of meeting and distribute copies of minutes within 7 days of meeting to participants and interested parties.
- 1.6 QUALITY CONTROL AND COORDINATION MEETINGS
- A. Scheduled by Engineer on regular basis and as necessary to review test and inspection reports, and other matters relating to quality control of Work and work of other contractors.
- B. Attendees will include:
1. Contractor.
 2. Contractor's designated quality control representative.
 3. Subcontractors and Suppliers, as necessary.
 4. Engineer's representatives.
- 1.7 POST CONSTRUCTION MEETING
- A. Meet with and inspect the Work at 11 months after date of Substantial Completion with Owner and Engineer.
- B. Arrange meeting at least 7 days before meeting.
- C. Meet in Owner's office or other mutually agreed upon place.
- D. Inspect the Work and draft list of items to be completed or corrected.

- E. Review service and maintenance contracts, and take appropriate corrective action when necessary.
- F. Complete or correct defective work and extend correction period accordingly.
- G. Require attendance of Superintendent, appropriate manufacturers and installers of major units of constructions, and affected subcontractors.

1.8 OTHER MEETINGS

- A. In accordance with Contract Documents and as may be required by Owner and Engineer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Preparation, submittal, and maintenance of computerized progress schedule and reports, contract time adjustments, and payment requests, including the following:
 1. Preliminary Schedule.
 2. Detailed Progress Schedule.
 3. Schedule Updates.
 4. Schedule Revisions.

1.2 SUBMITTALS

- A. Informational Submittals:
 1. Preliminary Progress Schedule: Submit at least 7 days prior to preconstruction conference.
 2. Detailed Progress Schedule:
 - a. Submit initial Detailed Progress Schedule within 45 days after Effective Date of the Agreement.
 - b. Submit an Updated Progress Schedule at each update, in accordance with Article Detailed Progress Schedule.
 3. Submit with Each Progress Schedule Submission:
 - a. Contractor's certification that Progress Schedule submission is actual schedule being utilized for execution of the Work.
 - b. Electronic files compatible with latest version of the Contractor's selected software, or compatible with Microsoft Project, or compatible with Microsoft Excel.
 - c. Progress Schedule: Legible copies.
 - d. Narrative Progress Report: Same number of copies as specified for Progress Schedule.
 4. Prior to final payment, submit a final Updated Progress Schedule.

1.3 PRELIMINARY PROGRESS SCHEDULE

- A. In addition to basic requirements outlined in General Conditions, show a detailed schedule, beginning with Notice to Proceed, for minimum duration of 90 days, and a summary of balance of Project through Final Completion.
- B. Show activities including, but not limited to the following:
 1. Notice to Proceed.
 2. Permits.
 3. Submittals, with review time. Contractor may use Schedule of Submittals specified in Section 01 33 00, SUBMITTAL PROCEDURES.
 4. Early procurement activities for long lead equipment and materials.
 5. Initial Site work.
 6. Earthwork.
 7. Specified Work sequences and construction constraints.
 8. Contract Milestone and Completion Dates.
 9. Owner-furnished products delivery dates or ranges of dates.
 10. Major structural, mechanical, equipment, electrical, architectural, and instrumentation and control Work.
 11. System startup summary.
 12. Project close-out summary.
 13. Demobilization summary.

- C. Update Preliminary Progress Schedule monthly; as part of progress payment process. Failure to do so may result in the Owner withholding all or part of the monthly progress payment until the Preliminary Progress Schedule is updated in a manner acceptable to Engineer.
- D. Format: In accordance with Article Progress Schedule Critical Path Network.
- E. Update monthly to reflect actual progress and occurrences to date, including weather delays.

1.4 DETAILED PROGRESS SCHEDULE

- A. General: Comprehensive computer-generated schedule using a "Critical Path Method" (CPM), generally as outlined in Associated General Contractors of America (AGC) 580, "Construction Project Planning and Scheduling Guidelines." If a conflict occurs between the AGC publication and this Specification, this Specification shall govern. Adjust or confirm schedules in accordance with General Conditions on a monthly basis and submit to Engineer.
- B. Contents:
 - 1. Schedule shall begin with the date of Notice to Proceed and conclude with the date of Final Completion.
 - 2. Identify Work calendar basis using days as a unit of measure.
 - 3. Show complete interdependence and sequence of construction and Project-related activities reasonably required to complete the Work.
 - 4. Identify the Work of separate stages and other logically grouped activities, and clearly identify critical path of activities.
 - 5. Reflect sequences of the Work, restraints, delivery windows, review times, Contract Times and Project Milestones set forth in the Agreement and Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION.
 - 6. Include as applicable, at a minimum:
 - a. Obtaining permits, submittals for early product procurement, and long lead time items.
 - b. Mobilization and other preliminary activities.
 - c. Initial Site work.
 - d. Specified Work sequences, constraints, and Milestones, including
 - e. Substantial Completion date(s) Subcontract Work.
 - f. Major equipment design, fabrication, factory testing, and delivery dates.
 - g. Delivery dates for Owner-furnished products, as specified in Section 01 11 00, SUMMARY OF WORK.
 - h. Site work.
 - i. Concrete Work.
 - j. Structural steel Work.
 - k. Architectural features Work.
 - l. Conveying systems Work.
 - m. Equipment Work.
 - n. Mechanical Work.
 - o. Electrical Work.
 - p. Instrumentation and control Work.
 - q. Interfaces with Owner-furnished equipment.
 - r. Other important Work for each major facility.
 - s. Equipment and system startup and test activities.
 - t. Project closeout and cleanup.
 - u. Demobilization.
 - 7. No activity duration exclusive of those for Submittals review and product fabrication/delivery, shall be less than 1 day and not more than 14 days, unless otherwise approved.
 - 8. Activity duration for Submittal review shall not be less than review time specified unless clearly identified and prior written acceptance has been obtained from Engineer.

9. If Contractor provides an accepted schedule with an early completion date, Owner reserves the right to reduce Contract Times to match the early completion date by issuing a deductive Change Order at no change in Contract Price.

C. Network Graphical Display:

1. Plot or print on paper not greater than 30" x 42" or smaller than 22" x 34", unless otherwise approved.
2. Title Block: Show name of Project, Owner, date submitted, revision or update number, and the name of the scheduler. Updated schedules shall indicate data date.
3. Identify horizontally across top of schedule the time frame by year, month, and day.
4. Identify each activity with a unique number and a brief description of the Work associated with that activity.
5. Indicate the critical path.
6. Show, at a minimum, the controlling relationships between activities.
7. Plot activities on a time-scaled basis, with the length of each activity proportional to the current estimate of the duration.
8. Plot activities on an early start basis unless otherwise requested by Engineer.
9. Provide a legend to describe standard and special symbols used.

D. Schedule Report:

1. 8-1/2" x 11" white paper, unless otherwise approved.
2. List information for each activity in tabular format, including, at a minimum:
 - a. Activity Identification Number.
 - b. Activity Description.
 - c. Original Duration.
 - d. Remaining Duration.
 - e. Early Start Date (Actual start on Updated Progress Schedules).
 - f. Early Finish Date (Actual finish on Updated Progress Schedules).
 - g. Late Start Date.
 - h. Late Finish Date.
 - i. Total Float.
3. Sort reports, in ascending order, as listed below:
 - a. Activity number sequence with predecessor and successor activity.

E. Cost -Loading:

1. Note the estimated cost to perform each Work activity, with the exception of Submittals or Submittal reviews, in the network in a tabular listing.
2. The sum of all activity costs shall equal the Contract Price. An unbalanced or front-end-loaded schedule will not be acceptable.
3. The accepted cost-loaded Progress Schedule shall constitute the Schedule of Values specified in Section 01 29 00, PAYMENT PROCEDURES.

1.5 PROGRESS OF THE WORK

A. Updated Progress Schedule shall reflect:

1. Progress of Work to within 5 working days prior to submission.
2. Approved changes in Work scope and activities modified since submission.
3. Delays in Submittals or re-submittals, deliveries, or Work.
4. Adjusted or modified sequences of Work.
5. Other identifiable changes.
6. Revised projections of progress and completion.
7. Report of changed logic.

- B. Produce detailed sub schedules during Project, upon request of Owner or Engineer, to further define critical portions of the Work such as facility shutdowns.

- C. If Contractor fails to complete activity by its latest scheduled completion date and this Failure is anticipated to extend Contract Times (or Milestones), Contractor shall, within 7 days of such failure, submit a written statement as to how Contractor intends to correct nonperformance and return to acceptable current Progress Schedule. Actions by Contractor to complete the Work within Contract Times (or Milestones) will not be justification for adjustment to Contract Price or Contract Times.
- D. Owner may order Contractor to increase plant, equipment, labor force or working hours if Contractor fails to:
 - 1. Complete an activity by its completion date.
 - 2. Satisfactorily execute Work as necessary to prevent delay to overall completion of Project, at no additional cost to Owner.

1.6 SCHEDULE ACCEPTANCE

- A. Engineer's acceptance will demonstrate agreement that:
 - 1. Proposed schedule is accepted with respect to:
 - a. Contract Times, including Final Completion are within the specified times.
 - b. Specified Work sequences and constraints are shown as specified.
 - c. Access restrictions are accurately reflected.
 - d. Startup and testing times are as specified.
 - e. Submittal review times are as specified.
 - f. Startup testing duration is as specified and timing is acceptable.
 - 2. In all other respects, Engineer's acceptance of Contractor's schedule indicates that in the Engineer's judgment, the schedule represents reasonable plan for constructing Project in accordance with the Contract Documents. Engineer's review will not make any change in Contract requirements. Lack of comment on any aspect of schedule that is not in accordance with the Contract Documents will not thereby indicate acceptance of that change, unless Contractor has explicitly called the nonconformance to Engineer's attention in submittal. Schedule remains Contractor's responsibility and Contractor retains responsibility for performing all activities, for activity durations, and for activity sequences required to construct Project in accordance with the Contract Documents.
- B. Unacceptable Preliminary Progress Schedule:
 - 1. Make requested corrections; resubmit within 10 days.
 - 2. Until acceptable to Engineer as Baseline Progress Schedule, continue review and revision process, during which time Contractor shall update schedule on a monthly basis to reflect actual progress and occurrences to date.
- C. Unacceptable Detailed Progress Schedule:
 - 1. Make requested corrections; resubmit within 10 days.
 - 2. Until acceptable to Engineer as Baseline Progress Schedule, continue review and revision process.
- D. Narrative Report: All changes to activity duration and sequences, including addition or deletion of activities subsequent to Engineer's acceptance of Baseline Progress Schedule shall be delineated in Narrative Report current with proposed Updated Progress Schedule.

1.7 ADJUSTMENT OF CONTRACT TIMES

- A. Reference the General Conditions and Section 01 26 00, CONTRACT MODIFICATION PROCEDURES.

- B. Evaluation and reconciliation of Adjustments of Contract Times shall be based on the Updated Progress Schedule at the time of proposed adjustment or claimed delay.
- C. Float:
 - 1. Float time is a Project resource available to both parties to meet contract Milestones and Contract Times.
 - 2. Use of float suppression techniques, such as preferential sequencing or logic, special lead/lag logic restraints, and extended activity times are prohibited. Use of float time disclosed or implied by use of alternate float-suppression techniques shall be shared to proportionate benefit of Owner and Contractor.
 - 3. Pursuant to above float-sharing requirement, no time extensions will be granted nor delay damages paid until a delay occurs, which:
 - a. Impacts Project's critical path,
 - b. Consumes all available float or contingency time, and
 - c. Extends Work beyond contract completion date.
- D. Claims Based on Contract Times:
 - 1. Where Engineer has not yet rendered formal decision on Contractor's Claim for adjustment of Contract Times, and parties are unable to agree as to amount of adjustment to be reflected in Progress Schedule, Contractor shall reflect an interim adjustment in the Progress Schedule as acceptable to Engineer.
 - 2. It is understood and agreed that such interim acceptance will not be binding on either Contractor or Owner, and will be made only for the purpose of continuing to schedule Work until such time as formal decision has been rendered as to an adjustment, if any, of the Contract Times.
 - 3. Contractor shall revise Progress Schedule prepared thereafter in accordance with Engineer's formal decision.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 90 – SAFETY PLAN

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Development and maintenance of a Construction Safety Plan.

1.2 REFERENCES

- A. OSHA.

1.3 CONSTRUCTION SAFETY PLAN

- A. Detail the Methods and Procedures to comply with Federal, and Local Health and Safety Laws, Rules and Requirements for the duration of the Contract Times. Include the following:
 1. Identification of the Certified or Licensed Safety Consultant, who will prepare, initiate, maintain and supervise safety programs, and procedures.
 2. Procedures for providing workers with an awareness of safety and health hazards expected to be encountered in the course of construction.
 3. Safety equipment appropriate to the safety and health hazards expected to be encountered during construction. Include warning devices, barricades, safety equipment in public right-of-way and protected areas, and safety equipment used in multi-level structures.
 4. Methods for minimizing employees' exposure to safety and health hazards expected during construction.
 5. Procedures for reporting safety or health hazards.
 6. Procedures to follow to correct a recognized safety and health hazard.
 7. Procedures for investigation of accidents, injuries, illnesses and unusual events that have occurred at the construction site.
 8. Periodic and scheduled inspections of general work areas and specific work stations.
 9. Training for employees and workers at the jobsite.
 10. Methods of communication of safe working conditions, work practices and required personal protection equipment.
- B. Assume responsibility for every aspect of Health and Safety on the jobsite, including the health and safety of subcontractors, suppliers, and other persons on the jobsite:
 1. Forward available information and reports to the Safety Consultant who shall make the necessary recommendations concerning worker health and safety at the jobsite.
 2. Employ additional health and safety measures specified by the Safety Consultant, as necessary, for workers in accordance with OSHA guidelines.
- C. Transmit to OWNER and ENGINEER copies of reports and other documents related to accidents or injuries encountered during construction.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 00 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of:
 - 1. Submittals Related to Project Submittals as related to:
 - a. Action Submittals
 - b. Informational Submittals
- B. Related sections:
 - 1. 01 29 00 – Payment Procedures.
 - 2. 01 31 00 – Project Management and Coordination.
 - 3. 01 32 00 – Construction Progress Documentation.
 - 4. 01 77 00 – Closeout Procedures.
 - 5. 01 78 23 – Operation and Maintenance Data.
 - 6. 01 79 00 – Demonstration and Training.

1.2 DEFINITIONS

- A. Action Submittal: Written and graphic information submitted by Contractor that requires Engineer's approval.
- B. Informational Submittal: Information submitted by Contractor that does not require Engineer's approval.

1.3 PROCEDURES

- A. Direct Submittals to Engineer.
- B. Contractor will submit all submittals electronically using Email to facilitate the transfer of submittals and related files.
- C. Transmittal of Submittal:
 - 1. Contractor shall:
 - a. Review each submittal and check for compliance with Contract Documents.
 - b. Stamp each submittal with uniform approval stamp before submitting to Engineer.
 - 1). Stamp to include Project name, submittal number, Specification number, Contractor's reviewer name, date of Contractor's approval and statement certifying that submittal has been reviewed, checked, and approved for compliance with Contract Documents.
 - 2). Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
 - 2. Complete, sign, and transmit with each submittal package, one Transmittal of Contractor's Submittal form. A blank Transmittal of Contractor's Submittal form may be provided by Engineer.
 - 3. Identify Each Submittal with the Following:
 - a. Numbering and Tracking System:
 - 1) Submittal No. 8300-001, etc.
 - b. Sequentially number each submittal.
 - c. Resubmission of submittal shall have original number with sequential alphabetic suffix (ie: Resubmittal No. 8300-001-A).
 - 1). Specification section and paragraph to which submittal applies.
 - 2). Project title and Engineer's project number.

- 3). Date of transmittal.
 - 4). Names of Contractor, subcontractor or Supplier and Manufacturer as appropriate.
 4. Identify and describe each deviation or variation from Contract Documents.
 - D. Format:
 1. Do not base Shop Drawings on reproductions of Contract Documents.
 2. Package submittal information by individual Specification section. Do not combine different Specification sections together in submittal package, unless otherwise directed in Specification.
 3. Present in a clear and thorough manner and in sufficient detail to show kind, size, arrangement, and function of components, materials, and devices, and compliance with Contract Documents.
 4. Index with labeled tab dividers in orderly manner.
 - E. Timeliness: Schedule and submit in accordance Schedule of Submittals, and requirements of individual Specification sections.
 - F. Processing Time:
 1. Time for review shall commence on Engineer's receipt of submittal.
 2. Engineer will act upon Contractor's submittal and transmit response to Contractor not later than 30 days after receipt, unless otherwise specified.
 3. Re-submittals will be subject to same review time.
 4. No adjustment of Contract Times or Price will be allowed due to delays in progress of Work caused by rejection and subsequent re-submittals.
 - G. Re-submittals: Clearly identify each correction or change made.
 - H. Incomplete Submittals:
 1. Engineer will return entire submittal for Contractor's revision if preliminary review deems it incomplete.
 2. When any of the following are missing, submittal will be deemed incomplete:
 - a. Contractor's review stamp completed and signed.
 - b. Transmittal of Contractor's Submittal completed and signed.
 3. Submittals not required by Contract Documents will not be reviewed and will be returned stamped "Not Reviewed."
 4. Engineer will keep one electronic copy and return one electronic copy to Contractor.
 - I. Coordination with Project:
 1. It is the Contractor's responsibility to coordinate all equipment furnished with project elevations and dimensions. Approval of the submittal does not relieve the Contractor of the responsibility.
 2. Contractor shall be responsible for coordinating all project aspects and project changes with all submittals.
- 1.4 ACTION SUBMITTALS
- A. Prepare and submit Action Submittals required by individual Specification sections.
 - B. Contractor will submit all submittals electronically using Email to facilitate the transfer of submittals and related files.
 - C. Shop Drawings:
 1. Identify and Indicate:

- a. Applicable Contract Drawing and Detail number, products, units and assemblies, and system or equipment identification or tag numbers.
 - b. Equipment and Component Title: Identical to title shown on Drawings.
 - c. Critical field dimensions and relationships to other critical features of Work. Note dimensions established by field measurement.
 - d. Project-specific information drawn accurately to scale.
 - 2. Manufacturer's standard schematic drawings and diagrams as follows:
 - a. Modify to delete information that is not applicable to the Work.
 - b. Supplement standard information to provide information specifically applicable to the Work.
 - 3. Product Data: Provide as specified in individual Specifications.
 - 4. Foreign Manufacturers: When proposed, include following additional information:
 - a. Names and addresses of at least two companies that maintain technical service representatives close to Project.
 - b. Complete list of spare parts and accessories for each piece of equipment.
- D. Samples:
- 1. Copies: One, unless otherwise specified in individual Specifications.
 - 2. Preparation: Mount, display, or package Samples in manner specified to facilitate review of quality. Attach label on unexposed side that includes the following:
 - a. Manufacturer name.
 - b. Model number.
 - c. Material.
 - d. Sample source.
 - 3. Manufacturer's Color Chart: Units or sections of units showing full range of colors, textures, and patterns available.
 - 4. Full-size Samples:
 - a. Size as indicated in individual Specification section.
 - b. Prepared from same materials to be used for the Work.
 - c. Cured and finished in manner specified.
 - d. Physically identical with product proposed for use.
- E. Action Submittal Dispositions: Engineer will review, mark, and stamp as appropriate, and distribute marked-up copies as noted:
- 1. Furnish as Submitted:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal.
 - b. Distribution
 - 1). One electronic copy furnished to Resident Project Representative.
 - 2). One electronic copy retained in Engineer's file.
 - 3). One electronic copy returned to Contractor appropriately annotated.
 - 2. Furnish as Corrected or Noted:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal, in accordance with Engineer's notations.
 - b. Distribution:
 - 1). One electronic copy furnished to Resident Project Representative.
 - 2). One electronic copy retained in Engineer's file.
 - 3). One electronic copy to Contractor appropriately annotated.
 - 3. Revise and Resubmit:
 - a. Make corrections or obtain missing portions, and resubmit.
 - b. Except for portions indicated, Contractor may begin to incorporate product(s) or implement Work covered by submittal, in accordance with Engineer's notations.
 - c. Distribution:
 - 1). One electronic copy furnished to Resident Project Representative.
 - 2). One electronic copy retained in Engineer's file.
 - 3). One electronic copy to Contractor appropriately annotated.
 - 4. Rejected:

- a. Contractor may not incorporate product(s) or implement Work covered by submittal.
- b. Distribution:
 - 1). One electronic copy furnished to Resident Project Representative.
 - 2). One electronic copy retained in Engineer's file.
 - 3). One electronic copy returned to Contractor appropriately annotated.

1.5 INFORMATIONAL SUBMITTALS

A. General:

1. Contractor will submit all submittals electronically using Email to facilitate the transfer of submittals and related files.
2. Refer to individual Specification sections for specific submittal requirements.
3. Engineer will review each submittal. If submittal meets conditions of the Contract, Engineer will forward electronic copies to appropriate parties. If Engineer determines submittal does not meet conditions of the Contract and is therefore considered unacceptable, Engineer will retain one electronic copy and return one electronic copy with review comments to Contractor, and require that submittal be corrected and resubmitted.
4. Application for Payment: In accordance with Section 01 29 00, PAYMENT PROCEDURES.
5. Certificates:
 - a. General:
 - 1). Provide notarized statement that includes signature of entity responsible for preparing certification.
 - 2). Signed by officer or other individual authorized to sign documents on behalf of that entity.
6. Welding: In accordance with individual Specification sections.
7. Installer: Prepare written statements on Manufacturer's letterhead certifying that installer complies with requirements as specified in individual Specification sections.
8. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
9. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual Specification sections.
10. Manufacturer's Certificate of Compliance: In accordance with Section 01 79 00, DEMONSTRATION AND TRAINING.
11. Manufacturer's Certificate of Proper Installation: In accordance with Section 01 79 00, DEMONSTRATION AND TRAINING.

B. Construction Photographs and Video: In accordance with Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION, and as may otherwise be required in Contract Documents.

C. Contract Closeout Submittals: In accordance with Section 01 77 00, CLOSEOUT PROCEDURES.

D. Contractor-Design Data:

1. Written and graphic information.
2. List of assumptions.
3. List of performance and design criteria.
4. Summary of loads or load diagram, if applicable.
5. Calculations.
6. List of applicable codes and regulations.
7. Name and version of software.
8. Information requested in individual Specification section.

- E. Manufacturer's Instructions: Written or published information that documents Manufacturer's recommendations, guidelines, and procedures in accordance with individual Specification sections.
- F. Operation and Maintenance Data: As required in Section 01 78 23, OPERATION AND MAINTENANCE DATA.
- G. Schedules:
 - 1. Schedule of Submittals: Prepare separately or in combination with Progress Schedule as specified in Section 01 32 00, CONSTRUCTION PROGRESS DOCUMENTATION.
 - a. Show for Each, at a Minimum, the Following:
 - 1). Specification section number.
 - 2). Identification by numbering and tracking system as specified under Paragraph "Transmittal of Submittal".
 - 3). Estimated date of submission to Engineer, including reviewing and processing time.
 - b. On a monthly basis, submit updated schedule to Engineer if changes have occurred or re-submittals are required.
 - 2. Schedule of Values: In accordance with Section 01 29 00, PAYMENT PROCEDURES.
 - 3. Schedule of Estimated Progress Payments: In accordance with Section 01 32 00, CONSTRUCTION PROGRESS DOCUMENTATION.
 - 4. Progress Schedules: In accordance with Section 01 32 00, CONSTRUCTION PROGRESS DOCUMENTATION.
- H. Special Guarantee: Supplier's written guarantee as required in individual Specification sections.
- I. Statement of Qualification: Evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty Subcontractor, trade, Specialist, consultant, installer, and other professionals.
- J. Submittals Required by Laws, Regulations, and Governing Agencies:
 - 1. Submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable Federal, State, or local governing agency or their representative.
 - 2. Transmit to Engineer for Owner's records one electronic copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and governing agency.
- K. Test and Inspection Reports:
 - 1. General: Shall contain signature of person responsible for test or report.
 - 2. Factory:
 - a. Identification of product and Specification section, type of inspection or test with referenced standard or code.
 - b. Date of test, Project title and number, and name and signature of authorized person.
 - c. Test results.
 - d. If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
 - e. Provide interpretation of test results, when requested by Engineer.
 - f. Other items as identified in individual Specification sections.
 - 3. Field: As a minimum, include the following:
 - a. Project title and number.
 - b. Date and time.
 - c. Record of temperature and weather conditions.
 - d. Identification of product and Specification section.

- e. Type and location of test, Sample, or inspection, including referenced standard or code.
 - f. Date issued, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.
 - g. If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
 - h. Provide interpretation of test results, when requested by Engineer.
 - i. Other items as identified in individual Specification sections.
- 4. Testing and Startup Data: In accordance with Section 01 79 00, DEMONSTRATION AND TRAINING.
 - 5. Training Data: In accordance with Section 01 79 00, DEMONSTRATION AND TRAINING.

1.6 FINAL SUBMITTALS

- A. Submit final copy of all submitted information to OWNER as component of Final Close Out. Prepare final data in electronic media format.
- B. Organizational Format:
 - 1. Identify electronic files with title "FINAL PROJECT SUBMITTALS" and list each submittal with the following information on each file's cover sheet:
 - a. Project title.
 - b. Designate applicable system, equipment, material, or finish.
 - c. Identity of separate structure as applicable.
 - d. Identity of general subject matter covered in manual.
 - e. Identity of equipment number and Specification section.
 - 2. Provide Title Page file with the following:
 - a. Contractor name, address, and telephone number.
 - b. Subcontractor, Supplier, installer, or maintenance contractor's name, address, and telephone number, as appropriate.
 - 1) Identify area of responsibility of each.
 - 2) Provide name and telephone number of local source of supply for parts and replacement.
 - 3. Provide electronic searchable Table of Contents for all files:
 - a. Arranged in systematic order with consecutive page numbers.
 - b. Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.
 - 4. Text: Manufacturer's printed data, or neatly identified
 - 5. Material shall be suitable for reproduction, with quality equal to original.
 - 6. All drawings and oversized figures shall be presented electronically in 11x 17 format.
- C. Electronic Media Format:
 - 1. Portable Document Format (PDF):
 - a. After all preliminary data has been found to be acceptable to Engineer, submit Operation and Maintenance data in PDF format on CD.
 - b. Files to be exact duplicates of Engineer-accepted preliminary data. Arrange by specification number and name.
 - c. Files to be fully functional, fully viewable and fully searchable in most recent version of Adobe Acrobat.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 34 00 – PHOTOGRAPHIC AND VIDEOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes Requirements for:
 - 1. Pre-construction photographs.
 - 2. Pre-construction videos.
 - 3. Post-construction photographs.
 - 4. Post-construction videos.
- B. The purpose of the photographs and videos is to document the condition of the facilities prior to the CONTRACTOR beginning work at the Project site and after Substantial Completion of the Work.
- C. Areas to be photographed and videoed shall include the site of the Work and all existing facilities either on or adjoining the Project site, including the interior of existing structures, that could be damaged as a result of the CONTRACTOR's Work.
- D. The scope of the photographic and videographic documentation shall be the sole responsibility of the CONTRACTOR, but shall be acceptable to the ENGINEER.
- E. Related sections:
 - 1. Section 01 31 00 – Project Management and Coordination
 - 2. Section 01 31 19 – Project Meetings.
 - 3. Section 01 33 00 – Submittal Procedures.
 - 4. Section 01 77 00 – Closeout Procedures.

1.2 SUBMITTALS

- A. Key Plan: Submit key plan of Project site with notation of vantage points marked for location and direction of each photograph. Include the same label information as the corresponding set of photographs.
- B. Photographs:
 - 1. Digital Media:
 - a. Provide photos as individual, indexed JPG files with the following characteristics:
 - 1) Compression shall be set to preserve quality over file size.
 - 2) Highest resolution JPG images shall be submitted. Resizing to a smaller size when high resolution JPGs are available shall not be permitted.
 - 3) JPG image resolution shall be 4000 by 3000 or higher.
 - 4) Images shall have rectangular clean images. Artistic borders, beveling, drop shadows, etc. are not permitted.
- C. Videos:
 - 1. Submit 4 copies of each video within 7 days of recording.
 - 2. Videos shall be submitted in a digital color video format on a flashdrive.
 - 3. Identification: On each copy provide a label with the following information:
 - a. Name of project.
 - b. Date video was recorded.
- D. Pre-Construction Photographs and Videos: Submit prior to beginning work at the Project site or prior to the Preconstruction Conference specified in Section 01 31 19, whichever occurs earlier. Reference Section 01 31 00 for additional requirements.

- E. Post-Construction Photographs and Videos: Submit with project closeout documents as specified in Section 01 77 00. Reference Section 01 31 00 for additional requirements.

PART 2 - PRODUCTS

2.1 MEDIA

- A. Paper Media:
 - 1. Commercial grade, glossy surface, acid-free photographic paper.
- B. Digital Media:
 - 1. Flashdrive with capacity for all pictures and videos compatible with latest version of Microsoft Windows.
- C. Videos:
 - 1. Flashdrive.

PART 3 - EXECUTION

3.1 GENERAL

- A. Photographs (Paper and Digital Media):
 - 1. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
- B. Videos:
 - 1. Display continuous running time.
 - 2. At start of each video recording, record weather conditions from local newspaper or television and the actual temperature reading at Project Site.

END OF SECTION

SECTION 01 35 00 – SPECIAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Special procedures for locating and verifying concealed existing facilities.

1.2 CONCEALED EXISTING FACILITIES

- A. Verify locations of utilities and facilities which may exist by consulting with the OWNER, utility companies, and Texas811 (phone number 800-344-8377, website: www.texas811.org/) or other service available in area of Project (see dig/call information on the Drawings):
 - 1. Abide by easement and right-of-way restrictions.
- B. Notify the OWNER, owners of facilities when the Work will be in progress. Make arrangements for potential emergency repairs in accordance with requirements of owners of utility facilities, including individual or residential facilities.
- C. Assume responsibility for repair of facilities damaged by performance of the Work.
- D. Expose sanitary and storm sewers, water, gas, electric, telephone utility lines, and other underground facilities indicated to permit survey location prior to commencement of Work in affected area:
 - 1. Expose in ample time to permit relocation of interfering utilities with minimum delaying effect on contract time.
- E. Work required for raising, lowering, or relocating utilities not indicated will be performed by affected utility owners or as part of the Work at option of affected owners of utilities:
 - 1. When part of the Work, perform work in accordance with standards of affected utility owner, and adjustment to Contract Price and Contract Times will be made as stipulated in conditions of contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 41 00 – REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Regulatory requirements:
 1. Building code.
 2. Electrical code.
 3. Energy code.
 4. Fire code.
 5. Mechanical code.
 6. Plumbing code.

1.2 REFERENCES

- A. International Code Council (ICC):
 1. International Building Code (IBC), 2009.
 2. International Existing Building Code (IEBC), 2009.
 3. International Energy Conservation Code (IECC), 2009.
 4. International Fire Code (IFC), 2009.
 5. International Mechanical Code (IMC), 2009.
 6. International Plumbing Code (IPC), 2009.
- B. National Fire Protection Association (NFPA):
 1. NFPA 70: National Electrical Code, 2011.
- C. National Electric Code Council:
 1. National Electric Code (NEC), NFPA 70, 2011

1.3 SYSTEM DESCRIPTION

- A. Design Requirements:
 1. Building code:
 - a. International Building Code.
 2. Electrical code:
 - a. NFPA 70: National Electric Code.
 3. Energy conservation code:
 - a. International Energy Conservation Code.
 4. Fire code:
 - a. International Fire Prevention Code.
 5. Mechanical codes:
 - a. International Mechanical Code.
 6. Plumbing code:
 - a. International Plumbing Code.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 REFERENCE TO STANDARDS AND SPECIFICATIONS OF TECHNICAL SOCIETIES

- A. Reference to standards and specifications of technical societies and reporting and resolving discrepancies associated therewith shall be as provided in the General Conditions, and as may otherwise be required herein and in the individual Specification sections.
- B. Work specified by reference to published standard or specification of government agency, technical association or trade association, professional society or institute, testing agency, or other organization shall meet requirements or surpass minimum standards of quality for materials and workmanship established by designated standard or specification.
- C. Where so specified, products or workmanship shall also meet or exceed additional prescriptive or performance requirements included within Contract Documents to establish a higher or more stringent standard of quality than required by referenced standard.
- D. Where two or more standards are specified to establish quality, product and workmanship shall meet or exceed requirements of most stringent.
- E. Where both a standard and a brand name are specified for a product in Contract Documents, proprietary product named shall meet or exceed requirements of specified reference standard.
- F. Copies of Standards and Specifications of Technical Societies:
 - 1. Copies of applicable referenced standards have not been bound in these Contract Documents.
 - 2. Where copies of standards are needed by Contractor, obtain a copy or copies directly from publication source and maintain in an orderly manner at the Site as Work Site records, available to Contractor's personnel, Subcontractors, Owner, and Engineer.

1.2 ABBREVIATIONS

- A. Abbreviations for trade organizations and government agencies: Following is a list of construction industry organizations and government agencies to which references may be made in the Contract Documents, with abbreviations used.
 - 1. AA Aluminum Association
 - 2. AABC Associated Air Balance Council
 - 3. AAMA American Architectural Manufacturers Association
 - 4. AASHTO American Association of State Highway and Transportation Officials
 - 5. ABMA American Bearing Manufacturers' Association
 - 6. ACI American Concrete Institute
 - 7. AEIC Association of Edison Illuminating Companies
 - 8. AGA American Gas Association
 - 9. AGMA American Gear Manufacturers' Association
 - 10. AI Asphalt Institute
 - 11. AISC American Institute of Steel Construction
 - 12. AISI American Iron and Steel Institute
 - 13. AITC American Institute of Timber Construction
 - 14. ALS American Lumber Standards
 - 15. AMCA Air Movement and Control Association
 - 16. ANSI American National Standards Institute
 - 17. APA The Engineered Wood Association
 - 18. API American Petroleum Institute

19.	APWA	American Public Works Association
20.	ARI	Air-Conditioning and Refrigeration Institute
21.	ASAE	American Society of Agricultural Engineers
22.	ASCE	American Society of Civil Engineers
23.	ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
24.	ASME	American Society of Mechanical Engineers
25.	ASNT	American Society for Nondestructive Testing
26.	ASTM	ASTM International
27.	AWI	Architectural Woodwork Institute
28.	AWPA	American Wood Preservers' Association
29.	AWPI	American Wood Preservers' Institute
30.	AWS	American Welding Society
31.	AWWA	American Water Works Association
32.	BHMA	Builders Hardware Manufacturers' Association
33.	CBM	Certified Ballast Manufacturer
34.	CDA	Copper Development Association
35.	CGA	Compressed Gas Association
36.	CIS PI	Cast Iron Soil Pipe Institute
37.	CMAA	Crane Manufacturers' Association of America
38.	CRSI	Concrete Reinforcing Steel Institute
39.	CS	Commercial Standard
40.	CSA	Canadian Standards Association
41.	CSI	Construction Specifications Institute
42.	DIN	Deutsches Institute für Normung e.V.
43.	DIPRA	Ductile Iron Pipe Research Association
44.	EIA	Electronic Industries Alliance
45.	EJCDC	Engineers Joint Contract Documents' Committee
46.	ETL	Electrical Test Laboratories
47.	FAA	Federal Aviation Administration
48.	FCC	Federal Communications Commission
49.	FDA	Food and Drug Administration
50.	FEMA	Federal Emergency Management Agency
51.	FIPS	Federal Information Processing Standards
52.	PM	Factory Mutual
53.	Fed. Spec.	Federal Specifications (FAA Specifications)
54.	FS	Federal Specifications and Standards (Technical Specifications)
55.	GA	Gypsum Association
56.	GANA	Glass Association of North America
57.	ID	Hydraulic Institute
58.	HMI	Hoist Manufacturers' Institute
59.	IBC	International Building Code
60.	ICBO	International Conference of Building Officials
61.	ICC	International Code Council
62.	ICEA	Insulated Cable Engineers' Association
63.	IFC	International Fire Code
64.	IEEE	Institute of Electrical and Electronics Engineers, Inc.
65.	IESNA	Illuminating Engineering Society of North America
66.	IFI	Industrial Fasteners Institute
67.	IGMA	Insulating Glass Manufacturer's Alliance
68.	IMC	International Mechanical Code
69.	INDA	Association of the Non-woven Fabrics Industry
70.	IPC	International Plumbing Code
71.	ISA	Instrumentation, Systems, and Automation
72.	ISO	International Organization for Standardization
73.	ITL	Independent Testing Laboratory

74.	JIC	Joint Industry Conferences of Hydraulic Manufacturers
75.	MIA	Marble Institute of America
76.	Mil.	Military Specifications
77.	MMA	Monorail Manufacturers' Association
78.	NAAMM	National Association of Architectural Metal Manufacturers
79.	NACE	NACE International
80.	NEBB	National Environmental Balancing Bureau
81.	NEC	National Electrical Code
82.	NECA	National Electrical Contractors Association
83.	NEMA	National Electrical Manufacturers' Association
84.	NESC	National Electrical Safety Code
85.	NETA	International Electrical Testing Association
86.	NFPA	National Fire Protection Association
87.	NHLA	National Hardwood Lumber Association
88.	NICET	National Institute for Certification in Engineering Technologies
89.	NIST	National Institute of Standards and Technology
90.	NRCA	National Roofing Contractors Association
91.	NRTL	Nationally Recognized Testing Laboratories
92.	NSF	NSF International
93.	NSPE	National Society of Professional Engineers
94.	NTMA	National Terrazzo and Mosaic Association
95.	NWWDA	National Wood Window and Door Association
96.	OSHA	Occupational Safety and Health Act (both Federal and State)
97.	PCI	Pre-cast/Pre-stressed Concrete Institute
98.	PEI	Porcelain Enamel Institute
99.	PPI	Plastic Pipe Institute
100.	PS	Product Standards Section-U.S. Department of Commerce
101.	RMA	Rubber Manufacturers' Association
102.	RUS	Rural Utilities Service
103.	SAE	Society of Automotive Engineers
104.	SDI	Steel Deck Institute
105.	SDI	Steel Door Institute
106.	SJI	Steel Joist Institute
107.	SMACNA	Sheet Metal and Air Conditioning Contractors National Association
108.	SPI	Society of the Plastics Industry
109.	SSPC	The Society for Protective Coatings
110.	SWI	Steel Window Institute
111.	TEMA	Tubular Exchanger Manufacturers' Association
112.	TCA	Tile Council of North America
113.	TIA	Telecommunications Industry Association
114.	UBC	Uniform Building Code
115.	UFC	Uniform Fire Code
116.	UL	Underwriters Laboratories Inc.
117.	UMC	Uniform Mechanical Code
118.	USBR	U.S. Bureau of Reclamation
119.	WCLIB	West Coast Lumber Inspection Bureau
120.	WWPA	Western Wood Products Association

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 42 40 – ABBREVIATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Abbreviations and meanings.

1.2 INTERPRETATIONS

- A. Interpret abbreviations by context in which abbreviations are used.

1.3 ABBREVIATIONS

A. Abbreviations Used to Identify Reference Standards:

- | | | |
|-----|--------|--|
| 1. | AA | Aluminum Association |
| 2. | AAMA | Architectural Aluminum Manufacturers Association |
| 3. | AAN | American Association of Nurserymen |
| 4. | AASHTO | American Association of State Highway and Transportation Officials |
| 5. | ABC | Associated Air Balance Council |
| 6. | ABPA | Acoustical and Board Products Association |
| 7. | ACI | American Concrete Institute |
| 8. | ACIL | American Council of Independent Laboratories |
| 9. | ADC | Air Diffusion Council |
| 10. | ABMA | American Bearing Manufacturers' Association (formerly AFBMA, Anti-Friction Bearing Manufacturers' Association) |
| 11. | AGA | American Gas Association |
| 12. | AGC | Associated General Contractors |
| 13. | AGMA | American Gear Manufacturers' Association |
| 14. | AI | Asphalt Institute |
| 15. | AIA | American Institute of Architects |
| 16. | AIMA | Acoustical and Insulating Materials Association |
| 17. | AISC | American Institute of Steel Construction |
| 18. | AISI | American Iron and Steel Institute |
| 19. | AITC | American Institute of Timber Construction |
| 20. | AMCA | Air Moving and Conditioning Association |
| 21. | AMG | Arizona Masonry Guild |
| 22. | ANSI | American National Standards Institute |
| 23. | APA | American Plywood Association |
| 24. | API | American Petroleum Institute |
| 25. | ARI | Air Conditioning and Refrigeration Institute |
| 26. | ASAHC | American Society of Architectural Hardware Consultants |
| 27. | ASHRAE | American Society of Heating, Refrigeration and Air Conditioning Engineers |
| 28. | ASME | American Society of Mechanical Engineers |
| 29. | ASTM | ASTM International (Former name American Society for Testing and Materials. Still used in specifications.) |
| 30. | AWI | Architectural Woodwork Institute |
| 31. | AWPA | American Wood Preservers Association |
| 32. | AWPI | American Wood Preservers Institute |
| 33. | AWS | American Welding Society |
| 34. | AWSC | American Welding Society Code |
| 35. | AWWA | American Water Works Association |
| 36. | BHMA | Builders Hardware Manufacturers Association |
| 37. | BIA | Brick Institute of America |
| 38. | BSI | Building Stone Institute |

39.	CLFMI	Chain Link Fence Manufacturers Institute
40.	CPSC	U.S. Consumer Product Safety Commission
41.	CRA	California Redwood Association
42.	CRI	Carpet and Rug Institute
43.	CRSI	Concrete Reinforcing Steel Institute
44.	CS	Commercial Standards
45.	CSI	Construction Specifications Institute
46.	CTI	Ceramic Tile Institute
47.	DHI	Door and Hardware Institute
48.	EIFS	Exterior Insulation and Finish System
49.	EJCDC	Engineers Joint Contract Documents Committee
50.	FGMA	Flat Glass Marketing Association
51.	FIA	Factory Insurance Association
52.	FM	Factory Mutual
53.	FS	Federal Specifications
54.	FTI	Facing Tile Institute
55.	GA	Gypsum Association
56.	IAPMO	International Association of Plumbing and Mechanical Officials
57.	IBC	International Building Code
58.	ICBO	International Conference of Building Officials
59.	ICC	International Code Council
60.	IEEE	Institute of Electrical and Electronics Engineers
61.	MAG	Maricopa Association of Governments
62.	MIA	Marble Institute of America
63.	ML/SFA	Metal Lath/Steel Framing Association
64.	MS	Military Specifications
65.	NAAMM	National Association of Architectural Metal Manufacturers
66.	NAPA	National Asphalt Pavement Association
67.	NBHA	National Builders Hardware Association
68.	NCMA	National Concrete Masonry Association
69.	NEC	National Electrical Code
70.	NECA	National Electrical Contractors Association
71.	NETA	International Electrical Testing Association
72.	NEMA	National Electrical Manufacturers Association
73.	NFPA	National Fire Protection Association
74.	NFPA	National Forest Products Association
75.	NIST	National Institute of Standards and Technology
76.	NMWIA	National Mineral Wood Insulation Association
77.	NPCA	National Paint and Coatings Association
78.	NRCA	National Roofing Contractors Association
79.	NTMA	National Terrazzo and Mosaic Association
80.	NWMA	National Woodwork Manufacturer's Association
81.	PCA	Portland Cement Association
82.	PCI	Prestressed Concrete Institute
83.	PDCA	Paint and Decorating Contractors of America
84.	PDI	Plumbing and Drainage Institute
85.	PEI	Porcelain Enamel Institute
86.	PS	Product Standard
87.	RTI	Resilient Tile Institute
88.	SAE	Society of Automotive Engineers
89.	SCPA	Structural Clay Products Association
90.	SDI	Steel Door Institute
91.	SIGMA	Sealed Insulating Glass Manufacturers Association
92.	SJI	Steel Joist Institute
93.	SMACNA	Sheet Metal and Air Conditioning Contractors National Association
94.	SSPC	Society for Protective Coatings-Steel Structures Painting Council

95.	TCA	Tile Council of America
96.	UBC	Uniform Building Code (ICBO)
97.	UL	Underwriters Laboratories, Inc.
98.	UNS	Unified Numbering System
99.	USDA	United States Department of Agriculture
100.	VA	Vermiculite Association
101.	WCLA	West Coast Lumberman's Association
102.	WCLIB	West Coast Lumber Inspection Bureau
103.	WPA	Western Pine Association
104.	WPOA	Western Plumbing Officials Association
105.	WRC	Welding Research Council
106.	WSCPA	Western States Clay Products Association
107.	WWPA	Western Wood Products Association

B.	B.	Abbreviations Used in Specifications:
1.	a	year or years (metric unit)
2.	A	ampere or amperes
3.	am	ante meridian (before noon)
4.	ac	alternating current
5.	ac-ft	acre-foot or acre-feet
6.	atm	atmosphere
7.	AWG	American Wire Gauge
8.	bbl	barrel or barrels
9.	bd	board
10.	bhp	brake horsepower
11.	bil gal	billion gallons
12.	BOD	biochemical oxygen demand
13.	Btu	British thermal unit or units
14.	Btuh	British thermal units per hour
15.	bu	bushel or bushels
16.	C	degrees Celsius
17.	cal	calorie or calories
18.	cap	capita
19.	cd	candela or candelas
20.	cfm	cubic feet per minute
21.	Ci	curie or curies
22.	cm	centimeter or centimeters
23.	cmu	concrete masonry unit
24.	CO	carbon monoxide
25.	Co.	Company
26.	CO ₂	carbon dioxide
27.	COD	chemical oxygen demand
28.	Corp.	Corporation
29.	counts/min	counts per minute
30.	cu	cubic
31.	cu cm	cubic centimeter or centimeters
32.	cu ft	cubic foot or feet
33.	cu ft/day	cubic feet per day
34.	cu ft/hr	cubic feet per hour
35.	cu ft/min	cubic feet per minute
36.	cu ft/sec	cubic feet per second
37.	cu in	cubic inch or inches
38.	cu m	cubic meter or meters
39.	cu yd	cubic yard or yards
40.	d	day (metric units)
41.	day	day (English units)

42.	db	decibels
43.	DB	dry bulb (temperature)
44.	dc	direct current
45.	diam	diameter
46.	DO	dissolved oxygen
47.	DS	dissolved solids
48.	emf	electromotive force
49.	fpm	feet per minute
50.	F	degrees Fahrenheit
51.	ft	feet or foot
52.	fc	foot-candle or foot candles
53.	ft/day	feet per day
54.	ft/hr	feet per hour
55.	ft/min	feet per minute
56.	ft/sec	feet per second
57.	g	gram or grams
58.	G	gravitational force
59.	gal	gallon or gallons
60.	gal/day	gallons per day
61.	gal/min	gallons per minutes
62.	gal/sec	gallons per second
63.	gfd	gallons per square foot per day
64.	g/L	grams per liter
65.	gpd	gallons per day
66.	gpd/ac	gallons per day per acre
67.	gpd/cap	gallons per day per capita
68.	gpd/sq ft	gallons per day per square foot
69.	gph	gallons per hour
70.	gpm	gallons per minute
71.	gps	gallons per second
72.	h	hour or hours (metric units)
73.	ha	hectare or hectares
74.	hp	high point
75.	hp	horsepower
76.	hp-hr	horsepower-hour or horsepower-hours
77.	hr	hour or hours (English units)
78.	Hz	hertz
79.	ID	inside diameter
80.	ihp	indicated horsepower
81.	Inc.	Incorporated
82.	inch	inch
83.	inches	inches
84.	inches/sec	inches per second
85.	J	joule or joules
86.	JTU	Jackson turbidity unit or units
87.	k	kips
88.	K	kelvin
89.	K	thermal conductivity
90.	kcal	kilocalorie or kilocalories
91.	kcmil	thousand circular mils
92.	kg	kilogram or kilograms
93.	km	kilometer or kilometers
94.	kN	kilonewton or kilonewtons
95.	kPa	kilopascal or kilopascals
96.	ksi	kips per square inch
97.	kV	kilovolt or kilovolts

98.	kVA	kilovolt-ampere or kilovolt-amperes
99.	kW	kilowatt or kilowatts
100.	kWh	kilowatt hour
101.	L	liter or liters
102.	lb/1000 cu ft	pounds per thousand cubic foot
103.	lb/acre-ft	pounds per acre-foot
104.	lb/ac	pounds per acre
105.	lb/cu ft	pounds per cubic foot
106.	lb/day/cu ft	pounds per day per cubic foot
107.	lb/day/acre	pounds per day per acre
108.	lb/sq ft	pounds per square foot
109.	lin	linear, lineal
110.	lin ft	linear foot or feet
111.	lm	lumen or lumens
112.	log	logarithm (common)
113.	ln	logarithm (natural)
114.	lx	lux
115.	m	meter or meters
116.	M	molar (concentration)
117.	mA	milliampere or milliamperes
118.	max	maximum
119.	mCi	millicurie or millicuries
120.	meq	milliequivalent
121.	μF	microfarad or microfarads
122.	MFBM	thousand feet board measure
123.	mfr	manufacturer
124.	mg	milligram or milligrams
125.	mgd/ac	million gallons per day per acre
126.	mgd	million gallons per day
127.	mg/L	milligrams per liter
128.	μg/L	micrograms per liter
129.	μm	micrometer or micrometers
130.	mile	mile
131.	mil. gal	million gallons
132.	miles	miles
133.	min	minimum
134.	min	minute or minutes
135.	MLSS	mixed liquor suspended solids
136.	MLVSS	mixed liquor volatile suspended solids
137.	mm	millimeter or millimeters
138.	mol wt	molecular weight
139.	mol	mole
140.	Mpa	megapascal or megapascals
141.	mph	miles per hour
142.	MPN	most probable number
143.	mR	milliroentgen or milliroentgens
144.	Mrad	megarad or megarads
145.	mV	millivolt or millivolts
146.	MW	megawatt or megawatts
147.	N	newton or newtons
148.	N	normal (concentration)
149.	No.	number
150.	Nos	numbers
151.	NRC	noise reduction coefficient
152.	NTU or ntu	nephelometric turbidity unit
153.	oc	on center

154.	OD	outside diameter
155.	ORP	oxidation-reduction potential
156.	OT	ortho-tolidine
157.	OTA	ortha-tolidine-arsenite
158.	oz	ounce or ounces
159.	oz/sq ft	ounces per square foot
160.	Pa	pascal or pascals
161.	pl	plate or property line
162.	pm	post meridiem (afternoon)
163.	ppb	parts per billion
164.	ppm	parts per million
165.	ppt	parts per thousand
166.	pr	pair
167.	psf/hr	pounds per square foot per hour
168.	psf	pounds per square foot
169.	psi	pounds per square inch
170.	psia	pounds per square inch absolute
171.	psig	pounds per square inch gauge
172.	PVC	polyvinyl chloride
173.	qt	quart or quarts
174.	R	radius
175.	R	roentgen or roentgens
176.	rad	radiation absorbed dose
177.	RH	relative humidity
178.	rpm	revolutions per minute
179.	rps	revolutions per second
180.	S	second (metric units)
181.	S	Siemens (mho)
182.	SDI	sludge density index or silt density index
183.	sec	second (English units)
184.	SI	International System of Units
185.	sp	static pressure
186.	sp gr	specific gravity
187.	sp ht	specific heat
188.	sq	square
189.	cm ² or sq cm	square centimeter or centimeters
190.	sq ft	square feet or foot
191.	sq inch	square inch
192.	sq inches	square inches
193.	km ² or sq km	square kilometer or kilometers
194.	m ² or sq m	square meter or meters
195.	mm ² or sq mm	square millimeter or millimeters
196.	sq yd	square yard or yards
197.	SS	suspended solids
198.	STC	Sound Transmission Class
199.	SVI	sludge volume index
200.	TDS	total dissolved solids
201.	TKN	total Kjeldahl nitrogen
202.	TLM	median tolerance limit
203.	TOC	total organic carbon
204.	TOD	total oxygen demand
205.	TOW	top of weir
206.	TS	total solids
207.	TSS	total suspended solids
208.	TVS	total volatile solids

209.	U	U Factor/U Value
210.	U	Coefficient of Heat Transfer
211.	U	heat transfer coefficient
212.	UNS	Uniform Numbering System
213.	US	United States
214.	V	volt or volts
215.	VA	volt-ampere or volt-amperes
216.	W	watt or watts
217.	WB	wet bulb
218.	wg	water gauge
219.	wk	week or weeks
220.	wt	weight
221.	yd	yard or yards
222.	yr	year or years (English unit)

C. Abbreviations Used on Drawings: As listed on Drawings or in Specifications.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 45 00 – QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Quality control and control of installation.
 - 2. Tolerances.
 - 3. References.
 - 4. Mock-up requirements.
 - 5. Authority and duties of Owner's representative or inspector.
 - 6. Sampling and testing.
 - 7. Testing and inspection services.
 - 8. Contractor's responsibilities.
- B. Related sections:
 - 1. Section 01 45 24 - Special Tests and Inspections.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- H. When specified, products will be tested and inspected either at point of origin or at Work site:
 - 1. Notify Engineer in writing well in advance of when products will be ready for testing and inspection at point of origin.
 - 2. Do not construe that satisfactory tests and inspections at point of origin is final acceptance of products. Satisfactory tests or inspections at point of origin do not preclude retesting or re-inspection at Work site.
- I. Do not ship products which require testing and inspection at point of origin prior to testing and inspection.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

- B. Comply with manufacturers' tolerances. When Manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM): E 329 - Standard for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.
- B. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- C. Conform to reference standard by date of issue current on date of Contract Documents, except where specific date is established by code.
- D. Obtain copies of standards where required by product specification sections.
- E. When specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

1.5 MOCK-UP REQUIREMENTS

- A. Tests will be performed under provisions identified in this Section and identified in respective product specification sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups shall be comparison standard for remaining Work.
- D. Where mock-up has been accepted by Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by Engineer.

1.6 AUTHORITY AND DUTIES OF OWNER'S REPRESENTATIVE OR INSPECTOR

- A. Owner's Project Representative employed or retained by Owner is authorized to inspect the Work.
- B. Inspections may extend to entire or part of the Work and to preparation, fabrication, and manufacture of products for the Work.
- C. Deficiencies or defects in the Work which have been observed will be called to Contractor's attention.
- D. Inspector will not:
 - 1. Alter or waive provisions of Contract Documents.
 - 2. Inspect Contractor's means, methods, techniques, sequences, or procedures for construction.
 - 3. Accept portions of the Work, issue instructions contrary to intent of Contract Documents, or act as foreman for Contractor.
 - 4. Supervise, control, or direct Contractor's safety precautions or programs; or inspect for safety conditions on Work site, or of persons thereon, whether Contractor's employees or others.

- E. Inspector will:
 1. Conduct on-site observations of the Work in progress to assist Engineer in determining when the Work is, in general, proceeding in accordance with Contract Documents.
 2. Report to Engineer whenever Inspector believes that Work is faulty, defective, does not conform to Contract Documents, or has been damaged; or whenever there is defective material or equipment; or whenever Inspector believes the Work should be uncovered for observation or requires special procedures.

1.7 SAMPLING AND TESTING

- A. General:
 1. Prior to delivery and incorporation in the Work, submit listing of sources of materials, when specified in sections where materials are specified.
 2. When specified in sections where products are specified:
 - a. Submit sufficient quantities of representative samples of character and quality required of materials to be used in the Work for testing or examination.
 - b. Test materials in accordance with standards of national technical organizations.
- B. Sampling:
 1. Furnish specimens of materials when requested.
 2. Do not use materials which are required to be tested until testing indicates satisfactory compliance with specified requirements.
 3. Specimens of materials will be taken for testing whenever necessary to determine quality of material.
 4. Assist Engineer in preparation of test specimens at site of work, such as soil samples and concrete test cylinders.
- C. Testing:
 1. Owner will employ and pay for services of independent testing laboratory to perform routine tests of materials to confirm compliance with requirements of Contract Documents:
 - a. Mill tests, soil compaction test, and other specified tests shall be paid for by Contractor.
 2. When protesting failed tests of material in place or to be used, take additional specimens and have specimens tested:
 - a. When original test proves to have been in error, file claim for reimbursement of direct costs for sampling and testing.
- D. Test standards:
 1. Perform sampling, specimen preparation, and testing of materials in accordance with specified standards, and when no standard is specified, in accordance with standard of nationally recognized technical organization.
 2. Physical characteristics of materials not particularly specified shall conform to standards published by ASTM, where applicable.
 3. Standards and publication references in Contract Documents shall be edition or revision in effect on date stipulated in the Contract Documents.

1.8 TESTING AND INSPECTION SERVICES

- A. Contractor will employ and pay for specified services of an independent firm; known as Contractor's independent testing firm, to perform Contractor quality control testing as required in the technical specifications for various work and materials.
- B. Owner will employ and pay for specified services of an "Owner's independent testing firm" to perform testing and inspection as required in the technical specifications for various work and

materials or stipulated in Section 01 45 24 to confirm Contractor's compliance with Contract Documents. If Engineer or Owner's independent testing firm is not properly certified to perform specialty inspections required by the building department, Owner will employ and pay for a quality specialty inspection firm to perform required testing and inspection.

- C. The Contractor's independent testing firm will perform tests, inspections and other services specified in individual specification sections and as required by Owner and requested by the Engineer.
- D. The qualifications of laboratory that will perform the testing, contracted by the Owner or by the Contractor, shall be as follows:
 - 1. Has authorization to operate in the state where the project is located.
 - 2. Meets "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.
 - 3. Meets requirements of ASTM E 329.
 - 4. Laboratory Staff: Maintain full time specialist on staff to review services.
 - 5. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to National Bureau of Standards (NBS) or accepted values of natural physical constants.
 - 6. Will submit copy of report of inspection of facilities made by Materials Reference Laboratory of NBS during most recent tour of inspection, with memorandum of remedies of deficiencies reported by inspection.
- E. Testing, inspections and source quality control may occur on or off project site. Perform off-site testing inspections and source quality control as required by Engineer or Owner.
- F. Reports will be submitted by Contractor's independent testing firm and by Owner's independent testing firm to Engineer, Contractor, and Owner in triplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents. Each report shall include:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Testing laboratory name, address, and telephone number.
 - 4. Name and signature of laboratory inspector.
 - 5. Date and time of sampling or inspection.
 - 6. Record of temperature and weather conditions.
 - 7. Date of test.
 - 8. Identification of product and specification section.
 - 9. Location of sample or test in Project.
 - 10. Type of inspection or test.
 - 11. Results of tests and compliance with Contract Documents.
 - 12. Interpretation of test results, when requested by Engineer.
- G. Contractor shall cooperate with Owner's independent testing firm, furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Engineer and Owner's independent testing firm 48 hours prior to expected time for operations requiring testing.
 - 2. Make arrangements with Owner's independent testing firm and pay for additional samples and tests required for Contractor's use.
- H. Limitations of authority of testing Laboratory: Owner's independent testing firm or Laboratory is not authorized to:
 - 1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency or laboratory may not approve or accept any portion of the Work.
 - 3. Agency or laboratory may not assume duties of Contractor.

4. Agency or laboratory has no authority to stop the Work.
 - I. Testing and employment of an Owner's independent testing firm or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
 - J. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same Owner's independent testing firm on instructions by Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
 - K. The Owner's independent testing firm responsibilities will include:
 1. Test samples of mixes submitted by Contractor.
 2. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
 3. Perform specified sampling and testing of products in accordance with specified standards.
 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 5. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or products.
 6. Perform additional tests required by Engineer.
 7. Attend preconstruction meetings and progress meetings.
 - L. Owner's independent testing firm individual test reports: After each test, Owner's independent testing firm will promptly submit electronically and three hard copies of report to Engineer and to Contractor. When requested by Engineer, the Owner's independent testing firm will provide interpretation of test results. Include the following:
 1. Date issued.
 2. Project title and number.
 3. Name of inspector.
 4. Date and time of sampling or inspection.
 5. Identification of product and specifications section.
 6. Location in Project.
 7. Type of inspection or test.
 8. Date of test.
 9. Certified test results stamped and signed by a registered Engineer in the state that the project is located.
 10. Summary of conformance with Contract Documents.
 - M. Owner's independent testing firm will provide monthly report of certification to identify all work performed for special inspections and other contract requirements on this project. The following certified monthly report at a minimum will include but not limited to:
 1. Results of testing.
 2. Testing logs.
 3. Outstanding deficiencies.
 4. Various statistical data.
 5. Testing curves (up to 4 types) as required by the Engineer.
- 1.9 CONTRACTOR'S RESPONSIBILITIES
- A. Cooperate with Owner's independent testing firm or laboratory personnel and provide access to construction and manufacturing operations.
 - B. Secure and deliver to Owner's independent testing firm or laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.

- C. Provide to Owner's independent testing firm or laboratory and Engineer preliminary mix design proposed to be used for concrete, and other materials mixes which require control by testing laboratory.
- D. Furnish electronically and 5 hard copies of product test reports.
- E. Furnish incidental labor and facilities:
 - 1. To provide access to construction to be tested.
 - 2. To obtain and handle samples at Work site or at source of product to be tested.
 - 3. To facilitate inspections and tests.
 - 4. For storage and curing of test samples.
- F. Notify Owner's independent testing firm or laboratory 48 hours in advance of when observations, inspections and testing is needed for laboratory to schedule and perform in accordance with their notice of response time.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 50 00 – TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 1. Furnishing, maintaining, and removing construction facilities and temporary controls, including temporary utilities, construction aids, barriers and enclosures, security, access roads, temporary controls, project sign, and sheds, and removal after construction.
- B. Related sections:
 1. Section 01 14 00 – Work Restrictions.
 2. Section 01 32 00 – Construction Progress Documentation
 3. Section 01 33 00 – Submittal Procedures
 4. Section 01 34 00 – Photographic and Videographic Documentation

1.2 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 1. American Association of Nurserymen: American Standards for Nursery Stock.
 2. Federal Emergency Management Agency.
 3. NFPA, National Fire Prevention Standard for Safeguarding Building Construction Operations.
 4. Telecommunications Industry Association (TIA); Electronic Industries Alliance (EIA): 568B, Commercial Building Telecommunications Cabling Standard.
 5. U.S. Department of Agriculture: Urban Hydrology for Small Watersheds.
 6. U.S. Weather Bureau: Rainfall-Frequency Atlas of the U.S. for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years.

1.3 SUBMITTALS

- A. Informational Submittals:
 1. General: For products specified to be furnished under this Section, submit product data in accordance with Section 01 33 00.
 2. For Temporary Piping Systems:
 - a. Submit layout drawings showing proposed routing of piping, including proposed pipe support and pipe restraint locations.
 - b. Submit product data for piping, fittings, appurtenances, restraints, supports, and all other components of the temporary piping system.
 - c. Submit all information at least 28 days prior to when each temporary piping system is scheduled to be installed and allow 14 days for review and comment by ENGINEER and OWNER.
 3. Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.
 4. Temporary Utility Submittals:
 - a. Electric power supply and distribution plans.
 - b. Water supply and distribution plans.
 - c. Drainage plans.
 - d. Sanitary sewer.
 5. Temporary Construction Submittals:
 - a. Access Roads: Routes, cross-sections, and drainage facilities.
 - b. Parking area plans.
 - c. Staging area location plan.
 - d. Traffic and Pedestrian Control and Routing Plans: As specified herein, and proposed revisions thereto.

6. Temporary Control Submittals:
 - a. Noise control plan.
 - b. Plan for disposal of waste materials and intended haul routes.

1.4 MOBILIZATION

- A. Mobilization shall Include, but Not be Limited to, these Principal Items:
 1. Obtaining required permits.
 2. Installing temporary construction power, wiring, and lighting facilities.
 3. Providing onsite communication facilities, including telephones.
 4. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies.
 5. Arrange for and erection of Contractor's work and storage yard.
 6. Posting OSHA required notices and establishing safety programs and procedures.
 7. Have Contractor's superintendent at Site full time.
- B. Use area designated for Contractor's temporary facilities as shown on Drawings.

1.5 PROTECTION OF WORK AND PROPERTY

- A. Comply with Owner's safety rules while on Owner's property.
- B. Keep Owner informed of serious onsite accidents and related claims.
- C. Use of Explosives: No blasting or use of explosives will be allowed onsite.

1.6 VEHICULAR TRAFFIC

- A. Traffic Routing Plan: Show sequences of construction affecting use of roadways, time required for each phase of the Work, provisions for decking over excavations and phasing of operations to provide necessary access, and plans for signing, barricading, and striping to provide passages for pedestrians and vehicles.

1.7 TEMPORARY UTILITIES

- A. Temporary Electrical Power:
 1. Arrange with local utility to provide adequate temporary electrical service.
 2. Provide and maintain adequate jobsite power distribution facilities conforming to applicable Laws and Regulations.
 3. Provide, maintain, and pay for electric power for performance of the Work except for power required for the final 7-day operational test:
 - a. When using permanent facilities, provide separate meter and reimburse OWNER for power used in connection with performance of the Work.
- B. Temporary Electrical Lighting:
 1. In work areas, provide temporary lighting sufficient to maintain lighting levels during working hours not less than lighting levels required by Occupational Safety and Health Administration (OSHA) and state agency which administers OSHA regulations where Project is located.
 2. When available, permanent lighting facilities may be used in lieu of temporary facilities:
 - a. Prior to Substantial Completion of the Work, replace bulbs, lamps, or tubes used by CONTRACTOR for lighting.
- C. Temporary Heating, Cooling, and Ventilating:

1. Heat and ventilate work areas to protect the Work from damage by freezing, high temperatures, weather, and to provide safe environment for workers.
 2. Permanent heating system may be utilized when sufficiently completed to allow safe operation.
- D. Temporary Water:
1. Pay for and construct facilities necessary to furnish potable water for human consumption and non-potable water for use during construction.
 2. Remove temporary piping and connections and restore affected portions of the facility to original condition before Substantial Completion.
 3. Pay for water used for construction prior to Substantial Completion. OWNER will provide water for 7-day final test.
- E. Temporary Sanitary Facilities:
1. Provide suitable and adequate sanitary facilities that are in compliance with applicable Laws and Regulations.
 2. At completion of the Work, remove sanitary facilities and leave site in neat and sanitary condition.
- F. Temporary Fire Protection: Provide sufficient number of fire extinguishers of type and capacity required to protect the Work and ancillary facilities.
- G. First Aid: Post first aid facilities and information posters conforming to requirements of OSHA and other applicable Laws and Regulations in readily accessible locations.
- H. Utilities in Existing Facilities: See Section 01 14 00, WORK RESTRICTIONS.
- 1.8 CONSTRUCTION AIDS
- A. Provide railings, kick plates, enclosures, safety devices, and controls required by Laws and Regulations and as required for adequate protection of life and property.
- B. Use construction hoists, elevators, scaffolds, stages, shoring, and similar temporary facilities of ample size and capacity to adequately support and move loads.
- C. Design temporary supports with adequate safety factor to assure adequate load bearing capability:
1. When requested, submit design calculations by professional registered engineer prior to application of loads.
 2. Submitted design calculations are for information and record purposes only.
- D. Accident Prevention:
1. Exercise precautions throughout construction for protection of persons and property.
 2. Observe safety provisions of applicable Laws and Regulations.
 3. Guard machinery and equipment, and eliminate other hazards.
 4. Make reports required by authorities having jurisdiction, and permit safety inspections of the Work.
 5. Before commencing construction work, take necessary action to comply with provisions for safety and accident prevention.
- E. Barricades:
1. Place barriers at ends of excavations and along excavations to warn pedestrian and vehicular traffic of excavations.
 2. Provide barriers with flashing lights after dark.
 3. Keep barriers in place until excavations are entirely backfilled and compacted.

4. Barricade excavations to prevent persons from entering excavated areas in streets, roadways, parking lots, treatment plants, or other public or private areas.
- F. Warning Devices and Barricades: Adequately identify and guard hazardous areas and conditions by visual warning devices and, where necessary, physical barriers:
1. Devices shall conform to minimum requirements of OSHA and State agency which administers OSHA regulations where Project is located.
- G. Hazards in Public Right-of-Way:
1. Mark at reasonable intervals, trenches and other continuous excavations in public right-of-way, running parallel to general flow of traffic, with traffic cones, barricades, or other suitable visual markers during daylight hours:
 - a. During hours of darkness, provide markers with torches, flashers, or other adequate lights.
 2. At intersections or for pits and similar excavations, where traffic may reasonably be expected to approach head on, protect excavations by continuous barricades:
 - a. During hours of darkness, provide warning lights at close intervals.
- H. Hazards in Protected Areas: Mark or guard excavations in areas from which public is excluded, in manner appropriate for hazard.
- I. Above Grade Protection: On multi-level structures, provide safety protection that meets requirements of OSHA and State agency which administers OSHA regulations where Project is located.
- J. Protect existing structures, trees, shrubs, and other items to be preserved on Project site from injury, damage or destruction by vehicles, equipment, worker or other agents with substantial barricades or other devices commensurate with hazards.
- K. Fences:
1. Enclose site of the Work with fence adequate to protect the Work against acts of theft, violence and vandalism.
 2. Enclose temporary offices and storage areas with fence adequate to protect temporary facilities against acts of theft, violence and vandalism.
 3. When entire or part of site is to be permanently fenced, permanent fence may be built to serve for both permanent and temporary protection of the work site, provided that damaged or defaced fencing is replaced prior to Substantial Completion.
 4. Protect temporary and permanent openings and close openings in existing fences to prevent intrusion by unauthorized persons. Bear responsibility for protection of plant and material on site of the Work when openings in existing fences are not closed.
 5. During night hours, weekends, holidays, and other times when no work is performed at site, provide temporary closures or enlist services of security guards to protect temporary openings.
 6. Fence temporary openings when openings are no longer necessary.
 7. Temporary Fencing:
 - a. Temporary fencing to contain livestock will be installed by others. Contractor shall stake location of the temporary construction easement every 100 feet prior to fence installation. Contractor shall contact Jim Knight at 972-322-7990 a minimum of three (3) weeks prior to work on Old Celina Ltd. property.
 - b. All access to Old Celina Ltd. Properties shall be through existing gates as shown on plans. Gates shall remain closed when not in use.
 - c. Any damage to existing or temporary fencing shall be reported immediately to the Construction Inspector and Jim Knight at 972-322-7990. Repairs will be made by Ranch staff, but will be at the expense of the Contractor.

1.9 SECURITY

- A. Make adequate provision for protection of the work area against fire, theft, and vandalism, and for protection of public against exposure to injury.

1.10 ACCESS ROADS

- A. General:
 1. Build and maintain access roads to and on site of the Work to provide for delivery of material and for access to existing and operating plant facilities on site.
 2. Build and maintain dust free roads which are suitable for travel at 20 miles per hour.
- B. Off-Site Access Roads:
 1. Build and maintain graded earth roads.
 2. Build roads only in public right-of-way or easements obtained by OWNER.
 3. Obtain rights-of-way or easements when electing to build along other alignment.
- C. On-Site Access Roads:
 1. Maintain access roads to storage areas and other areas to which frequent access is required.
 2. Maintain similar roads to existing facilities on site of the Work to provide access for maintenance and operation.
 3. Protect buried vulnerable utilities under temporary roads with steel plates, wood planking, or bridges.
 4. Maintain on-site access roads free of mud. Under no circumstances shall vehicles leaving the site track mud off the site onto the public right-of-way.

1.11 TEMPORARY CONTROLS

- A. Dust Control:
 1. Prevent dust nuisance caused by operations, unpaved roads, excavation, backfilling, demolition, or other activities.
 2. Control dust by sprinkling with water, use of dust palliatives, modification of operations, or other means acceptable to agencies having jurisdiction.
- B. Noise Control:
 1. In inhabited areas, particularly residential, perform operations in manner to minimize noise.
 2. In residential areas, take special measures to suppress noise during night hours.
- C. Mud Control:
 1. Prevent mud nuisance caused by construction operations, unpaved roads, excavation, backfilling, demolition, or other activities.

1.12 PROJECT SIGN

- A. Provide and maintain Project identification sign consisting of painted 8 foot wide by 4 foot high exterior grade plywood and minimum 10 foot long 4 by 4 lumber posts, set in ground at least 3 feet, with exhibit lettering by professional sign painter using no more than 5 sign colors:
 1. List at least the title of the Project, and names of the OWNER, ENGINEER, and CONTRACTOR.
- B. Erect Project identification sign where directed.

1.13 REMOVAL

- A. Remove temporary buildings and furnishings before inspection for Substantial Completion or when directed.
- B. Clean and repair damage caused by installation or use of temporary facilities.
- C. Remove underground installations to minimum depth of 24 inches and grade to match surrounding conditions.
- D. Restore existing facilities used during construction to specified or original condition.

1.14 TEMPORARY PROCESS PIPING

- A. CONTRACTOR shall provide all piping, appurtenances, and other materials as required to provide temporary piping systems as specified herein, as indicated on the Drawings, and as needed to perform the Work.
- B. CONTRACTOR shall field route piping as needed and as field conditions dictate, unless otherwise indicated on the Drawings, and determine appropriate lengths of piping and quantity/type of pipe fittings needed to construct temporary piping system. Do not block access points such as stairs, doors, and walkways to existing facilities unless approved in writing by the OWNER.
- C. Restrain piping at valves and at fittings where piping changes direction, changes sizes, and at ends:
 - 1. When piping is buried, use concrete thrust block or mechanical restraints.
 - 2. When piping is exposed or under water, use mechanical or structural restraints.
 - 3. Determine thrust forces by multiplying the nominal cross sectional area of the piping by the operating pressure of the piping.
- D. Temporary piping systems shall be installed in a manner that will not damage existing or new facilities.
- E. Unless indicated otherwise, piping material, including gaskets, shall be suitable for the process fluid requiring temporary piping.
- F. After Temporary Piping System is no longer required:
 - 1. Remove temporary piping system.
 - 2. Clean and repair damage caused by installation or use of temporary piping system.
 - 3. Restore existing facilities to original condition.
- G. Providing temporary piping systems as specified in Paragraph 1.14.
- H. Temporary pumping of other process flows is not allowed unless approved in writing by the OWNER.
- I. After Temporary Process Pumping System is no Longer Required:
 - 1. Remove temporary process pumping system.
 - 2. Clean and repair damage caused by installation or use of temporary process pumping system.
 - 3. Restore existing facilities to original condition.

PART 2 - PRODUCTS

2.1 FIELD OFFICES AND SHEDS

- A. CONTRACTOR's Field Office:
 - 1. Not Applicable.
- B. ENGINEER's Field Office:
 - 1. Not Applicable

PART 3 - EXECUTION

3.1 ENGINEER'S FIELD OFFICE

- A. Not Applicable

3.2 TEMPORARY UTILITIES

- A. Power:
 - 1. Electric power will be available at or near Site. Determine type and amount available and make arrangements for obtaining temporary electric power service, metering equipment, and pay all costs for electric power used during contract period, except for portions of the Work designated in writing by Engineer as substantially complete.
 - 2. Cost of electric power will be borne by Contractor.
- B. Lighting: Provide temporary lighting to meet applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the Work.
- C. Heating, Cooling, and Ventilating:
 - 1. Provide as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for installation of materials, and to protect materials, equipment, and finishes from damage due to temperature or humidity. Costs for temporary heat shall be borne by Contractor.
 - 2. Provide adequate forced air ventilation of enclosed areas to cure installed materials, to dispense humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.
 - 3. Pay all costs of installation, maintenance, operation, removal, and fuel consumed.
 - 4. Provide portable unit heaters, complete with controls, oil- or gas-fired, and suitably vented to outside as required for protection of health and property.
- D. Water:
 - 1. Potable water is available at the site. Secure written permission for connection and use from Owner and meet requirements for use. Contractor shall pay cost to connect water during construction. Owner shall pay cost for water used during construction.
 - 2. Include costs to connect and transport water to construction areas in Contract Price.
 - 3. Provide a means to prevent water used for testing from flowing back into source pipeline.
- E. Sanitary and Personnel Facilities:
 - 1. Provide and maintain facilities for Contractor's employees, Subcontractors, and all other onsite employers' employees. Service, clean, and maintain facilities and enclosures.
- F. Telephone Service:
 - 1. Contractor: Arrange and provide onsite telephone service for use during construction by Contractor. Pay costs of installation and monthly bills.

2. Engineer: Arrange and provide onsite telephone system for use during construction. Pay for all installation and basic monthly billing charges.
3. No incoming calls allowed to Owner's plant telephone system.

- G. Fire Protection: Furnish and maintain on Site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241).

3.3 PROTECTION OF WORK AND PROPERTY

A. General:

1. Perform Work within right-of-way and easements in a systematic manner that minimizes inconvenience to property owners and the public.
2. Schedule the Work so construction will not interfere with irrigation of cultivated lands or pasturelands. Construction may proceed during irrigation season, provided Contractor constructs temporary irrigation ditches, turnouts, and miscellaneous structures acceptable to property owners.
3. Provide continuous access for livestock through farm areas. Do not cut off ready access to portions of farmlands in which livestock are pastured. Maintain existing fences required to restrain livestock. Keep gates closed and secure.
4. Maintain in continuous service all existing oil and gas pipelines, underground power, telephone or communication cable, water mains, irrigation lines, sewers, poles and overhead power, and all other utilities encountered along line of the Work, unless other arrangements satisfactory to owners of said utilities have been made.
5. Where completion of the Work requires temporary or permanent removal or relocation of existing utility, coordinate all activities with owner of said utility and perform all work to their satisfaction.
6. Protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.
7. In areas where Contractor's operations are adjacent to or near a utility, such as gas, telephone, television, electric power, water, sewer, or irrigation system, and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection have been made by Contractor.
8. Notify property owners and utility offices that may be affected by construction operation at least 2 days in advance: Before exposing a utility, obtain utility owner's permission. Should service of a utility become interrupted due to Contractor's operation, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.
9. Do not impair operation of existing sewer system. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, pump stations, or other sewer structures.
10. Maintain original Site drainage wherever possible.

B. Site Security:

1. Erect a temporary security fence for protection of existing facilities. Maintain fence throughout construction period. Obtain Engineer's written permission before removal of temporary security fencing.
2. Provide and maintain additional temporary security fences as necessary to protect the Work and Contractor-furnished products not yet installed.

C. Barricades, Lights, Signs, and Equipment:

1. Provide as required by the Department of Transportation in the state having jurisdiction and in sufficient quantity to safeguard public and the Work.
2. Provide as necessary to prevent unauthorized entry to construction areas and affected roads, streets, and alleyways, inside and outside of fenced area, and as required to ensure

- public safety and the safety of Contractor's employees, other employer's employees, and others who may be affected by the Work.
3. Provide to protect existing facilities and adjacent properties from potential damage.
 4. Locate to enable access by facility operators and property owners.
 5. Protect streets, roads, highways, and other public thoroughfares that are closed to traffic by effective barricades with acceptable warning signs.
 6. Locate barricades at the nearest intersecting public thoroughfare on each side of the blocked section.
 7. Illuminate barricades and obstructions with warning lights from sunset to sunrise.
- D. Trees and Plantings:
1. Protect from damage and preserve trees, shrubs, and other plants outside limits of the Work and within limits of the Work, which are designated on the Drawings to remain undisturbed.
- E. Existing Structures:
1. Where Contractor contemplates removal of small structures such as mailboxes, signposts, and culverts that interfere with Contractor's operations, obtain approval of property owner and Engineer.
 2. Move mailboxes to temporary locations accessible to postal service.
 3. Replace items removed in their original location and a condition equal to or better than original.
- F. Finished Construction: Protect finished floors and concrete floors exposed as well as those covered with composition tile or other applied surfacing.
- G. Waterways: Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.
- H. Dewatering: Construct, maintain, and operate cofferdams, channels, flume drains, sumps, pumps, or other temporary diversion and protection works. Furnish materials required, install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work. Maintain foundations and parts of the Work free from water.
- ### 3.4 TEMPORARY CONTROLS
- A. Air Pollution Control:
1. Minimize air pollution from construction operations.
 2. Burning: Of waste materials, rubbish, or other debris will not be permitted on or adjacent to Site.
 3. Conduct operations of dumping rock and of carrying rock away in trucks to cause a minimum of dust. Give unpaved streets, roads, detours, or haul roads used in construction area a dust-preventive treatment or periodically water to prevent dust. Strictly adhere to applicable environmental regulations for dust prevention.
 4. Provide and maintain temporary dust-tight partitions, bulkheads, or other protective devices during construction to permit normal operation of existing facilities. Construct partitions of plywood, insulating board, plastic sheets, or similar material. Construct partitions in such a manner that dust and dirt from demolition and cutting will not enter other parts of existing building or facilities. Remove temporary partitions as soon as need no longer exists.
- B. Noise Control:
1. Noise Control Plan: Propose plan to mitigate construction noise and to comply with noise control ordinances, including method of construction, equipment to be used, and acoustical treatments.

- C. Water Pollution Control:
 1. Divert sanitary sewage and non-storm waste flow interfering with construction and requiring diversion to sanitary sewers. Do not cause or permit action to occur which would cause an overflow to existing waterway.
 2. Prior to commencing excavation and construction, obtain Engineer's agreement with detailed plans showing procedures intended to handle and dispose of sewage, groundwater, and storm water flow, including dewatering pump discharges.
 3. Comply with procedures outlined in U.S. Environmental Protection Agency manuals entitled, "Guidelines for Erosion and Sedimentation Control Planning," "Implementation, Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity," and "Erosion and Sediment Control- Surface Mining in Eastern United States."
 4. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.
- D. Erosion, Sediment, and Flood Control: Provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period.

3.5 STORAGE YARDS AND BUILDINGS

- A. Coordinate requirements with Section 01 60 00, PRODUCT REQUIREMENTS.
- B. Temporary Storage Yards: Construct temporary storage yards for storage of products that are not subject to damage by weather conditions.
- C. Temporary Storage Buildings:
 1. Provide environmental control systems that meet recommendations of manufacturers of equipment and materials stored.
 2. Arrange or partition to provide security of contents and ready access for inspection and inventory.
 3. Store combustible materials (paints, solvents, fuels) in a well-ventilated and remote building meeting safety standards.
 4. Provide, at a minimum, one temporary storage building or storage trailer to house specified spare part during the duration of construction and until spare parts are accepted by Owner and Engineer.

3.6 ACCESS ROADS

- A. Construct access roads as required and within easements, rights-of-way, or Project limits. Obtain Engineer's approval of access roads.
- B. Maintain drainage ways. Install and maintain culverts to allow water to flow beneath access roads. Provide corrosion-resistant culvert pipe of adequate strength to resist construction loads.
- C. Provide gravel, crushed rock, or other stabilization material to permit access by all motor vehicles at all times.
- D. Maintain road grade and crown to eliminate potholes, rutting, and other irregularities that restrict access.
- E. Coordinate with Engineer detours and other operations affecting traffic and access. Provide at least 72 hours notice to Engineer of operations that will alter access to the Site.

- F. Where access road crosses existing fences, install and maintain gates.
- G. Upon completion of construction, restore ground surface disturbed by access road construction to original grade. Replace damaged or broken culverts with new culvert pipe of same diameter and material.

3.7 PARKING AREAS

- A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations.
- B. Provide parking facilities for personnel working on the Project. No employee or equipment parking will be permitted on Owner's existing parking areas, except as specifically designated for Contractor's use.

3.8 VEHICULAR TRAFFIC

- A. Comply with Laws and Regulations regarding closing or restricting use of public streets or highways. No public or private road shall be closed, except by written permission of proper authority. Assure the least possible obstruction to traffic and normal commercial pursuits.
- B. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.
- C. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.
- D. Coordinate traffic routing with that of others working in same or adjacent areas.

3.9 CLEANING DURING CONSTRUCTION

- A. In accordance with General Conditions, as may be specified in other Specification sections, and as required herein.
- B. Wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris. At least weekly, sweep all floors (basins, tunnels, platforms, walkways, roof surfaces), and pick up all debris and dispose.
- C. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least at weekly intervals, dispose of such waste materials, debris, and rubbish offsite.
- D. At least weekly, brush sweep entry drive and roadways, and all other streets and walkways affected by the Work and where adjacent to the Work.

END OF SECTION

SECTION 01 57 13 – STORM WATER POLLUTION PREVENTION (SWPPP)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Procedures for Storm Water Pollution Prevention Plans
- B. Related Specification Sections include, but are not necessarily limited to:
 - 1. Division 01 50 00 – Temporary Facilities and Controls

1.2 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment
 - 1. Construction Activities resulting in less than 1 acre of disturbance
 - a. Work associated with this Item is considered subsidiary to the various Items bid. No separate payment will be allowed for this Item.
 - 2. Construction Activities resulting in greater than 1 acre of disturbance
 - a. Measurement and Payment shall be in accordance with Section 01 22 00.

1.3 REFERENCES

- A. Abbreviations and Acronyms
 - 1. Notice of Intent: NOI
 - 2. Notice of Termination: NOT
 - 3. Storm Water Pollution Prevention Plan: SWPPP
 - 4. Texas Commission on Environmental Quality: TCEQ
 - 5. Notice of Change: NOC
- B. Reference Standards
 - 1. Reference standards cited in this Specification refer to the current reference standard published at the time of the latest revision date logged at the end of this Specification, unless a date is specifically cited.
 - 2. Integrated Storm Management (iSWM) Technical Manual for Construction Controls

1.4 ADMINISTRATIVE REQUIREMENTS

- A. General
 - 1. Contractor is responsible for resolution and payment of any fines issued associated with compliance to Stormwater Pollution Prevention Plan.
- B. Construction Activities resulting in:
 - 1. Less than 1 acre of disturbance
 - a. Provide erosion and sediment control in accordance with Drawings.
 - 2. 1 to less than 5 acres of disturbance
 - a. Texas Pollutant Discharge Elimination System (TPDES) General Construction Permit is required
 - b. Complete SWPPP in accordance with TCEQ requirements
 - 1) TCEQ Small Construction Site Notice Required under general permit TXR150000
 - a) Sign and post at job site

- b) Prior to Preconstruction Meeting, provide one (1) copy to City Department of Transportation and Public Works, Environmental Division.
 - 2) Provide erosion and sediment control in accordance with:
 - a) The Drawings
 - b) TXR150000 General Permit
 - c) SWPPP
 - d) TCEQ requirements
- 3. 5 acres or more of Disturbance
 - a. Texas Pollutant Discharge Elimination System (TPDES) General Construction Permit is required
 - b. Complete SWPPP in accordance with TCEQ requirements
 - 1) Prepare a TCEQ NOI form and submit to TCEQ along with required fee
 - a) Sign and post at job site
 - b) Send copy to City Department of Transportation and Public Works, Environmental Division.
 - 2) TCEQ Notice of Change required if making changes or updates to NOI
 - 3) Provide erosion and sediment control in accordance with:
 - a) The Drawings
 - b) TXR150000 General Permit
 - c) SWPPP
 - d) TCEQ requirements
 - 4) Once the project has been completed and all the closeout requirements of TCEQ have been met a TCEQ Notice of Termination can be submitted.
 - a) Send copy to City Department of Transportation and Public Works, Environmental Division.

1.5 SUBMITTALS

A. SWPPP

- 1. Submit in accordance with Section 01 33 00, except as stated herein.
 - a. Prior to the Preconstruction Meeting, submit a draft copy of SWPPP to the City as follows:
 - 1) 1 copy to the City Project Manager
 - a) City Project Manager will forward to the City Department of Transportation and Public Works, Environmental Division for review

B. Modified SWPPP

- 1. If the SWPPP is revised during construction, resubmit modified SWPPP to the City in accordance with Section 01 33 00.

PART 2 - PRODUCTS [NOT USED]

PART 3 - EXECUTION [NOT USED]

END OF SECTION

SECTION 01 57 14 – TRAFFIC CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Installation of Traffic Control Devices and preparation of Traffic Control Plans
- B. Related Specification Sections include, but are not necessarily limited to:
 - 1. Division 01 50 00 – Temporary Facilities and Controls

1.2 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment
 - 1. Installation of Traffic Control Devices
 - a. Measurement
 - 1) Measurement for Traffic Control Devices shall be per month for the Project duration.
 - a) A month is defined as 30 calendar days.
 - b. Payment
 - 1) The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" shall be paid for at the unit price bid for "Traffic Control" as described in Specification Section 01 22 00 Measurement and Payment.
 - c. The price bid shall include:
 - 1) Traffic Control implementation
 - 2) Installation
 - 3) Maintenance
 - 4) Adjustments
 - 5) Replacements
 - 6) Removal
 - 7) Police assistance during peak hours
 - 2. Portable Message Signs
 - a. Measurement
 - 1) Measurement for this Item shall be per week for the duration of use.
 - b. Payment
 - 1) The work performed and materials furnished in accordance to this Item and measured as provided under "Measurement" shall be paid for at the unit price bid per week for "Portable Message Sign" rental.
 - c. The price bid shall include:
 - 1) Delivery of Portable Message Sign to Site
 - 2) Message updating
 - 3) Sign movement throughout construction
 - 4) Return of the Portable Message Sign post-construction
 - 3. Preparation of Traffic Control Plan Details
 - a. Measurement
 - 1) Measurement for this Item be per each Traffic Control Detail prepared.
 - b. Payment
 - 1) The work performed and materials furnished in accordance with this Item shall be paid for at the unit price bid per each "Traffic Control Detail" prepared.
 - c. The price bid shall include:
 - 1) Preparing the Traffic Control Plan Details for closures of 24 hours or longer
 - 2) Adherence to City and Texas Manual on Uniform Traffic Control Devices (TMUTCD)
 - 3) Obtaining the signature and seal of a licensed Texas Professional Engineer

4) Incorporation of City comments

1.3 REFERENCES

A. Reference Standards

1. Reference standards cited in this Specification refer to the current reference standard published at the time of the latest revision date logged at the end of this Specification, unless a date is specifically cited.
2. Texas Manual on Uniform Traffic Control Devices (TMUTCD).
3. Item 502, Barricades, Signs, and Traffic Handling of the Texas Department of Transportation, Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination

1. Contact Traffic Services Division (817-392-7738) a minimum of 48 hours prior to implementing Traffic Control within 500 feet of a traffic signal.

B. Sequencing

1. Any deviations to the Traffic Control Plan included in the Drawings must be first approved by the City and design Engineer before implementation.

1.5 SUBMITTALS

- A. Provide the City with a current list of qualified flaggers before beginning flagging activities. Use only flaggers on the qualified list.
- B. Obtain a Street Use Permit from the Street Management Section of the Traffic Engineering Division, 311 W. 10th Street. The Traffic Control Plan (TCP) for the Project shall be as detailed on the Traffic Control Plan Detail sheets of the Drawing set. A copy of this Traffic Control Plan shall be submitted with the Street Use Permit.
- C. Traffic Control Plans shall be signed and sealed by a licensed Texas Professional Engineer.
- D. Contractor shall prepare Traffic Control Plans if required by the Drawings or Specifications. The Contractor will be responsible for having a licensed Texas Professional Engineer sign and seal the Traffic Control Plan sheets.
- E. Lane closures 24 hours or longer shall require a site-specific traffic control plan.
- F. Contractor responsible for having a licensed Texas Professional Engineer sign and seal changes to the Traffic Control Plan(s) developed by the Design Engineer.
- G. Design Engineer will furnish standard details for Traffic Control.

PART 2 - PRODUCTS

2.1 ASSEMBLIES AND MATERIALS

A. Description

1. Regulatory Requirements
 - a. Provide Traffic Control Devices that conform to details shown on the Drawings, the TMUTCD, and TxDOT's Compliant Work Zone Traffic Control Device List (CWZTCDL).
2. Materials

- a. Traffic Control Devices must meet all reflectivity requirements included in the TMUTCD and TxDOT Specifications – Item 502 at all times during construction.
- b. Electronic message boards shall be provided in accordance with the TMUTCD.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protection of In-Place Conditions
 - 1. Protect existing traffic signal equipment.

3.2 INSTALLATION

- A. Follow the Traffic Control Plan (TCP) and install Traffic Control Devices as shown on the Drawings and as directed.
- B. Install Traffic Control Devices straight and plumb.
- C. Do not make changes to the location of any device or implement any other changes to the Traffic Control Plan without the approval of the Engineer.
 - 1. Minor adjustments to meet field constructability and visibility are allowed.
- D. Maintain Traffic Control Devices by taking corrective action as soon as possible.
 - 1. Corrective action includes but is not limited to cleaning, replacing, straightening, covering, or removing Devices.
 - 2. Maintain the Devices such that they are properly positioned, spaced, and legible, and that retroreflective characteristics meet requirements during darkness and rain.
- E. If the Inspector discovers that the Contractor has failed to comply with applicable federal and state laws (by failing to furnish the necessary flagmen, warning devices, barricades, lights, signs, or other precautionary measures for the protection of persons or property), the Inspector may order such additional precautionary measures be taken to protect persons and property.
- F. Subject to the approval of the Inspector, portions of this Project, which are not affected by or in conflict with the proposed method of handling traffic or utility adjustments, can be constructed during any phase.
- G. Barricades and signs shall be placed in such a manner as to not interfere with the sight distance of drivers entering the highway from driveways or side streets.
- H. To facilitate shifting, barricades and signs used in lane closures or traffic staging may be erected and mounted on portable supports.
 - 1. The support design is subject to the approval of the Engineer.
- I. Lane closures shall be in accordance with the approved Traffic Control Plans.
- J. If at any time the existing traffic signals become inoperable as a result of construction operations, the Contractor shall provide portable stop signs with 2 orange flags, as approved by the Engineer, to be used for Traffic Control.
- K. Contractor shall make arrangements for police assistance to direct traffic if traffic signal turn-ons, street light pole installation, or other construction will be done during peak traffic times (AM: 7 am – 9 am, PM: 4 pm - 6 pm).
- L. Flaggers

1. Provide a Contractor representative who has been certified as a flagging instructor through courses offered by the Texas Engineering Extension Service, the American Traffic Safety Services Association, the National Safety Council, or other approved organizations.
 - a. Provide the certificate indicating course completion when requested.
 - b. This representative is responsible for training and assuring that all flaggers are qualified to perform flagging duties.
2. A qualified flagger must be independently certified by 1 of the organizations listed above or trained by the Contractor's certified flagging instructor.
3. Flaggers must be courteous and able to effectively communicate with the public.
4. When directing traffic, flaggers must use standard attire, flags, signs, and signals and follow the flagging procedures set forth in the TMUTCD.
5. Provide and maintain flaggers at such points and for such periods of time as may be required to provide for the safety and convenience of public travel and Contractor's personnel, and as shown on the Drawings or as directed by the Engineer.
 - a. These flaggers shall be located at each end of the lane closure.

M. Removal

1. Upon completion of Work, remove from the Site all barricades, signs, cones, lights and other Traffic Control Devices used for work-zone traffic handling in a timely manner, unless otherwise shown on the Drawings.

END OF SECTION

SECTION 01 60 00 – PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 DEFINITIONS

A. Products:

1. New items for incorporation in the Work whether purchased by Contractor or Owner for the Project, or taken from previously purchased stock and may also include existing materials or components required for reuse.
2. Includes the terms material, equipment, machinery, components, subsystem, system, hardware, software, and terms of similar intent and is not intended to change meaning of such other terms used in Contract Documents, as those terms are self-explanatory and have well recognized meanings in construction industry.
3. Items identified by Manufacturer's product name, including make or model designation, indicated in Manufacturer's published product literature, that is current as of the date of the Contract Documents.

1.2 DESIGN REQUIREMENTS

- A. Where Contractor design is specified, design of installation, systems, equipment, and components, including supports and anchorage, shall be in accordance with provisions of latest edition of International Building Code (IBC) by International Code Council.

1.3 ENVIRONMENTAL REQUIREMENTS

- A. Altitude: Provide materials and equipment suitable for installation and operation under rated conditions at elevations shown on Drawings.
- B. Provide equipment and devices installed outdoors or in unheated enclosures capable of continuous operation within an ambient temperature range of 0 °F to 104 °F.

1.4 PREPARATION FOR SHIPMENT

- A. When practical, have the factory assemble products, mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with strippable protective coating.
- B. Package products to facilitate handling and protect from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, name of Project and Contractor, equipment number, and approximate weight. Include complete packing list and bill of materials with each shipment.
- C. Extra Materials, Special Tools, Test Equipment, and Expendables:
1. Furnish as Required by Individual Specifications.
 2. Schedule:
 - a. Ensure that shipment and delivery occur concurrently with shipment of associated equipment.
 - b. Transfer to Owner shall occur immediately subsequent to Contractor's acceptance of equipment from Supplier.
 3. Packaging and Shipment:
 - a. Package and ship extra materials and special tools to avoid damage during long term storage in original cartons insofar as possible, or in appropriately sized, hinged-cover, wood, plastic, or metal box.
 - b. Prominently Displayed on Each Package, the Following:

- 1). Manufacturer's part nomenclature and number, consistent with Operation and Maintenance Manual identification system.
- 2). Applicable equipment description.
- 3). Quantity of parts in package.
- 4). Equipment manufacturer.
4. Deliver materials to the site.
5. Notify Engineer upon arrival for transfer of materials.
6. Replace extra materials and special tools found to be damaged or otherwise inoperable at time of transfer to Owner.

- D. Request a minimum 7-day advance notice of shipment from manufacturer. Upon receipt of Manufacturer's advance notice of shipment, promptly notify Engineer of anticipated date of equipment arrival.
- E. Factory Test Results: Reviewed and accepted by Engineer before product shipment as required in individual Specification sections.

1.5 DELIVERY AND INSPECTION

- A. Deliver products in accordance with accepted current Progress Schedule and coordinate to avoid conflict with the Work and conditions at Site. Deliver anchor bolts and templates sufficiently early to permit setting prior to placement of structural concrete.
- B. Deliver products in undamaged condition, in Manufacturer's original container or packaging, with identifying labels intact and legible. Include on label, date of manufacture and shelf life, where applicable.
- C. Unload products in accordance with Manufacturer's instructions for unloading or as specified, and record receipt of products at Site. Promptly inspect for completeness and evidence of damage during shipment.
- D. Remove damaged products from Site, and expedite delivery of identical new undamaged products, and remedy incomplete or lost products to provide that specified, so as not to delay progress of the Work.

1.6 HANDLING, STORAGE, AND PROTECTION

- A. Handle and store products in accordance with Manufacturer's written instructions and in a manner to prevent damage. Store in approved storage yards or sheds provided in accordance with Section 01 50 00, TEMPORARY FACILITIES AND CONTROLS. Provide Manufacturer's recommended maintenance during storage, installation, and until products are accepted for use by Owner.
- B. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration. Keep running account of products in storage to facilitate inspection and to estimate progress payments for products delivered, but not installed in the Work.
- C. Store electrical, instrumentation, and control products, and equipment with bearings in weather-tight structures maintained above 60 °F. Protect electrical, instrumentation, and control products, and insulation against moisture, water, and dust damage. Connect and operate continuously all space heaters furnished in electrical equipment.

- D. Store fabricated products above ground on blocking or skids, prevent soiling or staining, and store loose granular materials in well-drained area on solid surface to prevent mixing with foreign matter. Cover products that are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.
- E. Store finished products that are ready for installation in dry and well-ventilated areas. Do not subject to extreme changes in temperature or humidity.
- F. After installation, provide coverings to protect products from damage due to traffic and construction operations. Remove coverings when no longer needed.
- G. Hazardous Materials: Prevent contamination of personnel, storage building, and Site. Meet requirements of product specification, codes, and manufacturer's instructions.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide the Manufacturers standard materials suitable for service conditions unless otherwise specified in the individual Specifications.
- B. Where product specifications include a named Manufacturer, with or without model number, and also include performance requirements, named Manufacturer's products must meet the performance specifications.
- C. Like items of products furnished and installed in the Work shall be end products of one Manufacturer and of the same series or family of models to achieve standardization for appearance, operation and maintenance, spare parts and replacement, Manufacturer's services, and implement same or similar process instrumentation and control functions in same or similar manner.
- D. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.
- E. Provide interchangeable components of the same Manufacturer, for similar components, unless otherwise specified.
- F. Equipment, components, systems, sub-systems: Design and manufacture with due regard for health and safety of operation, maintenance, and accessibility, durability of parts, and shall comply with applicable OSHA, State, and local health and safety regulations.
- G. Regulatory Requirement: Coating materials shall meet Federal, State, and local requirements limiting the emission of volatile organic compounds and for worker exposure.
- H. Safety Guards: Provide for all belt or chain drives, fan blades, couplings, or other moving or rotary parts. Cover rotating part on all sides. Design for easy installation and removal. Use 16-gauge or heavier; galvanized steel, aluminum coated steel, or galvanized or aluminum coated ½" mesh expanded steel. Provide galvanized steel accessories and supports, including bolts. For outdoors application, prevent entrance of rain and dripping water.
- I. Authority Having Jurisdiction (AHJ):
 - 1. Provide the Work in accordance with the **Texas** Fire Code that incorporates the **2019** International Building Code [with **Texas** Amendments]. Where required by the AHJ, material and equipment shall be labeled or listed by a nationally recognized testing

laboratory or other organization acceptable to the AHJ in order to provide a basis for approval under NEC.

2. Materials and equipment manufactured within the scope of standards published by Underwriters Laboratories, Inc. shall conform to those standards and shall have an applied UL listing mark.

J. Equipment Finish:

1. Provide Manufacturer's standard finish and color, except where specific color is indicated.
2. If Manufacturer has no standard color, provide equipment with gray finish as approved by Engineer.

- K. Special Tools and Accessories: Furnish to Owner, upon acceptance of equipment, all accessories required to place each item of equipment in full operation. These accessory items include, but are not limited to, adequate oil and grease (as required for first lubrication of equipment after field testing), light bulbs, fuses, hydrant wrenches, valve keys, hand wheels, chain operators, special tools, and other spare parts as required for maintenance.

- L. Lubricant: Provide initial lubricant recommended by equipment Manufacturer in sufficient quantity to fill lubricant reservoirs and to replace consumption during testing, startup, and operation until final acceptance by Owner.

2.2 FABRICATION AND MANUFACTURE

A. General:

1. Manufacture parts to U.S.A. standard sizes and gauges.
2. Two or more items of the same type shall be identical, by the same Manufacturer, and interchangeable.
3. Design structural members for anticipated shock and vibratory loads.
4. Use 1/4" minimum thickness for steel that will be submerged, wholly or partially, during normal operation.
5. Modify standard products as necessary to meet performance Specifications.

B. Lubrication System:

1. Require no more than weekly attention during continuous operation.
2. Convenient and accessible. Oil drains with bronze or stainless steel valves and fill-plugs easily accessible from the normal operating area or platform.
3. Locate drains to allow convenient collection of oil during oil changes without removing equipment from its installed position.
4. Provide constant-level oilers or oil level indicators for oil lubrication systems.
5. For grease type bearings, which are not easily accessible, provide and install stainless steel tubing; protect and extend tubing to convenient location with suitable grease fitting.

2.3 SOURCE QUALITY CONTROL

- A. Where Specifications call for factory testing to be witnessed by Engineer, notify Engineer not less than 14 days prior to scheduled test date, unless otherwise specified.
- B. Calibration Instruments: Bear the seal of a reputable laboratory certifying instrument has been calibrated within the previous 12 months to a standard endorsed by the National Institute of Standards and Technology (NIST).
- C. Factory Tests: Perform in accordance with accepted test procedures and document successful completion.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect materials and equipment for signs of pitting, rust decay, or other deleterious effects of storage. Do not install material or equipment showing such effects. Remove damaged material or equipment from the Site and expedite delivery of identical new material or equipment. Delays to the Work resulting from material or equipment damage that necessitates procurement of new products will be considered delays within Contractor's control.

3.2 INSTALLATION

- A. Equipment Drawings show general locations of equipment, devices, and raceway, unless specifically dimensioned.
- B. No shimming between machined surfaces is allowed.
- C. Install the Work in accordance with NECA Standard of Installation, unless otherwise specified.
- D. Repaint painted surfaces that are damaged prior to equipment acceptance.
- E. Do not cut or notch any structural member or building surface without specific approval of Engineer.
- F. Handle, install, connect, clean, condition, and adjust products in accordance with Manufacturer's instructions, and as may be specified. Retain a copy of Manufacturers' instruction at Site, available for review at all times.
- G. For material and equipment specifically indicated or specified to be reused in the Work:
 - 1. Use special care in removal, handling, storage, and reinstallation to assure proper function in the completed Work.
 - 2. Arrange for transportation, storage, and handling of products that require offsite storage, restoration, or renovation. Include costs for such Work in the Contract Price.

3.3 FIELD FINISHING

- A. In accordance with Section 09 90 00, PAINTING AND PROTECTIVE COATINGS and individual Specification sections.

3.4 ADJUSTMENT AND CLEANING

- A. Perform required adjustments, tests, operation checks, and other startup activities.

3.5 LUBRICANTS

- A. Fill lubricant reservoirs and replace consumption during testing, startup, and operation prior to acceptance of equipment by Owner.

END OF SECTION

SECTION 01 72 20 – FIELD ENGINEERING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of the required closeout procedures for the project:
 - 1. Providing and delivering informational submittals.
 - 2. Preparing, maintaining, providing and delivering Record Documents.
 - 3. Furnishing Releases from Agreements.
 - 4. Furnishing Evidence of Compliance with Requirements of Governing Authorities.
 - 5. Providing Warranties and Bonds.
 - 6. Providing Certificate of Final Completion.
- B. Related sections:
 - 1. Section 01 77 00 – Closeout Procedures.

1.2 QUALITY ASSURANCE

- A. Qualifications of Surveyor or Engineer: Registered civil engineer or land surveyor in state where Project is located.
- B. Accuracy of stakes, alignments, and grades may be checked randomly by ENGINEER:
 - 1. Notice of when checking will be conducted will be given.
 - 2. When notice of checking is given, postpone parts of the Work affected by stakes, alignments or grades to be checked until checked.
 - 3. Do not assume that ENGINEER's check substitutes or complements required field quality control procedures.

1.3 CONSTRUCTION STAKES, LINES, AND GRADES

- A. Execute the Work in accordance with the lines and grades indicated.
- B. Make distances and measurements on horizontal planes, except elevations and structural dimensions.

1.4 SURVEY REFERENCE POINTS

- A. Basic reference line, a beginning point on basic reference line, and a benchmark will be provided, by OWNER.
- B. From these reference points, establish other control and reference points as required to properly lay out the Work.
- C. Locate and protect control points prior to starting site work, and preserve permanent reference points during construction:
 - 1. Make no changes or relocations without prior written notice.
 - 2. Replace Project control point, when lost or destroyed, in accordance with original survey control.
- D. Set monuments for principal control points and protect them from being disturbed and displaced:
 - 1. Re-establish disturbed monuments.
 - 2. When disturbed, postpone parts of the Work that are governed by disturbed monuments until such monuments are re-established.

1.5 PROJECT SURVEY REQUIREMENTS

- A. Establish minimum of 2 permanent benchmarks on site referenced to data established by survey control points.
- B. Record permanent benchmark locations with horizontal and vertical data on Project Record Documents.
- C. Assume responsibility for accuracy of stakes, alignments, and grades by performing verifications and checking in accordance with standard surveying practice.

1.6 RECORD DOCUMENTS

- A. Prepare and submit Record Documents as specified in Section 01 77 00.
- B. Maintain complete, accurate log of control points and survey.
- C. Affix civil engineer's or land surveyor's signature and registration number to Record Drawing to certify accuracy of information shown.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 73 20 – CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Cutting and patching existing and new construction.
- B. Related sections:
 - 1. Section 01 33 00 – Submittal Procedures.
 - 2. Section 01 60 00 – Product Requirements.

1.2 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Cutting and Patching Plan:
 - 1. Submit details of proposed construction before cutting and patching construction commences affecting:
 - a. Work of OWNER or of others.
 - b. Structural integrity of element of Project.
 - 2. Cutting and Patching Plan shall include the following:
 - a. Identification of Work.
 - b. Description of affected construction.
 - c. Necessity for cutting, patching, alteration, or excavation.
 - d. Description of proposed construction.
 - e. Scope of cutting, patching, alteration, or excavation. Verify locations of utilities and facilities which may exist by consulting with the OWNER, utility companies, and the Texas One Call System or other service available in area of Project (see dig/call information on the Drawings):

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with specifications and standards for products involved.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Provide adequate temporary support as necessary to ensure structural integrity of affected portion of Work.
- B. Provide devices and methods to protect other portions of Project from damage and persons from injury.
- C. Provide protection from elements for that portion of Project which may be exposed by cutting and patching, and maintain excavations free from water.

3.2 CUTTING AND PATCHING

- A. Cut, Fit, and Patch when Required to:
 - 1. Make its several parts fit together properly.
 - 2. Remove and replace construction not conforming to Contract Documents.

3. Remove samples of installed construction as specified for testing.
 4. Provide routine penetrations of nonstructural surfaces for installation of piping and electrical conduit.
- B. Execute cutting and demolition by methods which will prevent damage and will provide proper surfaces to receive installation of repairs.
- C. Openings in Existing Concrete and Masonry:
1. Create Openings by:
 - a. Saw cutting completely through concrete or masonry, or
 - b. Scoring edges of opening with saw to at least 1 inch depth on both surfaces (when accessible) and removing concrete or masonry by chipping.
 2. Do not allow saw cuts to extend beyond limits of opening.
 3. Make corners square and true by combination of core drilling and grinding or chipping.
 4. Prevent debris from falling into adjacent tanks or channels in service or from damaging existing equipment and other facilities.
- D. Sizing of Openings in Existing Concrete or Masonry:
1. Make openings sufficiently large to permit final alignment of pipe and fittings without deflections.
 2. Allow adequate space for packing around pipes and conduit to ensure watertightness.
- E. Grouting Pipes in Place:
1. Sandblast concrete surfaces and thoroughly clean sand and other foreign material from surfaces prior to placing grout.
 2. Grout pipes, sleeves, castings, and conduits in place by pouring grout under a head of at least 4 inches. Vibrate grout into place. Completely fill the spaces occupied by pipes, sleeves, castings, and conduits.
 3. Water cure the grout.
- F. Connections to Existing Pipes:
1. Cut existing pipe square.
 2. Properly prepare the ends for the connection indicated on the Drawings.
 3. Repair any damage to existing lining and coating.
- G. Rehabilitate all areas affected by removal of existing equipment, equipment pads and bases, piping, supports, electrical panels, electric devices, and conduits such that little or no evidence of the previous installation remains:
1. Fill areas in existing floors, walls, and ceilings from removed piping, conduit and fasteners with non-shrink grout and finish smooth.
 2. Remove Concrete Bases for Equipment and Supports by:
 - a. Saw cutting clean, straight lines with a depth equal to the concrete cover over reinforcement minus 1/2 inch below finished surface. Do not cut existing reinforcement on floors.
 - b. Chip concrete within scored lines and cut exposed reinforcing steel and anchor bolts.
 - c. Patch with non-shrink grout to match adjacent grade and finish.
 3. Terminate abandoned piping and conduits with blind flanges, caps, or plugs.
- H. Treat Existing Concrete Reinforcement as Follows:
1. Where existing reinforcement is to remain, protect, clean, and extend into new concrete.
 2. Where Existing Reinforcement is not to be Retained, Cut Off as Follows:
 - a. Where new concrete joins existing concrete at the removal line, cut reinforcement flush with concrete surface at the removal line.

- b. Where concrete surface at the removal line is the finished surface, cut reinforcement 2 inches below the surface, paint ends with epoxy, and patch holes with dry pack mortar.

END OF SECTION

SECTION 01 73 40 – WORK WITHIN PUBLIC RIGHT-OF-WAY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Requirements for maintenance, support, protection, relocation, reconstruction and adjusting-to-grade, restoration, construction of temporary and new facilities, and abandonment of existing utilities affected by construction work within the public right-of-way.

1.2 REFERENCES

- A. State of Texas, Department of Transportation (TxDOT):
 - 1. Standard Specifications.

1.3 DEFINITIONS

- A. Utility: For purpose of this Section, utility means any public or private service, such as electric light and power systems; gas distribution systems; telephone, telegraph, cable television and other communication services; water distribution; storm drain and sanitary sewer services; police and fire communication systems; street lighting and traffic signs and signals; parking meters; and steam distribution systems.
- B. For Trenching:
 - 1. Open Trench:
 - a. General: Includes excavation, pipe laying, backfilling, and pavement replacement.
 - 2. Any excavated areas shall be considered as "open trench" until all pavement replacement has been made, or until all trenches outside of pavement replacement areas have been backfilled and compacted in accordance with these Contract Documents.

1.4 DESIGN REQUIREMENTS

- A. Trenching:
 - 1. Except where otherwise specified, indicated on the Drawings, or accepted in writing by the ENGINEER, the maximum length of open trench, where construction is in any stage of completion, shall not exceed the linear footage as set forth below. Descriptions under following area designations are general in nature and may be amended in writing by the ENGINEER due to particular or peculiar field conditions:
 - a. Business District Areas C 100 Linear Feet: Store front areas.
 - b. Commercial Areas C 400 Linear Feet: Industrial, shopping centers, churches, schools, hotels, motels, markets, gas stations, government and private office buildings, hospitals, fire and police stations, and nursing homes.
 - c. Residential Areas C 1 Block or 600 Linear Feet, Whichever is the Least: Single and multi-family residences, apartments, and condominiums.
 - d. Undeveloped Areas C 1,000 Linear Feet: Parks, golf courses, farms, undeveloped subdivided land.
 - 2. Completely backfill trenches across streets and install temporary or permanent pavement as soon as possible after pipe laying.
- B. Site Conditions:
 - 1. Use substantial steel plates with adequate trench bracing to bridge across trenches at street and alley crossings, commercial driveways, and residential driveways where trench backfill and temporary patch have not been completed during regular working hours.
 - 2. Provide safe and convenient passage for pedestrians.
 - 3. Maintain access to fire stations, fire hydrant, and hospitals at all times.

4. Provide traffic control devices, barricades and signage as required by the regulating agency.

1.5 SUBMITTALS

- A. Traffic Control Plan: Submit detailed traffic control plan for acceptance by jurisdictional agency.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 77 00 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes description and requirements of the required closeout procedures for the project:
 - 1. Providing and delivering informational submittals.
 - 2. Preparing, maintaining, providing and delivering Record Documents.
 - 3. Furnishing Releases from Agreements.
 - 4. Furnishing Evidence of Compliance with Requirements of Governing Authorities.
 - 5. Providing Warranties and Bonds.
 - 6. Providing Certificate of Final Completion.
- B. Related sections:
 - 1. 01 29 00 – Payment Procedures.
 - 2. 01 32 00 – Construction Progress Documentation.
 - 3. 01 72 20 – Field Engineering.
 - 4. 01 78 23 – Operation and Maintenance Data.
 - 5. 01 79 00 – Demonstration and Training.

1.2 SUBMITTALS

- A. Informational Submittals:
 - 1. Submit Prior to Application for Final Payment.
 - a. Record Documents: As required in General Conditions.
 - b. Approved Shop Drawings and Samples: As required in the General Conditions.
 - c. Operations and Maintenance Manuals: In accordance with Section 01 78 23, and as required in individual Specification sections.
 - d. Certificates of Testing and Inspection: As required in the General Conditions, these General Requirements sections, and the individual Specifications sections.
 - e. Training Sessions: In accordance with Section 01 79 00, and individual Specifications sections.
 - f. Certificate of Substantial Completion.
 - g. Special bonds, Special Guarantees, and Service Agreements.
 - 2. Form of Submittal:
 - a. Bind in commercial quality 8-1/2" by 11" three ring, side binders with hardback, cleanable, plastic covers.
 - 1). Label cover of each binder with typed or printed title Warranties and Bonds, with title of Project; name; address, and telephone number of Contractor and equipment Supplier, and name of responsible principal.
 - 2). Table of Contents: Neatly typed, in the sequence of the of the Project Manual, with each item identified with the number and title of the Specification section in which specified, and the name of the product or Work item.
 - 3). Separate each warranty or Bond with index tab sheets keyed to the Table of Contents. Provide full information, using separate typed sheets as necessary. List Subcontractor, Supplier, and Manufacturer, with name, address, and telephone number of responsible contact for service and warranty issues.
 - 3. Preparation of Submittal:
 - a. Obtain notarized warranties and Bonds, executed in duplicate by responsible Subcontractor, Supplier, and Manufacturer, within 10 days after completion of the applicable item or Work, except for items put into use with Owner's permission, leave date of beginning of time warranty until date of Substantial Completion is determined.
 - 4. Time of Submission: Submit within 10 days after the date of Date of Substantial Completion and prior to submission of Final Application of Payment.

- a. Spare parts and special tools as required by individual Specification sections.
- b. Consent of Surety to Final Payment: As required in General Conditions.
- c. Releases or Waivers of Liens and Claims: As required in General Conditions.
- d. Releases from Agreements.
- e. Final Application for Payment: Submit in accordance with procedures and requirements stated in Section 01 29 00.
- f. Extra Materials: As required by individual Specification sections.

1.3 RECORD DOCUMENTS

- A. Quality Assurance:
 - 1. Furnish qualified and experienced person, whose duty and responsibility shall be to maintain record documents.
 - 2. Accuracy of Records:
 - 3. Coordinate changes within record documents, making legible and accurate entries on each sheet of Drawings and other documents where such entry is required to show change.
 - 4. Purpose of Project record documents is to document factual information regarding aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive Site measurement, investigation, and examination.
 - 5. Make entries within 24 hours after receipt of information that a change in the Work has occurred.
 - 6. Prior to submitting each request for progress payment, request Engineer's review and approval of current status of record documents. Failure to properly maintain, update, and submit record documents may result in a deferral by Engineer to recommend whole or any part of Contractor's Application for Payment, either partial or final.
 - 7. Maintain at Project site, available to OWNER and ENGINEER, 1 copy of the Contract Documents, shop drawings and other submittals, in good order.

1.4 RELEASES FROM AGREEMENTS

- A. Furnish Owner written releases from property owners or public agencies where side agreements or special easements have been made, or where Contractor's operations have not been kept within the Owner's construction right-of-way.
- B. In the Event Contractor is Unable to Secure Written Releases:
 - 1. Inform Owner of the reasons.
 - 2. Owner or its representatives will examine the Site, and Owner will direct Contractor to complete the Work that may be necessary to satisfy terms of the side agreement or special easement.
 - 3. Should Contractor refuse to perform this Work, Owner reserves right to have it done by separate contract and deduct cost of same from Contract Price, or require Contractor to furnish a satisfactory bond in a sum to cover legal Claims for damages.
 - 4. When Owner is satisfied that the Work has been completed in agreement with Contract Documents and terms of side agreement or special easement, right is reserved to waive requirement for written release if:
 - 5. Contractor's failure to obtain such statement is due to grantor's refusal to sign, and this refusal is not based upon any legitimate Claims that Contractor has failed to fulfill terms of side agreement or special easement, or
 - 6. Contractor is unable to contact or has had undue hardship in contacting grantor.

1.5 EVIDENCE OF COMPLIANCE WITH REQUIREMENTS OF GOVERNING AUTHORITIES

- A. Submit the Following:
 - 1. Certificate of Occupancy.
 - 2. Certificates of Inspection:
 - a. Mechanical.

b. Electrical.

1.6 WARRANTIES AND BONDS

- A. Provide executed Warranty or Guaranty Form if required by Contract Documents.
- B. Provide specified additional warranties, guarantees, and bonds from manufacturers and suppliers.

1.7 CERTIFICATE OF FINAL COMPLETION

- A. When 7-day operational test has been successfully completed, ENGINEER will certify that new facilities are operationally complete. ENGINEER will submit a list of known items (punch list) still to be completed or corrected prior to contract completion.
- B. List of items to be completed or corrected will be amended as items are resolved by CONTRACTOR.
- C. When all items have been completed or corrected, submit written certification that the entire work is complete in accordance with the Contract Documents and request final inspection.
- D. Upon completion of final inspection, ENGINEER will either prepare a written acceptance of the entire work or advise CONTRACTOR of work not complete. If necessary, inspection procedures will be repeated.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 MAINTENANCE OF RECORD DOCUMENTS

- A. General:
 - 1. Promptly following commencement of Contract Times, secure from Engineer at no cost to Contractor, one complete set of Contract Documents. Drawings will be full size.
 - 2. Label or stamp each record document with title, "RECORD DOCUMENTS," in neat large printed letters.
 - 3. Record information concurrently with construction progress and within 24 hours after receipt of information that change has occurred. Do not cover or conceal Work until required information is recorded.
- B. Preservation:
 - 1. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
 - 2. Make documents and Samples available at all times for observation by Engineer.
- C. Making Entries on Drawings:
 - 1. Use an erasable colored pencil (not ink or indelible pencil), clearly describe change by graphic line and note as required.
 - a. Make annotations with erasable colored pencil conforming to the following color code:

Additions:	Red
Deletions:	Green
Comments	Blue

Dimensions:	Graphite
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2. Date entries.
 3. Call attention to entry by "cloud" drawn around area or areas affected.
 4. Legibly mark to record actual changes made during construction, including, but not limited to:
 5. Depths of various elements of foundation in relation to finished first floor data if not shown or where depth differs from that shown.
 6. Horizontal and vertical locations of existing and new Underground Facilities and appurtenances, and other underground structures, equipment, or Work, and Reference to at least two measurements to permanent surface improvements.
 7. Location of internal utilities and appurtenances concealed in the construction referenced to visible and accessible features of the structure.
 8. Locate existing facilities, piping, equipment, and items critical to the interface between existing physical conditions or construction and new construction.
 9. Changes made by Addenda and Field Orders, Work Change Directive, Change Order, and Engineer's written interpretation and clarification using consistent symbols for each and showing appropriate document tracking number.
 10. Dimensions on Schematic Layouts: Show on record drawings, by dimension, the centerline of each run of items that are described in previous subparagraph above.
 11. Clearly identify the item by accurate note such as "cast iron drain," "galv. water," and the like.
 12. Show, by symbol or note, vertical location of item ("under slab," "in ceiling plenum," "exposed," and the like).
 13. Make identification so descriptive that it may be related reliably to Specifications.
 14. Mark and record field changes and detailed information contained in submittals and change orders.
 15. Record actual depths, horizontal and vertical location of underground pipes, duct banks and other buried utilities. Reference dimensions to permanent surface features.
 16. Identify specific details of pipe connections, location of existing buried features located during excavation, and the final locations of piping, equipment, electrical conduits, manholes, and pull boxes.
 17. Identify location of spare conduits including beginning, ending and routing through pull boxes, and manholes. Record spare conductors, including number and size, within spare conduits, and filled conduits.
 18. Provide schedules, lists, layout drawings, and wiring diagrams.
- D. Maintain Documents Separate From Those Used for Construction:
1. Label documents "RECORD DOCUMENTS."
- E. Keep Documents Current:
1. Record required information at the time the material and equipment is installed and before permanently concealing.
- F. Deliver record documents with transmittal letter containing date, Project title, CONTRACTOR's name and address, list of documents, and signature of CONTRACTOR.
- G. During progress meetings, record documents will be reviewed to ascertain that changes have been recorded.
- H. Final Schedule Submittal in accordance with Section 01 32 00.

3.2 FINAL CLEANING

- A. At completion of the Work or of a part thereof and immediately prior to Contractor's request for certificate of Substantial Completion; or if no certificate is issued, immediately prior to Contractor's notice of completion, clean entire Site or parts thereof, as applicable.
1. Leave the Work and adjacent areas affected in a cleaned condition satisfactory to Owner.
 2. Remove grease, dirt, dust, paint or plaster splatter, stains, labels, fingerprints, and other foreign materials from exposed surfaces.
 3. Repair, patch, and touch up marred surfaces to specified finish and match adjacent surfaces.
 4. Clean all windows.
 5. Clean and wax wood, vinyl, or painted floors.
 6. Broom clean exterior paved driveways and parking areas.
 7. Hose clean sidewalks, loading areas, and others contiguous with principal structures.
 8. Rake and clean all other surfaces.
 9. Remove snow and ice from access to buildings.
 10. Replace air-handling filters and clean ducts, blowers, and coils of ventilation units operated during construction.
 11. Leave water courses, gutters, and ditches open and clean.
 12. Perform final cleaning prior to inspections for Final Acceptance.
 13. Employ skilled workers who are experienced in cleaning operations.
 14. Use cleaning materials which are recommended by manufacturers of surfaces to be cleaned.
 15. Prevent scratching, discoloring, and otherwise damaging surfaces being cleaned.
 16. Clean roofs, gutters, downspouts, and drainage systems.
 17. Broom clean exterior paved surfaces and rake clean other surfaces of site work:
 - a. Police yards and grounds to keep clean.
 18. Remove dust, cobwebs, and traces of insects and dirt.
 19. Clean grease, mastic, adhesives, dust, dirt, stains, fingerprints, paint, blemishes, sealants, plaster, concrete, and other foreign materials from sight-exposed surfaces, and fixtures and equipment.
 20. Remove non-permanent protection and labels.
 21. Polish waxed woodwork and finish hardware.
 22. Wash tile.
 23. Wax and buff hard floors, as applicable.
 24. Wash and polish glass, inside and outside.
 25. Wash and shine mirrors.
 26. Polish glossy surfaces to clear shine.
 27. Vacuum carpeted and soft surfaces.
 28. Clean permanent filters and replace disposable filters when heating, ventilation, and air conditioning units were operated during construction.
 29. Clean ducts, blowers and coils when units were operated without filters during construction.
 30. Clean light fixtures and replace burned-out or dim lamps.
- B. Use only cleaning materials recommended by Manufacturer of surfaces to be cleaned.

3.3 WASTE DISPOSAL

- A. Arrange for and dispose of surplus materials, waste products, and debris off-site:
1. Prior to making disposal on private property, obtain written permission from OWNER of such property.
- B. Do not fill ditches, washes, or drainage ways which may create drainage problems.
- C. Do not create unsightly or unsanitary nuisances during disposal operations.

- D. Maintain disposal site in safe condition and good appearance.
- E. Complete leveling and cleanup prior to Final Acceptance of the Work.

3.4 TOUCH-UP AND REPAIR

- A. Touch-up or repair finished surfaces on structures, equipment, fixtures, and installations that have been damaged prior to inspection for Final Acceptance.
- B. Refinish or replace entire surfaces which cannot be touched-up or repaired satisfactorily.

3.5 FINAL CLEANING AND DISINFECTION OF SYSTEMS OF POTABLE WATER MAINS

- A. Clean interior of pipe and fittings.
- B. When pipe contains dirt that cannot be removed by flushing, swab pipe interiors with solution containing not less than 500 parts per million of chlorine until clean.
- C. Flush 12 inch in diameter and smaller pipe as thoroughly as available water sources will permit.
- D. Fill pipe with chlorine solution of sufficient strength to provide 10 parts per million chlorine residual at end of 24 hours.
- E. Flush pipes with potable water until chlorine residual is less than 0.6 parts per million before pipes are put into service.

3.6 CLOSEOUT DOCUMENTS

- A. Submit following Closeout Submittals upon completion of the Work and at least 7 days prior to submitting Application for Final Payment:
 1. Evidence of Compliance with Requirements of Governing Authorities.
 2. Project Record Documents.
 3. Operation and Maintenance Manuals.
 4. Warranties and Bonds.
 5. Keys and Keying Schedule.
 6. Evidence of Payment and Release of Stop Payment Notices as outlined in Conditions of the Contract.
 7. Release of claims as outlined in Conditions of the Contract.
 8. Survey Record Documents as specified in Section 01 72 20.
 9. Certificate of Final Completion.

END OF SECTION

DIVISION 2

EXISTING CONDITIONS

SECTION 02 41 00 - DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 1. Portions of buildings and other areas, equipment and materials selective demolition, and partial demolition work are as shown on Drawings and specified herein.
 2. Equipment and materials to be removed for construction and reinstalled for reuse or continued operation are as shown on the drawings and specified herein.

1.2 SUBMITTALS

- A. Shop Drawings: Plans showing all equipment and materials to be removed and reinstalled for reuse on continued operation including interim storage plans for each item.
- B. Quality Control Submittals:
 1. Schedule of demolition, as part of and consistent with the progress schedule specified in Section 01 32 00, CONSTRUCTION PROGRESS DOCUMENTATION.
 2. Methods of demolition and equipment proposed to demolish each structure.
 3. Copies of any authorizations and permits required to perform Work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Utilities:
 1. Notify Owner and appropriate utilities 72 hours prior to turning off affected services before starting demolition or alterations.
 2. Remove utility lines exposed by demolition excavation.
 3. Remove electric, sanitary, and storm drainage adjacent to buildings to be demolished.
 4. Excavate utility lines serving buildings to be demolished and provide a permanent leak-proof closure for water and gas lines.
 5. Plug sewer lines at locations shown or at limits of excavation if not shown with min. 2,000 psi compressive strength concrete plug to prevent groundwater infiltrating sewer systems. Length of plug shall be 5 feet minimum.
- B. Removal and Storage of Equipment for Reuse:
 1. Do not remove equipment and materials without approval of Engineer.
 2. Properly store and maintain equipment and materials in same condition as when removed.
 3. Engineer will determine condition of equipment and materials prior to removal.

3.2 DEMOLITION

- A. Drawings define minimum portion of equipment to be removed and structures to be modified. Unless otherwise shown, rough cuts or breaks may be made exceeding limits of demolition shown.
- B. Provide all demolition, removal, temporary storage, and reinstallation of existing equipment as required for implementation of the work.

- C. Core drill floor slabs, catch basins, and other concrete improvements to remain in place below ground, or break holes at structure's lowest point to allow water to freely migrate through.
- D. Remove piping from areas to be backfilled. Pipe, valves, and fittings adjacent to those to be removed may also be removed as salvage.
- E. Remove all materials associated with existing equipment that is to be removed or relocated.
- F. Cut off concealed or embedded conduit, boxes, or other materials a minimum of 3/4 inch below final finished surface.
- G. Cut off drilled piers a minimum of 6 inches below bottom of new foundations.
- H. Demolish existing concrete structure to 18" below grade.

3.3 DISPOSAL

- A. Dispose of debris and other non-salvaged materials offsite in licensed landfills.

3.4 BACKFILLING

- A. Demolished Areas: Backfill to existing ground level, elevations shown, or foundation level of new construction.
- B. Backfill Material and Compaction:
 - 1. For fill in structures, use sand conforming to AHTD Standard Specifications for Highway Construction, Section 802.02(b) Fine Aggregate, otherwise conform to Section 31 23 23.13, FILL AND BACKFILL. Top 6" of backfill to grade shall be select fill conforming to Section 31 23 23.13 FILL AND BACKFILL and shall be compacted to 90% standard proctor density.
 - 2. Do not use demolition debris as backfill material.

3.5 SALVAGE

- A. Equipment and materials not reused or reinstalled, including all metals and piping within the limits of demolition, unless otherwise specified, shall be delivered to the Owner for scrap.

END OF SECTION

DIVISION 3 CONCRETE

SECTION 03 11 00 - CONCRETE FORMWORK

PART 1 - GENERAL

1.1 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. American Concrete Institute (ACI):
 - a. 117, Standard Specifications for Tolerances for Concrete Construction and Materials.
 - b. 318/318R, Building Code Requirements for Reinforced Concrete.
 - c. 347, Formwork for Concrete.

1.2 DESIGN REQUIREMENTS

- A. Design formwork in accordance with ACI 301, ACI 347 and ACI 318 to provide concrete finishes specified in Section 03 30 00, CAST-IN-PLACE CONCRETE.
- B. When high range water reducer (superplasticizer) is used in concrete mix, forms shall be designed for full hydrostatic pressure per ACI 347.
- C. Make joints in forms watertight.
- D. Limit panel deflection to 1/360th of each component span to achieve tolerances specified.

1.3 SUBMITTALS

- A. Shop Drawings:
 - 1. Form Ties-Tapered Through-Bolts: Proposed method of sealing form tie hole; coordinate with details shown.
 - 2. Manufacturer's Data for the Following Product: Form release agent.
- B. Samples: One each as follows:
 - 1. Form ties.
- C. Information Submittals: Statement of qualification for formwork designer.

1.4 QUALIFICATIONS

- A. Formwork Designer: Formwork, falsework, and shoring design shall be by an Engineer licensed in the State of the project site.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Wall Forms and Underside of Slabs:
 - 1. Materials: Plywood, hard plastic finished plywood, overlaid waterproof particle board, or steel in "new and undamaged" condition, of sufficient strength and surface smoothness to produce specified finish.
 - 2. Circular Structures:
 - a. Conform forms to circular shape of structure.
 - b. Straight panels may be substituted for circular forms provided panels do not exceed 2' in horizontal width and angular deflection is no greater than 3-1/2° per joint.

- B. Painted Surface Forms: High density overlay plywood for flat concrete surfaces to be painted.
- C. All Other Forms: Materials as specified for wall forms.
- D. Form Release Agent:
 - 1. Material: Release agent shall not bond with, stain, or adversely affect concrete surfaces, and shall not impair subsequent treatments of concrete surfaces when applied to forms. A "ready to use" water based material formulated to reduce or eliminate surface imperfections, containing no mineral oil or organic solvents. Environmentally safe, meeting local, state, and federal regulations and can be used in potable water facilities.
 - 2. Manufacturers and Products:
 - a. Master Builders, Inc.; Rheofinish 211.
 - b. Cresset Chemical Company; Crete-Lease 20-VOC.
 - c. US Mix Products Company; US SPEC Slickote.
- E. Rustication Grooves and Beveled Edge Corner Strips: Nonabsorbent material, compatible with form surface, fully sealed on all sides prohibiting loss of paste or water between the two surfaces.
- F. Form Ties:
 - 1. Material: Steel
 - 2. Spreader Inserts:
 - a. Conical or spherical type.
 - b. Design to maintain positive contact with forming material.
 - c. Furnish units that will leave no metal closer than 1" to concrete surface when forms, inserts, and tie ends are removed.
 - 3. Wire ties not permitted.
 - 4. Flat bar ties for panel forms furnish plastic or rubber inserts with minimum 1" depth and sufficient dimensions to permit patching of tie hole.
 - 5. Water Stop Ties: For water-holding structures, basements, pipe galleries, and accessible spaces below finish grade, furnish one of the following:
 - a. Integral steel water stop 0.103" thick and 0.625" in diameter tightly and continuously welded to tie.
 - b. Neoprene water stop 3/16" thick and 15/16" diameter whose center hole is 1/2-diameter of tie, or molded plastic water stop of comparable size.
 - c. Orient water stop perpendicular to tie and symmetrical about center of tie.
 - d. Design ties to prevent rotation or disturbance of center portion of tie during removal of ends and to prevent water leaking along tie.
 - 6. Through-Bolts: Tapered minimum 1" diameter at smallest end.
 - 7. Elastic Vinyl Plug:
 - a. Design and size of plug to allow insertion with tool to enable plug to elongate and return to original length, and diameter upon removal forming watertight seal.
 - b. Manufacturer and Product: Dayton/Richmond Co., Miamisburg, OH; A58 Sure Plug.
 - c. Recess plug 1" minimum and grout over hole. See Section 03 60 00 GROUT.

PART 3 - EXECUTION

3.1 FORM SURFACE PREPARATION

- A. Thoroughly clean form surfaces that will be in contact with concrete or that have been in contact with previously cast concrete, dirt, and other surface contaminants prior to coating surface.
- B. Exposed Wood Forms in Contact with Concrete: Apply form release agent as recommended by the manufacturer.

- C. Steel Forms: Apply form release agent to steel forms as soon as they are cleaned to prevent discoloration of concrete from rust.

3.2 ERECTION

- A. General: Unless specified otherwise, follow applicable recommendations of ACI347.
- B. Beveled Edges (Chamfer):
 - 1. Form 3/4" bevels at concrete edges, unless otherwise shown.
 - 2. Where beveled edges on existing adjacent structures are other than 3/4", obtain Engineer's approval of size prior to placement of beveled edge.
- C. Wall Forms:
 - 1. Do not reuse forms with damaged surfaces.
 - 2. Locate form ties and joints in an uninterrupted uniform pattern.
 - 3. Inspect form surfaces prior to installation to assure conformance with specified tolerances.
- D. Forms for Curbs and Sidewalks:
 - 1. Provide standard steel or wood forms.
 - 2. Set forms to true lines and grades, and securely stake in position.
- E. Form Tolerances: Provide forms in accordance with ACI 117, 347 and 318 and the following tolerances for finishes specified:
 - 1. Wall Tolerances:
 - a. Straight Vertical or Horizontal Wall Surface: Flat planes within tolerance specified.
 - b. Wall Type W-A:
 - 1). Plumb within 1/4" in 10' or within 1" from top to bottom for walls over 40 feet high.
 - 2). Depressions in Wall Surface: Maximum 5/16" when 10' straightedge is placed on high points in all directions.
 - c. Wall Type W-B:
 - 1). Plumb within 1/8" in 10' or within 1/2" from top to bottom for walls over 40' high.
 - 2). Depressions in Wall Surface: Maximum 1/8" when 10' straightedge is placed on high points in all directions.
 - 2. Thickness: Maximum -1/4" or +1/2" from dimension shown.
 - 3. Form Offset: Between adjacent pieces of form work, facing material shall not exceed 1/8" where exposed to public view and 1/4" maximum for all other conditions.

3.3 ADDITIONAL REQUIREMENTS

- A. Construct forms tight enough to prevent loss of concrete mortar.
- B. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Install keyways, reglets, recesses and the like for easy removal.
 - 2. Do not use rust-stained steel form-facing material.
 - 3. Use only form or form-tying methods which do not cause spalling of the concrete upon form stripping or tie removal.
- C. Set edge forms, bulkheads and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

- D. Provide temporary 12 inch wide x 18 inch high openings for cleanouts and inspection ports every 7 feet at the bottom of each lift form and where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations, where possible.
- E. Chamfer exterior corners and edges of permanently exposed concrete.
- F. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds and bulkheads required in the Work.
 - 1. Determine sizes and locations from trades providing such items.
 - 2. Openings shall be of sufficient size to permit final alignment of pipes or other items without deflection or offsets of any kind. Allow space for packing where items pass through the wall to ensure watertightness. Provide openings with continuous keyways and waterstops. Provide a slight flare to facilitate grouting and the escape of entrained air during grouting. Provide formed openings with reinforcement as indicated in the typical structural details. Reinforcing shall be at least 2 inches clear from the opening surfaces and encased items.
- G. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt and other debris just before placing concrete.
- H. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- I. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions before placing reinforcement.
- J. Embedded Items.
 - 1. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions and directions furnished with items to be embedded.
 - a. Install anchor bolts/rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
 - b. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles and other conditions.
 - c. Check special castings, channels or other metal parts that are to be embedded in the concrete prior to and again after placing the concrete.
 - d. Check nailing blocks, plugs and strips necessary for the attachment of trim, finish and similar work prior to placing the concrete.
- K. Pipes and wall spools cast in concrete.
 - 1. Install wall spools, wall flanges, and wall anchors before placing concrete. Do not weld, tie or otherwise connect the wall spools or anchors to the reinforcing steel.
 - 2. Support pipe and fabricated fittings to be encased in concrete on concrete piers or pedestals. Carry concrete supports to firm foundations so that no settlement will occur during construction.
 - 3. Pipes or spools located below operating water level shall have waterstop ring collars and shall be cast in place. Do not block out such piping and grout after the concrete section is cast. Pipes fitted with thrust rings shall be cast in place.
- L. Removing and reusing forms.
 - 1. General: Do not remove forms from concrete which has been placed with outside temperature below 50°F without first determining and verifying with Engineer if the

concrete has properly set without regard for time. Do not apply loading on green concrete. Immediately after forms are removed, the surface of the concrete shall be carefully examined and any irregularities in the surface shall be repaired and finished as specified.

- a. Leave formwork for beam soffits, joists, structural slabs, beams, girders and other structural elements that support weight of concrete in place until concrete has achieved 100 percent its 28-day design compressive strength.
 - b. Formwork for sides of beams, walls, columns and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50°F (10 deg C) for 48 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
 - c. Leave bracing for walls until the top or roof slab concrete reaches 100% of its 28-day design compressive strength.
 - d. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
2. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
 3. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces.
- M. Aluminum surfaces in contact with concrete.
1. Aluminum surfaces in contact with concrete or grout or dissimilar metals shall be protected with a Mylar isolator, bituminous paint or other material approved by Engineer.
- N. Shores and reshores.
1. Comply with ACI 318 (ACI 318M) and ACI 301 for design, installation and removal of shoring and reshoring.
 - a. Do not remove shoring or reshoring until measurement of slab tolerances is complete.
 2. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.
 3. For multi-storied structures, the shoring and reshoring diagrams and procedures shall be signed and sealed by a Registered Professional Engineer in the state where the construction is being undertaken. These diagrams and procedures shall take into account the effect of the loads on the uncured concrete and the construction load on each floor.
 4. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

END OF SECTION

SECTION 03 20 00 - CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 1. Reinforcing steel and related items required for cast-in-place concrete.
- B. Related Sections:
 1. Section 03 11 00 – Concrete Formwork.
 2. Section 03 30 00 – Cast-In-Place Concrete.

1.2 SUPERVISION

- A. Workmanship: Provide qualified supervision at all times reinforcing work is in progress. Workmen shall be experienced iron workers.
- B. Codes: Reinforcement placement and detailing shall comply with practice specified in the "Manual of Standard Practice for Detailing Reinforced Concrete Structures" publication ACI 315- latest edition of the American Concrete Institute or its latest revision, unless otherwise specified herein.

1.3 SUBMITTALS

- A. Shop drawings: Shop drawings shall be prepared for all reinforcement required by the project. Shop drawings shall be logically and legibly prepared to permit reasonable ease of sorting, selecting, placing reinforcement as well as checking drawings. Preparer and fabricator shall be identified on the drawings.
 1. Reinforcement shall not be fabricated until the shop drawings have been processed, approved and returned.
 2. Check all shop drawings to verify reinforcement dimensions required by drawings are satisfied.
 3. Provide bar sizes, bar lengths, bar material, bar grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and lap lengths, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- B. Reinforcement shop drawings:
 1. Review of reinforcement shop drawings by the Engineer will be limited to general compliance with the Contract Documents.
 2. Submit reinforcement shop drawings in a complete package for each specific structure. Partial submittals will be rejected.
- C. Changes to reinforcing steel contract drawing requirements:
 1. Indicate in separate letter submitted with shop drawings any changes of requirements indicated on the Drawings for reinforcing steel.
 2. Such changes will not be acceptable unless the Engineer has accepted such changes in writing.

1.4 PRODUCT HANDLING

- A. Protection:
 1. Use all means necessary to protect reinforcement from dirt and other foreign substances before and after placing.
 2. Store in a neat manner in logical order, bundled, tagged, off the ground, and in an area adequately isolated.

3. Re-bundle to maintain identification when placing is interrupted.
- B. Replacement: All damaged or improperly fabricated bars shall be replaced at the Contractor's expense.

PART 2 - PRODUCTS

2.1 CONCRETE REINFORCEMENT

- A. General: All reinforcement shall be free from rust, loose mill scale, and other contaminants.
- B. All bars shall be billet steel bars for concrete reinforcement ASTM A 615 Grade 60.
- C. Wire bar supports located between reinforcing bars and face of concrete:
 1. Stainless steel. Type 304 stainless steel bar supports.
 2. Support reinforcing for concrete placed on ground using bar support chairs with Type 304 stainless steel plates for resting on ground welded to the chairs.
- D. Concrete bar supports located between reinforcing bars and face of concrete:
 1. Manufactured expressly for supporting reinforcing bars.
 2. Manufactured with two annealed steel wires to securely tie concrete bar support to reinforcing steel.
 3. Manufactured with minimum $f'_c = 5,000$ psi concrete.

2.2 WELDED WIRE REINFORCEMENT (WWR):

- A. In accordance with ASTM A 185.
- B. WWR may not be used in place of reinforcing bars unless accepted in writing by the Engineer.
- C. Provide WWR in flat sheet form.
- D. If WWR is used, provide WWR having cross-sectional area per linear foot of not less than cross-sectional area per linear foot of reinforcing bars indicated on the Drawings.

2.3 ACCESSORIES:

- A. General: Accessories shall be subject to Engineer's approval.
 1. Tie wire - 18 gauge annealed steel wire.
 2. Number of chairs shall be adequate to prevent sag during steel and concrete placement.
 3. Wall layer spacers shall be 1/4 inch round "Z" bar.
 4. Horizontal layer spacers shall be wire bar supports or reinforcing bars bent to support top layer.
 5. Dowel bar splicer:
 - a. Dowel bar splicer shall be Richmond or approved equal, manufactured from standard specified rebar material, with NC threads and shop fabricated to specified dowel configurations.
 6. Mechanical Connectors:
 - a. Approved Manufacturers: Dayton Superior, Erico, or approved equal.
 - b. The mechanical connection shall meet the code requirements of developing in tension and compression as required by the referenced codes. Install per the manufacturer's approved procedures.

PART 3 - EXECUTION

3.1 GENERAL

- A. Reinforcing bars and welded wire fabric reinforcement: Verify that reinforcement is new stock free from rust scale, loose mill scale, excessive rust, dirt, oil, and other coatings which adversely affect bonding capacity when placed in the work.
- B. Other trades: Coordinate all work of other trades to avoid conflict with reinforcement.
- C. Shop drawings: Check all shop drawings to verify dimensions required.

3.2 FABRICATING

- A. General: Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice." Reinforcement shall be shop fabricated except where straight bars No. 5 or smaller are required.
- B. Bending: All bending shall be by using bending jigs and mandrels. All bars shall be bent cold.
- C. Cutting: Bars shall be cut by cold shearing. Torch cutting in the field may be permitted in special situations.

3.3 PREPARATION

- A. Surface Preparation:
 - 1. Reinforcing bars: Thin coating of red rust resulting from short exposure will not be considered objectionable. Thoroughly clean any bars having rust scale, loose mill scale, or thick rust coat.
 - 2. Cleaning of reinforcement materials: Remove concrete or other deleterious coatings from dowels and other projecting bars by wire brushing or sandblasting before bars are embedded in subsequent concrete placement.

3.4 PLACING

- A. General:
 - 1. Accurately place all bars to meet tolerances as outlined in ACI 318 and tie in place before placing concrete, include dowels. Tie with 18 gauge steel wire.
 - 2. Corner bars required for horizontal reinforcing. Unless otherwise noted on plans corner bars shall be same size and spacing as horizontal bar.
 - 3. No field bending of bars will be allowed.
- B. Clearance:
 - 1. Preserve clearance between bars of 1 inch minimum, not less than one bar diameter or 1-1/3 times large aggregate, whichever is larger.
 - 2. Provide following concrete coverage over reinforcing steel unless otherwise indicated on plans:
 - a. Three inches above subgrade - in excavation.
 - b. Two inches above subgrade - slab on fill.
 - c. Two inches from form - walls exposed to water or earth and for slab over water.
 - d. One and one-half inches from form - normal cover interior walls, beams, columns, etc.
 - e. Three-fourths inch on top steel - interior slabs.
 - f. One and one-half inches on top and bottom - exterior slab.
 - 3. Lap all reinforcing bars as required by ACI 318-latest edition Class B as indicated on the drawings except where otherwise required by ACI.

4. Stagger splices except where otherwise shown.
 5. Lap welded wire reinforcement a minimum of two spaces.
- C. Dowels: All dowels shall be placed and securely anchored before placing concrete
- D. Supports:
1. Provide a sufficient number to prevent sagging, to prevent shifting, and to support loads during construction; but in no case less than quantities and at locations as indicated in ACI 315.
 2. Do not use brick, broken concrete masonry units, spalls, rocks, wood or similar materials for supporting reinforcing steel.
 3. Do not use reinforcing bars that have less cover than required by the Contract Documents. Do not adjust location of reinforcement required by the Contract Documents to provide cover to these bars.
 4. Wire chairs will not be accepted to hold reinforcing clearance on walls.
- E. Tying of bar reinforcement:
1. Fasten bars securely in place with wire ties.
 2. Tie bars sufficiently often to prevent shifting.
 3. Provide at least 3 ties in each bar length.
 4. Do not apply to dowel lap splices or to bars shorter than 4 feet, unless necessary for rigidity.
 5. Tie slab bars at every intersection around periphery of slab.
 6. Tie wall bars and slab bar intersections other than around periphery at not less than every fourth intersection, but at not greater than following maximum spacings:
- | Bar Size | Slab Bar Spacing Inches | Wall Bar Spacing Inches |
|--------------------------------|-------------------------|-------------------------|
| Bars Number 5 and Smaller | 60 | 48 |
| Bars Number 6 through Number 9 | 96 | 60 |
| Bars Number 10 and Number 11 | 120 | 96 |
7. After tying wire ties, bend ends of wire ties in towards the center of the concrete section.
 - a. The cover for wire ties shall be the same as the cover requirements for reinforcing bars.
- F. Openings and obstructions:
1. Place additional reinforcing around openings as shown on the drawings and standard details.
 2. Bend reinforcing around obstructions. Place extra reinforcing where cutting is authorized. Engineer's approval required before cutting steel.
 3. Consult Engineer on special situations.
- G. Welded Wire Reinforcement:
1. Install necessary wiring, spacing chairs, or supports to keep welded wire fabric in place while concrete is being placed.
 2. Bend fabric as indicated on the Drawings or required to fit work.
 3. Unroll or otherwise straighten fabric to make flat sheet before placing in the Work.
 4. Lap splice welded wire fabric as indicated on the Drawings.
 5. If lap splice length is not indicated on the Drawings, splice fabric in accordance with ACI 318 and ACI 350.
- H. Certification: Certify material and type of deformation.

- I. Condition: All reinforcement shall be free from loose rust, dirt coating, oil, paint, or any foreign substance.

END OF SECTION

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete, including concrete materials, concrete accessories, concrete mixture designs, placement procedures, and finishes, for the following:
 - 1. Footings.
 - 2. Foundation walls.
 - 3. Slabs-on-grade.
 - 4. Suspended slabs.
 - 5. Concrete toppings.
 - 6. Building frame members.
 - 7. Building walls.
 - 8. Hydraulic (liquid containing) structures.
- B. Related Sections:
 - 1. Section 03 11 00 - Concrete Formwork
 - 2. Section 03 20 00 - Concrete Reinforcement

1.2 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 301 – Specifications for Structural Concrete
 - 2. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials
 - 3. ACI 305 - Hot Weather Concreting Standard
 - 4. ACI 306 - Cold Weather Concreting Standard
 - 5. ACI 318 - Building Code Requirements for Structural Concrete and Commentary
 - 6. ACI 350 - Code Requirements for Environmental Engineering Concrete Structures and Commentary
 - 7. ACI 211.1 – Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
 - 8. ACI 302.1R – Guide for Concrete Floor and Slab Construction
 - 9. ACI 308.1 – Standard Specification for Curing Concrete
 - 10. Manual of Concrete Practice
- B. ASTM International (ASTM):
 - 1. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 2. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
 - 3. ASTM C33 - Standard Specification for Concrete Aggregates
 - 4. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
 - 5. ASTM C40 - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete
 - 6. ASTM C42 - Standard Test Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - 7. ASTM C88 - Standard Test Method of Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
 - 8. ASTM C94 - Standard Specification for Ready-Mixed Concrete
 - 9. ASTM C114 - Standard Test Methods for Chemical Analysis of Hydraulic Cement
 - 10. ASTM C117 - Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
 - 11. ASTM C123 - Standard Test Method for Lightweight Particles in Aggregate

12. ASTM C131 - Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
13. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
14. ASTM C142 - Standard Test Method for Clay Lumps and Friable Particles in Aggregate
15. ASTM C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete
16. ASTM C150 - Standard Specification for Portland Cement
17. ASTM C156 - Standard Test Method for Water Loss [from a Mortar Specimen] Through Liquid Membrane-Forming Curing Compounds for Concrete
18. ASTM C157 - Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete
19. ASTM C171 - Standard Specifications for Sheet Materials for Curing Concrete
20. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete
21. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
22. ASTM C192 – Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
23. ASTM C231 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
24. ASTM C260 – Standard Specification for Air-Entraining Admixtures for Concrete
25. ASTM C295 – Standard Guide for Petrographic Examination of Aggregates for Concrete
26. ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
27. ASTM C494 – Standard Specification for Chemical Admixtures for Concrete
28. ASTM C618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
29. ASTM C881 – Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
30. ASTM C1064 – Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
31. ASTM C1059 – Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete
32. ASTM C1077 – Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
33. ASTM C1116 – Standard Specification for Fiber-Reinforced Concrete
34. ASTM C1315 – Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete
35. ASTM D448 – Standard Classification for Sizes of Aggregate for Road and Bridge Construction
36. ASTM D1751 – Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
37. ASTM D2240 – Standard Test Method for Rubber Property – Durometer Hardness
38. ASTM E329 – Standard Specification for Agencies Engages in Construction Inspection, Testing, or Special Inspection
39. ASTM E1155 – Standard Test Method for Determining F_F Floor Flatness and F_L Floor Levelness Numbers
40. ASTM E1643 – Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
41. ASTM E1745 – Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

- B. Exposed Concrete: Concrete surface that can be seen inside or outside of structures regardless whether concrete is above water, dry at all times, or can be seen when structure is drained.
- C. Hydraulic Structures: Liquid containing basins.
- D. Defective Areas: Surface defects that include honeycomb, rock pockets, indentations greater than 3/16", cracks 0.005" wide and larger as well as any crack that leaks for liquid containing basins and below grade habitable spaces; cracks 0.010" wide and larger in non-fluid holding structures, spalls, chips, air bubbles greater than 3/4" in diameter, pinholes, bug holes, embedded debris, lift lines, sand lines, bleed lines, leakage from form joints, fins and other projections, form pop-outs, texture irregularities, and stains and other color variations that cannot be removed by cleaning.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Concrete Mixture Designs: For each concrete mixture.
 - 1. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 2. Indicate amounts of mixing water to be withheld for later addition at Project site.
 - 3. Submit Shrinkage Test Results for design mixtures. See 3.14 FIELD QUALITY CONTROL, E. Shrinkage Tests - 3 for shrinkage test requirements and limitations. Any Mix Design submitted without a Shrinkage Test will not be reviewed and will be returned to the Contractor as "Rejected".
- C. Welding certificates.
- D. Qualification Data: For manufacturer, testing agency.
- E. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Curing compounds.
 - 4. Floor and slab treatments.
 - 5. Bonding agents.
 - 6. Adhesives.
 - 7. Vapor retarders.
 - 8. Semi-rigid joint filler.
 - 9. Joint-filler strips.
- F. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.
- G. Field quality-control test and inspection reports.
- H. Course Aggregate Gradation.
- I. Fine Aggregate Gradation.
- J. One copy of each 30 consecutive strength test results and mix design used from a record of past performance or one copy of the laboratory trial mix design and results and one copy of the mix design proposed for each mixture and use under this contract. If the 30 consecutive strength tests are used, the test shall have been made within the 12 month period prior to this submittal.

- K. Material Test Reports: for the following, from a testing agency acceptable to the ENGINEER, indicating compliance with requirements:
 - 1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- L. Ready-Mix concrete.
 - 1. Provide delivery tickets for ready-mix concrete or weigh-masters certificate per ASTM C94 including weights of cement and each size aggregate and amount of water added at the plant and record of pours. Record the amount of water added on the job on the delivery ticket. Water added at the plant shall account for moisture in both coarse and fine aggregate. If water is added on the job the total water content shall not exceed the water content of the approved design mix.
 - 2. Keep record showing time and place of each pour (placement) of concrete, together with transit-mix delivery slips certifying the contents of the pour (placement).
 - 3. Furnish records to Engineer upon request.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm with a minimum of 5 years' experience in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
 - 2. The criteria hereinafter set out are solely for the purpose of establishing required mixture proportions and do not constitute a basis for confirming the adequacy of concrete strength.
 - a. Required Average Strength above Specified Compressive Strength: Proportions, including water-cement ratio, shall be established on the basis either of laboratory trial batches or of field experience with the materials to be employed. The proportions shall be selected to produce an average strength of 28 days exceeding the specified compressive strength by the amount indicated below, when both air content and slump are the maximums permitted by the Specifications.
 - b. Determination of the required average strength shall be in accordance with ACI 318 "Building Code Requirements for Reinforced Concrete," except that if suitable data from trial batches or field experience cannot be obtained, permission will not be granted to base concrete proportions on the water-cement ratio limits set out in the above referenced code.
 - 1). Past Plant Performance: Proportions may be established on the actual field performance of the ready-mix producer. Where the concrete production facility has a record, based on at least 30 consecutive strength tests taken within the prior 12 months representing similar materials and conditions to those expected, the strength used as the basis for selecting proportions shall exceed the required f'_c by at least:
 - a). 400 psi if the standard deviation is less than 300 psi;
 - b). 500 psi if the standard deviation is 300 to 400 psi;
 - c). 700 psi if the standard deviation is 400 to 500 psi;
 - d). 900 psi if the standard deviation is 500 to 600 psi;
 - e). 1,200 psi if the standard deviation is above 600 psi or unknown.
 - 2). Strength data for determining standard deviation shall be considered to comply with the foregoing stipulations if they represent either a group of at least 30 consecutive tests or the statistical average of two groups totaling 30 or more tests. The tests used to establish standard deviation shall represent concrete produced to meet a specified strength or strengths within 1,000 psi of that

- specified for the proposed work. Changes in materials and proportions within the population of background tests shall not have been more closely restricted than they will be for the proposed work.
- 3). Strength data for determining standard deviation shall be considered to comply with the foregoing stipulations if they represent either a group of at least 30 consecutive tests or the statistical average of two groups totaling 30 or more tests. The tests used to establish standard deviation shall represent concrete produced to meet a specified strength or strengths within 1,000 psi of that specified for the proposed work. Changes in materials and proportions within the population of background tests shall not have been more closely restricted than they will be for the proposed work.
 - 4). Laboratory Trial Batches: When the ready-mix producer does not have a record of past performance, the combination of materials and the proportions selected shall be determined from trial mixes having proportions and consistencies suitable for the work based on ACI 211.1-77.
 - a) When laboratory trial batches are used as the basis for selecting concrete proportions, strength tests shall be made in accordance with "Method of Test for Compressive Strength of Molded Concrete Cylinders" (ASTM C39) on specimens prepared in accordance with "Method of Making and Curing Test Specimens in the Laboratory" (ASTM C192). A curve shall be established showing the relationship between water-cement ratio (or cement content) and compressive strength. The curve shall be based on at least three points representing batches which produce strengths above and below that required. Each point shall represent the average of at least three specimens tested at 28 days or the earlier age designation.
 - b) The average strength required shall exceed the specified compressive strength by 1,200 psi.
 - c) The maximum permissible water-cement ratio (or minimum cement content) for the concrete to be used in the structure shall be that shown by the curve to produce the average strength indicated, but in no case shall the water-cement ratio exceed 0.42 by weight.
- C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C1077 and ASTM E329 for testing indicated.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
1. ACI 301, "Specifications for Structural Concrete."
 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
 3. ACI 350 "Code Requirements for Environmental Engineering Concrete Structures."
 4. ACI 318 "Building Code Requirements for Reinforced Concrete."
- F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

- G. Sequence of concrete placing: Submit proposed sequence of placing concrete showing proposed beginning and ending of individual placements.
- H. Pre-installation Conference: Conduct conference at Project site.
 - 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete subcontractor.
 - 2. Review special inspection and testing and inspecting agency procedure for field quality control, concrete finishes and finishing, cold and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints and joint-filler strips, semi-rigid joint fillers, forms and form removal limitations, shoring and re-shoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures and concrete protection.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements products that may be incorporated into the work include, but are not limited to products specified.
 - 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 FORM-FACING MATERIALS

- A. See Section 03 11 00 CONCRETE FORMWORK for additional requirements.
- B. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints. Furnish on exposed surfaces and interior surfaces.
- C. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit. Permitted to furnish on below grade exterior surfaces
- D. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- E. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.
- F. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- G. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

- H. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- I. Form-Release Agent: As specified in Section 03 11 00 CONCRETE FORMWORK.

2.3 REINFORCEMENT ACCESSORIES

- A. Expansion Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
 - 1. All dowels shall be placed and securely anchored before placing concrete. All dowels shall be parallel with each other and perpendicular to the joint.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
 - 2. Secure all reinforcement in place using steel chairs, supports, "A" bars and any other ACI approved product. Supports shall be spaced adequately to support the steel firmly in place.
 - 3. Charis will not be accepted to hold reinforcing clearance on walls.
- C. General:
 - 1. Accessories shall be subject to Engineer's approval.
 - 2. Tie wire- 18 gauge steel wire. Ends of wire shall be bent towards the interior part of the wall.
 - 3. Support above forms with fabricated steel chairs. Number of chairs shall be adequate to prevent sag during steel and concrete placement.
 - 4. Wall layer spacers shall be 1/4" ROUND "Z" BAR.
 - 5. Horizontal layer spacers shall be stand.
 - 6. Mechanical Connectors:
 - a. Approved Manufactures: Dayton Superior, Erico, or approved equal.
 - b. The mechanical connection shall meet the code requirements of developing in tension and compression as required by the referenced codes. Install per the manufacture's approved procedures.

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement (Non-hydraulic Above Grade Structures): ASTM C150, Type I or II, or combination of Type I with fly ash.
 - 2. Portland Cement (Hydraulic and/or Below Grade Structures): ASTM C150 type II or combination of Type I with fly ash.
 - 3. Fly Ash: ASTM C618, Class C or F fly ash shall not exceed 15 percent of the cementitious materials, unless written approval is given by the Engineer.
- B. Normal-Weight Aggregates: ASTM C33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
 - 1. Maximum Coarse-Aggregate Size: 1" nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
 - 3. Fine aggregate:

- a. Provide fine aggregate for concrete or mortar consisting of clean, natural sand or of sand prepared from crushed stone or crushed gravel.
- b. Do not provide aggregate having deleterious substances in excess of following percentages by weight of contaminating substances.
- c. In no case shall total exceed percent listed.

Item	Test Method	Percent
Removed by decantation (dirt, silt, etc.)	ASTM C117	3
Shale or Chert	ASTM C123	1
	ASTM C295*	1
Clay Lumps	ASTM C142	1
* Test Method C123 is used to identify particles in the sample lighter than 2.40 Specific Gravity. Test Method C295 is used to identify which of the lightweight particles are shale or chert. If the results of Test Method C123 are less than 1 percent, Test Method C295 is not required.		

- d. Except as otherwise specified, grade fine aggregate from coarse to fine in accordance with ASTM C33.
4. Coarse aggregate:
- a. Provide coarse aggregate consisting of gravel or crushed stone made up of clean, hard, durable particles free from calcareous coatings, organic matter, or other foreign substances.
 - b. Not exceeding 15 percent by weight, of thin or elongated pieces having length greater than 5 times average thickness.
 - c. Deleterious substances: Not in excess of following percentages by weight, and in no case having total of all deleterious substances exceeding 2 percent.
 - d. Coarse aggregate shall be washed prior to combining in concrete mix.

Item	Test Method	Percent
Shale or chert	ASTM C123	1.25
	ASTM C295**	1
Coal and lignite	ASTM C123	1/4
Clay lumps and friable particles	ASTM C142	1/4
Materials finer than Number 200 sieve	ASTM C117	1/2*
* Except when material finer than Number 200 sieve consists of crusher dust, maximum amount shall be 1 percent.		
** Test Method C 123 is used to identify particles in the sample lighter than 2.40 Specific Gravity. Test Method C 295 is used to identify which of the lightweight particles are shale, chert, coal, or lignite. If the results of Test Method C 123 are less than 1.25 percent (the minimum combined percentage of shale, chert, coal and lignite), Test Method C 295 is not required.		

5. Grading:
- a. Aggregate for building elements and hydraulic structures: In accordance with ASTM C33, Size Number 57, except as otherwise specified or authorized in writing by the ENGINEER.

C. Water: ASTM C94 and potable (not recycled water).

2.5 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 - 2. Retarding Admixture: ASTM C494/C494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
 - a. Bayer Corporation.
 - b. ChemMasters.
 - c. Conspec Marketing & Manufacturing Co., Inc.; a Dayton Superior Company.
 - d. Davis Colors.
 - e. Elementis Pigments, Inc.

2.6 VAPOR RETARDERS

- A. Plastic Vapor Retarder: ASTM E1745, Class B. Include manufacturers' recommended adhesive or pressure-sensitive tape.
 - 1. Products:
 - a. Fortifiber Corporation: Moistop Ultra.
 - b. Revan Industries Inc.; Vapor Block 10.
 - c. Stego Industries, LLC; Stego Wrap, 15 mils.
- B. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D448, Size 57, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

2.7 FLOOR AND SLAB TREATMENTS

- A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or silicate materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces.
 - 1. Products:
 - a. Burke by Edoco; Titan Hard.
 - b. ChemMasters; Chemisil Plus.
 - c. ChemTec international; ChemTec One.
 - d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company
 - e. Curecrete Distribution Inc.; Ashford Formula.
 - f. Dayton Superior Corporation; Day-Chem sure Hard.
 - g. Euclid Chemical Company (The); Euco Diamond Hard.
 - h. Kaufman Products, Inc.; SureHard.
 - i. L&M Construction Chemicals, Inc.; Seal Hard.
 - j. Meadows, W. R., Inc.; Liqui-Hard.
 - k. Metalcrete Industries; Floorsaver.
 - l. Nox-Crete Products Group, Kinsman Corporation; Duranox.
 - m. Symons Corporation, a Dayton Superior Company; buff Hard.
 - n. US Mix Products Company; US Spec Industraseal.
 - o. Vexcon Chemicals, Inc.; Vexcon StarSeal PS.

2.8 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
 - 1. Products:
 - a. Axim Concrete Technologies; Cimfilm.
 - b. Burke by Edoco; BurkeFilm.
 - c. ChemMasters; Spray-Film.
 - d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior company; Aquafilm.
 - e. Dayton Superior Corporation; Sure Film.
 - f. Euclid Chemical Company (The); Eucobar.
 - g. Kaufman Products, Inc.; Vapor Aid.
 - h. Lambert Corporation; Lambco Skin.
 - i. L&M Construction Chemicals, Inc.; E-Con.
 - j. MBT Protection and Repair, Div., of ChemRex; Confilm.
 - k. Meadows, W. R., Inc; Sealtight Evapre.
 - l. Metalcrete Industries; Waterhold.
 - m. Nox-Crete Products Group, Kinsman Corporation; Monofilm.
 - n. Sika Corporation, Inc.; SikaFilm.
 - o. Symons Corporation, a Dayton Superior Company; Finishing Aid.
 - p. Unitex; Pro-Film.
 - q. US Mix Products Company; US Spec Monofilm ER.
 - r. Vexcon Chemicals, Inc.; Certi-Vex EnvioAssist.
- B. Absorptive Cover: AASHTO M182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating.
 - 1. Products:
 - a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
 - b. Burke by Edoco; Aqua Resin cure.
 - c. ChemMasters; Safe-Cure Clear.
 - d. Conspec Marketing & Manufacturing co., Inc., a Dayton Superior Company; W.B. Resin cure.
 - e. Dayton Superior Corporation; Day Chem Rez cure (J-11-W).
 - f. Euclid Chemical Company (The); Kurez DR VOX.
 - g. Kaufman Products, Inc.; Thinfilm 420.
 - h. Lambert Corporation; Aqua Kure-Clear.
 - i. L&M Construction Chemicals, Inc.; L&M Cure R.
 - j. Meadows, W. R., Inc.; 100 Clear.
 - k. Nox-Crete Products Group, Kinsman Corporation; Resom Cire E/
 - l. Sykkmons Corporation, a Dayton Superior Company; Resi-Chem Clear Cure.
 - m. Tamms Industries, Inc., Horncure WB 30.
 - n. Unitex; Hydro cure 309.
 - o. US Mix Products Company; US Spec Maxcure Resin Clear.
 - p. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.
- F. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C1315, Type 1, Class A. Compatible with penetrating liquid floor treatment for surfaces specified to receive penetrating liquid floor treatment.

1. Products:
 - a. Burke by Edoco; Cureseal 1315 WB.
 - b. ChemMasters; Polyseal WB.
 - c. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Sealcure 1315 WB
 - d. Euclid Chemical Company (The); Super Diamond Clear VOX.
 - e. Kaufman Products, Inc.; Sure Cure 25 Emulsion.
 - f. Lambert Corporation; UV Safe Seal.
 - g. L&M Construction Chemicals, Inc.; Lumiseal WB Plus.
 - h. Meadows, W. R., Inc.; Vocomp-30.
 - i. Metalcrete Industries; Metcure 30.
 - j. Symons Corporation, a Dayton Superior Company; Cure 7 Seal 31 Percent E.
 - k. Tamms Industries, Inc.; LusterSeal WB 300.
 - l. Unitex; Hydro Seal 25.
 - m. US Mix Products Company; US Spec Radiance UV-25.
 - n. Vexcon Chemicals, Inc.; Vexcon Starseal 1315.

2.9 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber.
- B. Semi-rigid Joint Filler: Two-component, semi-rigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D2240.
- C. Bonding Agent: ASTM C1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- D. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
 1. Types IV and V, load bearing for bonding hardened or freshly mixed concrete to hardened concrete.

2.10 REPAIR MATERIALS

- A. See Sections 03 01 00, CONCRETE SURFACE REPAIR SYSTEMS.

2.11 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage by weight of cementitious materials other than Portland cement in concrete as follows:
 1. Fly Ash: 15 percent of cementitious materials maximum, unless written approval is given by the Engineer.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement for non-hydraulic structures and 0.10 percent by weight of cement for hydraulic structures.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
 1. Use water-reducing or high-range water-reducing admixture in concrete, as required, for placement and workability.

2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.12 CONCRETE MIXTURES

- A. Proportion normal-weight concrete mixture as follows for all structural elements:
 1. Minimum Compressive Strength: 4,000 psi at 28 days.
 2. Maximum Water-Cementitious Materials Ratio: 0.42.
 3. Slump Limit: 8-inches Max for concrete with verified slump of 2 to 4-inches before adding high range water-reducing admixture or plasticizing admixture per ACI 301.
 4. Air content: 5 1/2%, $\pm 1.5\%$ at point of delivery.
- B. Proportion normal-weight concrete mixture as follows for all non-structural elements:
 1. Minimum Compressive Strength: 3,000 psi at 28 days.
 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 3. Slump Limit: 8 inch for concrete with verified slump of 2" to 4": before adding high-range water-reducing admixture or plasticizing admixture per ACI 301.
 4. Air content: 5 1/2%, $\pm 1.5\%$ at point of delivery.

2.13 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M and ASTM C1116, and furnish batch ticket information.
 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.
 1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 PLACING CONCRETE

- A. Place no concrete without prior authorization of the Engineer.
- B. Do not place concrete until:
 1. Reinforcement is secure and properly fastened in its correct position and loose form ties at construction joints have been retightened.
 2. Dowels, bucks, sleeves, hangers, pipes, conduits, anchor bolts, and any other fixtures required to be embedded in concrete have been placed and adequately anchored.
 3. Forms have been cleaned and oiled as specified.
- C. Do not place concrete in which initial set has occurred, or that has been retempered.

- D. Do not place concrete during rainstorms or high velocity winds.
 - E. Protect concrete placed immediately before rain to prevent water from coming in contact with such concrete or winds causing excessive drying.
 - F. Keep sufficient protective covering on hand at all times for protection of concrete.
 - G. After acceptance, adhere to proposed sequence of placing concrete, except when specific changes are requested and accepted by the Engineer.
 - H. Notify the Engineer in writing of readiness, not just intention, to place concrete in any portion of the work:
 - 1. Provide this notification in such time in advance of operations, as the Engineer deems necessary to make final inspection of preparations at location of proposed concrete placing.
 - 2. Place forms, reinforcement, screeds, anchors, ties, and inserts in place before notification of readiness is given to the Engineer.
 - 3. Depositing concrete:
 - a. Deposit concrete at or near its final position to avoid segregation caused by rehandling or flowing.
 - b. Do not deposit concrete in large quantities in one place and work along forms with vibrator or by other methods.
 - c. Do not drop concrete freely into place from height greater than 5 feet.
 - d. Use tremies for placing concrete where drop is over 5 feet.
 - e. Commence placement of concrete on slopes, starting at bottom of slope.
 - I. Place concrete in approximately horizontal layers not to exceed 24 inches in depth and bring up evenly in all parts of forms.
 - J. Continue concrete placement without avoidable interruption, in continuous operation, until end of placement is reached.
 - K. After concrete placement begins, continue concrete placement without significant interruption. Plan and implement precautions to prevent any delay, between layers being placed, from exceeding 20 minutes.
 - L. If concrete is to be placed over previously placed concrete and more than 20 minutes has elapsed, spread layer of cement grout not less than 1/2 inch in thickness nor more than 1 inch in thickness over surface before placing additional concrete.
 - M. Placement of concrete for slabs, beams, or walkways:
 - 1. If cast monolithically with walls or columns, do not commence until concrete in walls or columns has been allowed to set and shrink.
 - 2. Allow set time of not less than 1 hour for shrinkage.
- 3.2 FORMWORK: See Section 03 11 00, CONCRETE FORMWORK.
- 3.3 VAPOR RETARDERS
- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E1643 and manufacturer's written instructions.
 - 1. Lap joints 6 inches and seal with manufacturers' recommended tape.

3.4 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer/Owner
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 - 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 - 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 - 5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
 - 6. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one fourth of concrete thickness as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
 - 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.
 - 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.5 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by the Engineer.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 2. Maintain reinforcement in position on chairs during concrete placement.
 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 2. All embedded items such as wall pipes, embed frames, steel guide rails, channels, etc. (not including conduit and reinforcing) shall be considered "massive embedments" and are required to be kept above 32 deg F during placement and for the first 48 hours after placement. Contractor shall take the necessary measures; including insulated blankets, heated blankets, and heaters; to insure items are kept above 32 deg F. All other methods shall be submitted to the Engineer for approval.
 3. Do not use frozen materials or materials containing ice or snow.
 4. Do not place concrete on frozen subgrade or on subgrade containing frozen materials. Top 12-inches of subgrade shall be thawed prior to concrete placement. Contractor is responsible for verifying that the temperature for the top 12-inches of subgrade is above 32 deg F.
 5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- G. Hot-Weather Placement: Comply with ACI 305 and as follows:
1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is included in total amount of mixing water. Using liquid nitrogen to cool concrete is contractor's option, but liquid nitrogen should not replace water.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
 3. All other methods shall be submitted to the Engineer for approval.

3.6 CONCRETE WALL FINISHES

- A. Type W-1 (Ordinary Wall Finish or Coating):
 - 1. Patch tie holes.
 - 2. Knock off projections.
 - 3. Patch defective areas.
- B. Type W-2 (Smooth Wall Finish):
 - 1. Patch tie holes.
 - 2. Grind off projections, fins, and rough spots.
 - 3. Patch defective areas and repair rough spots resulting from form release agent failure or other reasons to provide smooth uniform appearance.
- C. Type W-5 (Finish for Painting):
 - 1. Patch tie holes.
 - 2. Grind off projections, fins, and rough spots.
 - 3. Patch and repair defective areas as specified for Type W-2.
 - 4. Apply paint or coating system as specified in Section 09 90 00 Painting and Protective Coatings.

3.7 CONCRETE SLAB FINISHES

- A. General:
 - 1. Finish slab concrete per the requirements of ACI 302.1R
 - 2. Use manual screeds, vibrating screeds, or roller compacting screeds to place concrete level and smooth.
 - 3. Do not use "Jitterbugs" or other special tools designed for the purpose of forcing coarse aggregate away from the surface and allowing a layer of mortar, which will be weak and cause surface cracks or de-lamination, to accumulate.
 - 4. Do not dust surface with dry materials.
 - 5. Use evaporation retardant.
 - 6. Round off edges of slabs with a steel edging tool, except where a cove finish is shown. Steel edging tool radius shall be 1/4" for slabs subject to wheeled traffic.
- B. Type S-1 (Steel Troweled Finish):
 - 1. Finish by screeding and floating with straightedges to bring surfaces to required finish elevation, use evaporation retardant.
 - 2. While concrete is still green, but sufficiently hardened to bear a person's weight without deep imprint, wood float to true, even plane with no coarse aggregate visible.
 - 3. Use sufficient pressure on wood floats to bring moisture to surface.
 - 4. After surface moisture has disappeared, hand trowel concrete to produce smooth, impervious surface, free from trowel marks.
 - 5. Burnish surface with an additional troweling. Final troweling shall produce a ringing sound from trowel.
 - 6. Do not use dry cement or additional water during troweling, nor will excessive troweling be permitted.
 - 7. Power Finishing:
 - a. An approved power machine may be used in lieu of hand finishing in accordance with directions of machine manufacturer.
 - b. Do not use power machine when concrete has not attained the necessary set to allow finishing without introducing high and low spots in slab.
 - c. Do first steel troweling for slab S-1 finish by hand.
- C. Type S-2 (Wood Float Finish):
 - 1. Finish slabs to receive fill and mortar setting beds by screeding with straight edges to bring surface to required finish plane.

2. Wood float finish to compact and seal surface.
 3. Remove laitance and leave surface clean.
 4. Coordinate with other finish procedures.
- D. Type S-5 (Broomed Finish):
1. Finish as specified for Type S-1 floor finish, except omit final troweling and finish surface by drawing a fine-hair broom lightly across the surface.
 2. Broom in same direction and parallel to expansion joints, or, in the case of inclined slabs, perpendicular to slope, except for round roof slab, broom surface in radial direction.
- E. Type S-6 (Sidewalk Finish):
1. Slope walks down 1/4" per foot away from structures, unless otherwise shown.
 2. Strike off surface by means of strike board and float with wood or cork float to a true plane, then flat steel trowel before brooming.
 3. Broom surface at right angles to direction of traffic or as shown.
 4. Lay out sidewalk surfaces in blocks, as shown or as directed by Engineer, with a grooving tool.
- F. Type S-7: The top surfaces of basins in which raking mechanisms are to be installed
1. Slabs shall be finished by sweeping in cement grout with the mechanism. The cement grout to be used shall be composed of one part Portland cement and two parts sand.
 2. The sweeping-in process shall be performed under the supervision of a factory representative of the equipment manufacturer.
 3. The slab upon which the grout is to be applied shall receive a Type S-5 finish except that after leveling and floating, it shall be raked in such a manner as to provide a good bond for the grout. Raking shall develop a pattern with a depth of 1/4" every 2". Before grout is deposited on the slab, it shall be thoroughly cleaned, wet down with clean water and lightly dusted with neat cement immediately prior to placement of the grout.

3.8 SCHEDULE OF CONCRETE FINISHES

- A. Form Tolerances: As specified in Section 03 11 00, CONCRETE FORMWORK.
- B. Provide concrete finishes as scheduled:

Area	Type of Finish	Required Form Tolerances
EXTERIOR WALL SURFACES		
Above grade/exposed (above a point 12" below finish grade)	W-2	W-B
Backfilled (below a point 12" below final grade)	W-1	W-A
INTERIOR WALL SURFACES		
Hydraulic Structures including tanks, pump stations, flow channels, junction boxes, and basins	W-5	W-A
Buildings, pipe galleries, and other dry areas	W-5	W-B
EXTERIOR SLABS		
Exposed Roof slab or Slab-on-grade for non-hydraulic structures (includes slabs under open canopies)	S-5	
Roof slab or Top of Wall for Hydraulic Structures	S-1	
Other water holding tanks and basins	S-1	
Stairs and landings	S-5	
Sidewalks	S-6	
Other exterior slabs/pads	S-6	

Top surfaces of basins in which raking mechanisms are to be installed	S-7	
INTERIOR SLABS		
Non-Hydraulic areas such as pipe galleries and slabs-on-grade	S-1	
Hydraulic channels / Water Holding Structures	S-1	
Underside of elevated slabs	S-3	
Slabs to receive fill and mortar setting beds	S-2	

3.9 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.
- D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.

3.10 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.

- c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
- 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
- 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.
- 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.11 LIQUID FLOOR TREATMENTS

- A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.
 - 1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
 - 2. Do not apply to concrete that is less than 28 days' old.
 - 3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.
- B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.

3.12 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 - 1. Defer joint filling until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semi-rigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.13 REPAIRING CONCRETE

A. General:

1. Any areas deemed as having excessive defects or considered to have a negative effect on the structural performance of the structure shall be removed to the extents approved by the Engineer. The Engineer has the option of calling for the removal of the entire section if the damage is such that a repair will not be a suitable option. All work required to correct the defect will be the responsibility of the Contractor and will be paid for by the Contractor.
2. Inject cracks as defined in 1.3.D Defective Areas with crack repair epoxy as specified in Section 03 64 00, CONCRETE REPAIR CRACK INJECTION.
3. Repair concrete surfaces defects as defined in 1.3.D Defective Areas using one of the materials specified in Section 03 01 00, CONCRETE SURFACE REPAIR SYSTEMS. Select system, submit for review, and obtain approval from Engineer prior to use.
4. Prior to starting the repair work, obtain quantities of color-matched repair material and manufacturer's detailed instructions for use to provide a structural repair with finish to match adjacent surface.
5. Develop repair techniques with material manufacturer.
6. Dress surface of repair that will remain exposed to view to match color and texture of adjacent surfaces. Repair of concrete shall provide a structurally sound surface finish, uniform in appearance or upgrade finish by other means until acceptable to Engineer.

B. Tie Holes:

1. Fill with nonshrink grout as specified in Section 03 60 00, GROUT.
2. Match color of adjacent concrete.
3. Compact grout using steel hammer and steel tool to drive grout to high density. Cure grout with water.

C. Alternate Form Ties-Through-Bolts:

1. Seal through-bolt hole by sandblasting or mechanically cleaning and roughening entire interior surface of hole, coating roughened surface with bonding agent and driving elastic vinyl plug and then dry packing entire hole on each side of plug with nonshrink grout, as specified in Section 03 60 00, GROUT. Use only enough water to dry pack grout. Dry pack while bonding agent is still tacky or remove bonding agent by mechanical means and reapply new bonding agent.
2. Compact grout using steel hammer and steel tool to drive grout to high density. Cure grout with water.

D. Exposed Metal Objects:

1. Metal objects not intended to be exposed in as-built condition of structure including wire, nails, and bolts, shall be removed by chipping back concrete to depth of 1 inch and then cutting or removing metal object.
2. Repair areas of chipped-out concrete per requirements of Section 03 01 00 CONCRETE SURFACE REPAIR SYSTEMS.

E. Blockouts at Pipes or Other Penetrations:

1. Meet details shown or submit proposed blockouts for review.
2. Use nonshrink, nonmetallic grout, Category I or II as specified in Section 03 60 00, GROUT.

3.14 FIELD QUALITY CONTROL

- #### A. Testing and Inspecting:
- Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. Payment of the testing and inspection agency shall be by the Contractor from the contract allowance for independent testing in accordance with Section 01 29 00, PAYMENT PROCEDURES.

- B. Inspections:
1. Steel reinforcement placement.
 2. Headed bolts and studs.
 3. Verification of use of required design mixture.
 4. Concrete placement, including conveying and depositing.
 5. Curing procedures and maintenance of curing temperature.
 6. Verification of concrete strength before removal of shores and forms from beams and slabs.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd. plus one set for each additional 50 cu. yd. or fraction thereof.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C143/C143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 4. Concrete Temperature: ASTM C1064/C1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
 5. Compression Test Specimens: ASTM C31/C31M.
 - a. Cast and laboratory cure two sets of three standard cylinder specimens for each composite sample.
 - b. Cast and field cure two sets of three standard cylinder specimens for each composite sample.
 6. Compressive-Strength Tests: ASTM C39/C39M; test one set of three laboratory-cured specimens at 7 days and one set of three specimens at 28 days.
 - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days. The third cylinder will be retained for subsequent testing if required by the Engineer.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
 8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
 9. Test results shall be reported in writing to Engineer, Owner, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
 10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.

11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by the Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Engineer.
 12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 13. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- D. Measure floor and slab flatness and levelness according to ASTM E 1155 48 hours after finishing. Specified overall values of flatness $F(f)=25$; and levelness $F(L)=20$; with minimum local values, $F(f)=17$ and $F(L)=15$.
1. $F(L)$ value only applies to elevated slabs after shoring has been removed.
- E. Shrinkage Tests:
1. Drying shrinkage tests shall be performed for the trial batch indicated in Paragraph CONCRETE MIXTURES FOR HYDRAULIC ELEMENTS for the first placement of each class of concrete for all structures noted in paragraph CONCRETE MIXTURES FOR HYDRAULIC ELEMENTS, and during construction to insure continued compliance with these Specifications. Number of field test to be determined by Engineer or Engineer's Field Representative.
 2. Drying shrinkage specimens shall be 4" by 4" by 11" prisms with an effective gauge length of 10"; fabricated, cured, dried, and measured in accordance with ASTM C157 modified as follows: specimens shall be removed from molds at an age of 23 ± 1 hours after trial batching, shall be placed immediately in water at $70 \text{ }^{\circ}\text{F} \pm 3 \text{ }^{\circ}\text{F}$ for at least 30 minutes, and shall be measured within 30 minutes thereafter to determine original length and then submerged in saturated lime water at $73 \text{ }^{\circ}\text{F} \pm 3 \text{ }^{\circ}\text{F}$. Measurement to determine expansion expressed as a percentage of original length shall be made at age 7 days. This length at age 7 days shall be the base length for drying shrinkage calculations ("0" days drying age). Specimens then shall be stored immediately in a humidity control room maintained at $73 \text{ }^{\circ}\text{F} \pm 3 \text{ }^{\circ}\text{F}$ and 50% $\pm 4\%$ relative humidity for the remainder of the test. Measurements to determine shrinkage expressed as percentage of base length shall be made and reported separately for 7, 14, 21, and 28 days of drying after 7 days of moist curing.
 3. The drying shrinkage deformation of each specimen shall be computed as the difference between the base length (at "0" days drying age) and the length after drying at each test age. The average drying shrinkage deformation of the specimens shall be computed to the nearest 0.0001" at each test age. If the drying shrinkage of any specimen departs from the average of that test age by more than 0.0004", the results obtained from that specimen shall be discarded. Results of the shrinkage test shall be reported in graphical form Length Change (in) vs. Age (days) and Length Change (%) vs. Age (days) to the nearest 0.001% of shrinkage. Compression test specimens shall be taken in each case from the same concrete used for preparing drying shrinkage specimens. These tests shall be considered a part of the normal compression tests for the project. Allowable shrinkage limitations shall be as indicated below.
 - a. Shrinkage Limitation: The maximum concrete shrinkage for specimens cast in the laboratory from the trial batch, as measured at 21-day drying age or at 28-day drying age shall be 0.036% or 0.042%, respectively. The Contractor shall only use a mix design for construction that has first met the trial batch shrinkage requirements.
 - b. The maximum concrete shrinkage for specimens cast in the field shall not exceed the trial batch maximum shrinkage requirement by more than 25%.
 - c. If the required shrinkage limitation is not met during construction, the Contractor shall take any or all of the following actions at no additional cost to the Owner, for securing the specified shrinkage requirements. These actions may include

changing the source of aggregates, cement and/or admixtures; reducing water content; washing of aggregate to reduce fines; increasing the number of construction joints; modifying the curing requirements; or other actions designed to minimize shrinkage or the effects of shrinkage

- F. Water Leakage Tests: In accordance with ACI 350.1.
1. Purpose: Determine integrity and water tightness of finished concrete surfaces. Contractor shall perform and pay for all costs associated with water leakage tests. Report all test results to the Engineer.
 2. All water-holding Structures:
 - a. Perform leakage tests after concrete structure is complete and capable of resisting the hydrostatic pressure of the water test. The concrete shall have achieved its full design strength.
 - b. Perform leakage test before backfill, brick facing, or other work that will cover concrete wall surfaces is begun.
 - c. Install all temporary bulkheads, cofferdams, and pipe blind flanges, and close all valves. Inspect each to see that it provides a complete seal.
 - d. Fill with water to test level shown, or maximum liquid level if no test level is given. Maintain this level for 72 hours prior to the start of the test to allow water absorption, structural deflection, and temperature to stabilize.
 - e. Measure evaporation and precipitation by floating a partially filled, transparent, calibrated, open top container.
 - f. Measure the water surface at two points 180° apart, when possible where attachments such as ladders exist, at 24-hour intervals. Using a sharp pointed hook gauge and fixed metal measure capable of reading to 1/100 of an inch. Continue the test for a period of time sufficient to produce at least 1/2" drop in the water surface based on the assumption that leakage would occur at the maximum allowable rate specified or for 72 hours whichever is the lesser time.
- G. Acceptance Criteria:
1. Volume loss shall not exceed 0.075% of contained liquid volume in a 24-hour period, correcting for evaporation, precipitation, and settlement.
 2. No damp spots or seepage visible on exterior surfaces. A damp spot is defined as sufficient moisture to be transferred to a dry hand upon touching.
- H. Repairs When Test Fails: Dewater the structure; fill leaking cracks with crack repair epoxy as specified in Section 03 64 00 CONCRETE REPAIR CRACK INJECTION. Patch areas of damp spots previously recorded, and repeat water leakage test in its entirety until the structure successfully passes the test.

END OF SECTION

SECTION 03 41 00 – PRECAST CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Precast concrete required for this Project.
- B. Reinforcing.
- C. Accessories.

1.2 RELATED SECTIONS

- A. Section 03 11 00, CONCRETE FORMWORK
- B. Section 03 20 00, CONCRETE REINFORCEMENT
- C. Section 03 30 00, CAST-IN-PLACE CONCRETE

1.3 QUALITY ASSURANCE

- A. Qualifications of workmen:
 - 1. Provide at least one person who shall be present at all times during execution of this portion of the work and who shall be thoroughly trained and experienced in placing and erecting the type of concrete described herein and who shall direct all work performed under this Section.
 - 2. Precast subcontractor shall be experienced in constructing the type of precast material required for the project. Submit data for approval.
 - 3. For finishing of exposed surfaces of the concrete, use only thoroughly trained and experienced journeyman concrete finishers.
 - 4. Approval required in advance in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.
- B. Codes and Standards:
 - 1. Comply with all pertinent codes and regulations and publication ACI 301 of the American Concrete Institute, latest edition.
 - 2. Where provisions of pertinent codes and standards conflict with this Specification, the more stringent provisions shall govern.

1.4 SUBMITTALS

- A. Materials list: Before any precast concrete is delivered to the construction site, submit to the Engineer in accordance with Section 01 33 00 SUBMITTAL PROCEDURES a complete list of all materials proposed to be furnished and installed under this portion of the work, showing manufacturer's name and catalog number for all items such as bond breaker, inserts, chairs, and conduits.

1.5 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

1.6 DESIGN

- A. All design of pre-stressed members shall be done in strict accordance with procedures set forth in the current edition of ACI 318 "Building Code Requirements for Reinforced Concrete."
- B. All precast structural concrete members shall be designed to meet requirements of the Building Code.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Concrete:
 1. Cement shall be Portland Cement conforming to ASTM C150, Portland Cement.
 2. Aggregates shall conform in quality to ASTM C33 for heavyweight aggregate.
 3. Heavyweight aggregates shall be graded crushed stone with a resulting unit weight of concrete of up to 155 pounds per cubic foot.
 4. Water shall be clean and free of injurious and deleterious substances.
 5. Concrete strength shall be minimum 5,000 psi at 28 days.
- B. Steel:
 1. Pre-stressing steel shall be high tensile strength uncoated seven wire strand which is low-relaxation strand or has been stress-relieved as a unit after the wires have been formed into a strand. It shall be manufactured and tested in accordance with ASTM A416. Either 250K or 270K strand may be used.
 2. All reinforcing bars shall conform to the requirements of ASTM A615, Grade 60 as required.
 3. Welded wire fabric shall conform to the requirements of ASTM A185.
 4. Cast in plates shall conform to the requirement of ASTM A36, or A440 as required.

2.2 OTHER MATERIALS

- A. All other materials not specifically described but required for a complete and proper installation of the work of this Section, shall be as selected by the Contractor subject to the approval of the Engineer.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Inspections:
 1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
 2. Verify that the work of this Section may be performed in strict accordance with all pertinent codes and regulations, the original design, and the manufacturer's recommendations for the items being installed.
- B. Discrepancies:
 1. In the event of discrepancy, immediately notify the Engineer.
 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 QUALITY

- A. Manufacturer of precast concrete shall be adequately equipped to form, place, and cure the required precast concrete, and shall have experience to produce precast concrete of required strength and water resistance.

3.3 PLACEMENT OF REINFORCEMENT

- A. Place all reinforcement in strict accordance with the drawings and with the provisions of Section 03 20 00, CONCRETE REINFORCEMENT of these Specifications.

3.4 PLACEMENT OF CONCRETE

- A. General:
 - 1. Concrete shall be placed and compacted by tamping or vibrating to produce a dense waterproof product.
 - 2. Finish all concrete surfaces in smooth finish to the tolerances described in Section 03 30 00, CAST-IN-PLACE CONCRETE of these Specifications.
- B. Curing:
 - 1. Cure all concrete of this Section in strict accordance with the methods specified in Section 03 30 00, CAST-IN-PLACE CONCRETE or approved alternative.

3.5 OPENINGS

- A. Locations and sizes of all openings 3 inches wide or larger to be cast into the members, if not shown on the contract drawings, must be supplied when shop drawings are submitted for approval. All other openings not so located shall be job cut by the various trades requiring them. All holes less than 3 inches in dimension through precast members are to be made by drilling or cutting in the field, by the various trades requiring them. However, field holes or cuts may not be made in the precast members without prior approval of the manufacturer.

3.6 ERECTION

- A. Responsibility:
 - 1. The entire method and sequence of erection shall be the responsibility of the Contractor.
- B. Alignment:
 - 1. Set all units in true alignment in all directions.
- C. All precast concrete items with cracks or other flaws that will detract from the appearance, shall be replaced.
- D. Grind to remove sharp edges.

END OF SECTION

DIVISION 13

SPECIAL CONSTRUCTION

SECTION 13 47 13 – CATHODIC PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 1. Passive cathodic protection systems that use magnesium anodes to protect ductile iron pipe at crossings of existing gas line.
 2. Passive cathodic protection systems that use magnesium anodes to protect steel casing pipe at crossing of existing BNSF Railroad.
- B. Related sections:
 1. Section 33 34 13 – Ductile Iron Water Transmission Pipe and Fittings
 2. Section 33 31 13 – Steel Encasement Pipe
 3. Section 40 42 13.16 – Polyethylene Encasement for DIP and CIP

1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design, supervise, test, and inspect the installation of cathodic protection systems, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
 1. Design cathodic protection for pipelines according to NACE RP0169.
- B. Survey site and determine soil or water corrosivity (resistivity), current requirements, potential surveys, stray currents, and water chemistry/corrosivity (pH). Geotechnical report shall be provided, but additional investigation may be required.
- C. Select anodes and accessories relevant to level of protection. Design anodes for an estimated life of 30 years before replacement.
- D. Cathodic protection systems shall provide protective potential that complies with referenced NACE standards. Insulators are required if needed to insulate protected metals from other structures.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For cathodic protection. Include plans, evaluations, sections, details, and attachments to other work.
 1. Detail locations of cathodic protection equipment, devices, and outlets, with characteristics and cross-references to products.
 2. Include calculations and details of anode designs.
 3. Include labeling and identifying scheme for wires, cables, and test boxes.
- C. Delegated-Design Submittal: For cathodic protection system indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified corrosion engineer responsible for their preparation.
 1. Conduct site tests necessary for design, including soil resistivity, close-interval potential surveys, testing during construction, interference testing, and training of Owner's personnel.
 2. Provide system design calculations, stating the maximum recommended anode current output density, and the rate of gaseous production, if any, at that current density.

- D. Provide all submittals per requirements of Section 01 33 00, SUBMITTAL PROCEDURES

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Plans, drawn to scale, and coordinating connections to piping.
- B. Qualification Data: For qualified professional engineer. Submit evidence of current license, corporate authorization (if applicable) of the engineering business, and NACE certifications.
- C. Field quality-control reports.
- D. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
 1. Basic system operation, outlining the step-by-step procedures required for system startup, operation, adjustment of current flow, and shutdown.
 2. Instructions for pipe-to-reference cell and tank-to-reference cell potential measurements and frequency of monitoring.
 3. Instructions for dielectric connections, interference and sacrificial-anode bonds; and precautions to ensure safe conditions during repair of pipe, tank or other metallic systems. Instructions shall be neatly bound.
 4. Locations of all anodes, test stations, and insulating joints.
 5. Structure-to-reference cell potentials as measured during the tests required by "Field Quality Control" Article.
 6. Recommendations for maintenance testing, including instructions for pipe-to-reference cell potential measurements and frequency of testing.
 7. Precautions to ensure safe conditions during repair of pipe system.

1.6 QUALITY ASSURANCE

- A. Corrosion Engineer Qualifications: A qualified professional engineer who has education and experience in cathodic protection of buried and submerged metal structures and has NACE accreditation or certification as a Corrosion Specialist or Cathodic Protection Specialist.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect anodes from exposure to rain and direct sunlight.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace permanent reference electrodes that fail in materials or workmanship within specified warranty period.
 1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MAGNESIUM ANODES, TYPE II

- A. Comply with ASTM B 843.

- B. Chemical composition as percent of weight shall be as follows:
 - 1. Aluminum: 0.010 maximum.
 - 2. Manganese: 0.50 to 1.3.
 - 3. Zinc: 0.05 maximum.
 - 4. Silicon: 0.50 maximum.
 - 5. Copper: 0.02 maximum.
 - 6. Nickel: 0.001 maximum.
 - 7. Iron: 0.03 maximum.
 - 8. Other Impurities: 0.05 each; 0.3 maximum total.
 - 9. Magnesium: Remainder.
- C. Anode Core: Galvanized steel with anode wire silver-soldered to the core. Connection shall be recessed and epoxy insulated for 600-V rating. Connection shall be covered with heat-shrinkable tubing, and insulation shall be extended over connection.
- D. Anode Wires: Factory-installed cables, with copper conductors, suitable for direct burial; not less than No. 10 AWG with Type THWN insulation according to ASTM D 1248 and NEMA WC 70/ICEA S-95-658; long enough to extend to accompanying junction box without splicing.
- E. Anode Backfill: Backfill materials packaged in water-permeable fabric sack or cardboard container. Anodes shall be factory installed in packaged backfill using methods that result in dense packing of fill with factory-installed anode spacers to ensure centering of anode in packaged anode backfill. Backfill material shall have the following chemical composition by weight:
 - 1. Hydrated Gypsum: 75 percent.
 - 2. Bentonite Clay: 20 percent.
 - 3. Anhydrous Sodium Sulfate: 5 percent.

2.2 MAGNESIUM/MANGANESE ALLOY ANODES

- A. Chemical composition as percent of weight shall be as follows:
 - 1. Aluminum: 0.01 maximum.
 - 2. Manganese: 0.50 to 1.3.
 - 3. Copper: 0.02 maximum.
 - 4. Nickel: 0.001 maximum.
 - 5. Iron: 0.03 maximum.
 - 6. Other Impurities: 0.05 each; 0.3 maximum total.
 - 7. Magnesium: Remainder.
- B. Bare Anode Weight: 40 lb, not including core, and a nominal length of 60 inches.
- C. Anode Wires: Factory-installed cables, with copper conductors, suitable for direct burial; not less than No. 10 AWG with Type THWN insulation according to ASTM D 1248 and NEMA WC 70/ICEA S-95-658; long enough to extend to accompanying junction box without splicing.
- D. Anode Backfill: Backfill materials packaged in water-permeable fabric sack or cardboard container. Anodes shall be factory installed in packaged backfill using methods that result in dense packing of fill with factory-installed anode spacers to ensure centering of anode in packaged anode backfill. Backfill material shall have the following chemical composition by weight:
 - 1. Hydrated Gypsum: 75 percent.
 - 2. Bentonite Clay: 20 percent.
 - 3. Anhydrous Sodium Sulfate: 5 percent.

2.3 PERMANENT REFERENCE ELECTRODES

- A. Copper/copper sulfate (Cu/CuSO₄), suitable for direct burial. Electrode shall be guaranteed by supplier for 30 years' service in the installed environment.

2.4 WIRE AND CABLE

- A. Anode Header Cable: Single-conductor, Type HMWPE, insulated cable specifically designed for direct-buried dc service in cathodic protection installations.
 1. Conductor: Stranded, annealed, uncoated copper, not less than No. 8 AWG, complying with ASTM B 3 and ASTM B 8.
 2. Insulation: High-molecular-weight polyethylene, complying with NEMA WC 70/ICEA S-95-658.
 3. Minimum Average Thickness of Insulation: 110 mils for Nos. 8 through 2 AWG, and 125 mils for Nos. 1 through 4/0 AWG; rated at 600 V.
 4. Connectors: exothermic welds.
- B. Conductors and Cables: Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
 1. Bonding Conductors for Joint and Continuity Bonds: Not less than No. 8 AWG, stranded, Type THWN copper conductors.
 2. Flexible Pipe Coupling Bonds: Flexible copper straps with electrical resistance equal to No. 1/0 AWG stranded copper wire and with five holes for five exothermic welds to pipe.
 3. Test Wires: No. 12 AWG, Type THWN copper conductors.
 4. Resistance Wires: No. 16 or No. 22 AWG nickel-chromium wire.
 5. Cables for Installation in Conduit: Type THWN copper conductors.

2.5 TEST STATIONS

- A. Plastic Test Stations: Flush-mounted type, manufactured of high-impact-resistant PVC or polycarbonate with watertight conduit connections and cover and removable terminal board having at least five terminals.
- B. Test Station Mounting Enclosures:
 1. Non-Traffic-Area Boxes: Comply with requirements in Section 260533 "Raceways and Boxes for Electrical Systems."
 2. Traffic-Area Boxes: Comply with requirements in Section 260543 "Underground Ducts and Raceways for Electrical Systems." Boxes shall have cast-iron covers with a welded bead legend "CP TEST."

2.6 SEALING, POTTING, AND DIELECTRIC COMPOUNDS

- A. Sealing and Dielectric Insulating Compound: Comply with NACE RP0188. Black, rubber based, soft, permanently pliable, tacky, moldable, and unbacked; 0.5 inch thick.
- B. Potting Compound: Comply with NACE RP0188. Cast-epoxy, two-package type; fabricated for this purpose and covered with heat-shrinkable tape.
- C. Pressure-Sensitive, Vinyl-Plastic Electrical Tape: Comply with UL 510.

2.7 EXOTHERMIC WELDING MATERIALS

- A. Exothermic Weld Kits: Specifically designed by manufacturer for welding materials and shapes required.

- B. Exothermic Weld Caps: Dome of high-density polyethylene, 10-mil minimum thickness, filled with mastic and containing a tunnel portion to separate lead wire from exothermic weld.

2.8 COATING REPAIR MATERIALS

- A. Touchup Coating Materials: Apply touch up coating to match requirements of manufacturer of original coating material.
- B. Adhesive-Applied Coating Materials: Coating materials shall be compatible with factory-applied coating system.
 - 1. Nominal thickness of coating materials shall be not less than 60 mils, plus or minus 5 percent.
 - 2. Coating materials shall be one of the following supplied by factory-applied coating system manufacturer:
 - a. Polyvinyl-chloride, pressure-sensitive, adhesive tape.
 - b. High-density polyethylene/bituminous rubber compound tape.
 - c. Butyl rubber tape.
 - d. Coal-tar epoxy.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

- A. Comply with ANSI/IEEE C2 and NFPA 70.
- B. Make connections to ferrous pipe using exothermic welding.
- C. Coat welds with the coating repair material and apply an exothermic weld cap.

3.2 MAGNESIUM ANODE INSTALLATION

- A. Install magnesium anodes at locations that clear obstructions. Install at least 36 inches and no more than 10 feet from pipe to be protected. Install in augered holes with top of anode a minimum of 36 inches below finished grade. In soils that will collapse into augered holes, use casing of galvanized sheet steel.
- B. Install anodes in a dry condition after plastic or waterproof protective covering has been completely removed from water-permeable permanent container that houses anode metal. Do not use anode-connecting wire for lowering anode into hole. Backfill annular space around anode with fine earth in 6-inch layers; compact each layer using hand tools. Do not strike anode or connecting wire during backfilling and compacting. After backfilling and compacting to within 6 inches of finished grade, pour approximately 5 gal. of water into each filled hole. After water has been absorbed by earth, complete backfilling to finished level.
- C. If rock strata are encountered before achieving specified augured hole depth, install anodes horizontally at depth at least as deep as bottom of pipe to be protected.
- D. Install anodes spaced as indicated, connected through a test station to the pipeline, allowing slack in connecting wire to compensate for movement during backfill operation.
- E. For tank protection, connect groups of anodes to collector cable. Make contact, through a test station, with tank to be protected.
- F. Do not use resistance wires to reduce current output of individual or group anodes.

- G. Wrap polyethylene encasement around wires to provide a watertight pipe area.

3.3 INSTALLATION OF REFERENCE ELECTRODES

- A. Install directly beneath the buried metallic component being protected.

3.4 CABLE AND WIRE INSTALLATION

- A. Install conductors, except anode wires, in PVC conduit with waterproof PVC junction boxes.
- B. Anode Wire Installation: Cover trench bottom for the anode wire with 3-inch layer of sand or stone-free earth. Center wire on backfill layer and do not stretch or kink the conductor. Place backfill over wire in layers not exceeding 6 inches deep, and compact each layer. Use clean fill, free from roots, vegetable matter, and refuse. Place cable underground-line warning tape within 18 inches of finished grade, above cable and conduit.
- C. Bonding Conductors: Install conductors on metallic pipe and tanks, to and across buried flexible couplings, mechanical joints, and flanged joints except at places where insulating joints are specified. Welded and threaded joints are considered electrically continuous and do not require bonding.
 - 1. Install at least two bonds between parts requiring bonding.
 - 2. Bonding conductors must contain sufficient slack for anticipated movement between structures. Bonding conductors across pipe joints shall have not less than a 4-inch slack for pipe expansion, contraction, and soil stress.
 - 3. Connect bonding conductors to pipe, coupling follower rings and coupling middle ring or sleeve. Connect bonding conductors with exothermic welds.
- D. For wire splicing, use compression connectors or exothermic welds.

3.5 TEST STATIONS

- A. Install test stations as follows:
 - 1. Where pipe crosses existing gas line.
- B. Install test stations on backfill complying with requirements for trench bottom fill for anode wires unless otherwise indicated.
- C. Terminate test conductors on terminal boards and install a spare set of test leads at each testing location.

3.6 COATINGS

- A. Field Joints: Apply adhesive-applied coating system in a thickness to achieve corrosion protection equal to adjacent factory-applied coating.

3.7 IDENTIFICATION

- A. Identify anode wires and anode header cables with marker tape.
- B. Identify underground wires and cables with underground-line warning tape.
- C. Identify text boxes with engraved, laminated acrylic or melamine label, permanently attached to text box.

3.8 FIELD QUALITY CONTROL

- A. Comply with NACE RP0169 and NACE RP0285.
- B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- C. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installation, including connections.
- D. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- E. Tests and Inspections:
 - 1. Static Pull Test: Choose, at random, one completed anode of each type for this destructive test. Demonstrate that anode wire connections have enough strength to withstand a minimum tensile load of 300 lb. If test fails, replace all anodes and repeat test at another randomly selected anode.
 - 2. Insulation Testing: Before anode system is connected to pipe, test insulation at each insulating joint and fitting. Demonstrate that no metallic contact, or short circuit, exists between the two insulated sections of pipe. Replace defective joints or fittings.
 - 3. Bonding Tests: Test for electrical continuity across all bonded joints. Repair or add additional bonds until electrical continuity is achieved.
 - 4. Baseline Potentials: After backfilling of pipe and anodes is completed, but before anodes are connected to pipe, measure the static potential of pipe to soil. Record initial measurements.
 - 5. Anode Output: Measure electrical current as anodes or groups of anodes are connected to pipe. Use a low-resistance ammeter. Record current, date, time, and location of each measurement.
 - 6. Pipe-to-Reference Electrode Potential Measurements: On completion of installation of entire cathodic protection system, make electrode potential measurements according to NACE RP0169, using a copper/copper-sulfate reference electrode and a potentiometer-voltmeter, or a dc voltmeter with an internal resistance (sensitivity) of not less than 100,000 ohms per volt and a full scale of 1 or 2 V. Make measurements at same locations as those used for baseline potentials. Record voltage, date, time, and location of each measurement, using one of the following two methods:
 - a. 0.85 V Negative Voltage: With cathodic system in operation, measure a negative voltage of at least minus 0.85 V between pipe and a saturated copper/copper-sulfate reference electrode contacting the earth directly over pipe.
 - b. 100-mV Polarization Voltage: Determine polarization voltage shift by interrupting protective current and measuring polarization decay. An immediate voltage shift will occur if protective current is interrupted. Use voltage reading, after immediate shift, as base reading from which to measure polarization decay. Measure at least a minimum polarization voltage shift of 100 mV between pipe and a saturated copper/copper-sulfate reference electrode contacting the earth directly over pipe.
- F. Location of Measurements for Piping: For coated piping or conduit, measure from reference electrode in contact with the earth directly over pipe. Measure at intervals not exceeding 400 feet. Make additional measurements at each distribution service riser, with reference electrode placed directly over service line.
- G. Interference Testing: Test interference with cathodic protection from any foreign pipes and tanks in cooperation with Owner of foreign pipes and tanks. Report results and recommendations.

- H. Stray Current Measurements: Perform at each test station. Mitigate stray currents due to lightning or overhead ac power transmission lines as provided for in NACE standards.
- I. Inspect coatings; comply with NACE RP0188. Repair imperfections of factory-applied coatings as specified in "Coatings" Article.
 - 1. Use electronic holiday detectors to detect coating imperfections.
 - 2. All damage to the protective coating during transit and handling shall be repaired before installation.
 - 3. Repair factory-applied coatings to have equal or better corrosion resistance than the factory-applied coating system. Field-repair material shall be of the type approved by, and shall be applied as recommended by, manufacturer of the coating material.

3.9 ADJUSTING

- A. Adjust cathodic current using resistors as recommended by corrosion engineer who prepared the Delegated-Design Submittal in Part 1.
- B. During the first year after Substantial Completion, test, inspect, and adjust cathodic protection system every three months to ensure its continued compliance with specified requirements.

3.10 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain cathodic protection system.

END OF SECTION

DIVISION 31 EARTHWORK

SECTION 31 06 20.19 – BACKFILL GROUTING

PART 1 - GENERAL

1.1 SUMMARY

A. WORK INCLUDED

1. This section covers the work necessary for backfill grouting between the outside of carrier pipe and the inside of tunnel initial support, including furnishing, mixing and placing grout; furnishing all labor, materials, equipment, and incidentals; and all other related work necessary for grouting, complete.
2. The Contractor's work under this section shall include: furnishing, handling, transporting, and storing of all materials and equipment for grouting; mixing and injecting grouts; cleanup of work areas; and all other operations incidental to grouting.

B. RELATED SECTIONS

1. Section 31 23 19 - Dewatering.
2. Section 33 31 13 - Steel Encasement.

1.2 REFERENCE STANDARDS

- A. The publications and standards listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the abbreviation only. Unless otherwise stated, the most recent version or edition of each publication or standard is implied.

1. American Society for Testing and Materials (ASTM):
 - a. C94, Standard Specification for Ready-Mixed Concrete.
 - b. C138, Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete-AASHTO No.: T121.
 - c. C150, Specifications for Portland Cement.
 - d. C311, Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete.
 - e. C495, Standard Test Method for Compressive Strength of Lightweight Insulating Concrete.
 - f. C567, Standard Test Method for Determining Density of Structural Lightweight Concrete.
 - g. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
 - h. C796, Standard Method of Testing Foaming Agents for Use in Producing Cellular Concrete Using Preformed Foam.
 - i. C869, Standard Specification for Foaming Agents Used in Making Preformed Foam for Cellular Concrete.

1.3 DEFINITIONS

- A. Backfill Grouting: An injection of low density cellular concrete to fill the void space between a carrier pipe and initial ground support.

1.4 SUBMITTALS

A. Grout Mixes:

1. Submit mix designs for each backfill grout mix proposed for use. Each mix design shall show the ingredients of the mix and shall include:
 - a. Type, brand, source, and amounts of cement, pozzolans, admixtures, foaming agent and other additives.

- b. Source and amount of water.
 - c. Representative samples of materials for materials testing and mix proportion testing.
 - d. Combined grading of each mix design.
 - e. Specific gravity of all materials.
 - f. Results of required tests.
 - 2. Submit a certificate of compliance signed by the supplier identifying the type of fly ash (if used) and stating that the fly ash is in accordance with ASTM C618 and these specifications. Supporting test data shall be furnished when requested by the Resident Engineer. All testing and sampling procedures shall be in accordance with ASTM C311.
 - 3. Submit water quality test results.
 - 4. Submit material specifications and instructions for use of any proposed concrete admixtures, including evidence from foam manufacturer that proposed admixtures are compatible with the foaming agent.
 - 5. Submit air content, unit weight, and compressive strength test results for proposed mix design.
- B. Grouting Workplan: The work plan for placing backfill grout shall include sequence of work, type(s) of equipment, location of equipment, placing procedures, (i.e., batching, mixing, and pumping location and procedures), pump line arrangement (including moving and breaking), maximum pipe length to be backfilled and end bulkhead details, communications provisions, methods for monitoring mix, testing procedures, and cleanup procedures. The work plan shall include pumping pressures, pumping rates, volumes to be placed per day, injection locations, maximum grout age before set initiation, maximum injection pressures and sequence of placement and pumping.
- C. Grouting Equipment:
- 1. Submit prior to the start of grouting operations calibration records for all meters and gauges to be used in grouting operations.
 - 2. Submit the following for the backfill grouting equipment proposed:
 - a. Manufacturer's specifications and operation instructions for grout conveyance equipment.
 - b. Pump specifications.
 - c. Grout hose, valve and port sizes and specifications.
 - d. Grout pressure gages and pressure gauge calibration data.
 - e. Foam generators and ancillary equipment.
- D. Grouting Records: The Contractor shall submit records of grouting operations as specified hereinafter.
- 1. Submit pre-backfill placement test reports and certification records for backfill grouting as follows:
 - a. Mill test reports for Portland cement.
 - b. Certificates of compliance for each load of Portland cement and fly ash (if used).
 - c. Certificates of compliance for foaming agent and all admixtures.
 - d. Proposed backfill grout mix designs with mix data for all components, mix properties including air content and wet unit weight, and testing results including cured unit weight and compressive strength tests reports from a certified testing laboratory.
 - e. Submit daily reports and records of backfill grout placement, including but not limited to follows:
 - 1) A delivery ticket with the information stated in section 16 of ASTM C94; except furnish actual scale weights of materials to the Engineer with each batch of concrete before unloading at the site.
 - 2) Submit a printout of the actual scale weights for all loads batched to the Engineer at the end of each working day.

- 3) Volumes and backfill levels placed.
- 4) Stationing of backfill grout placement.
- 5) Injection locations and pressures.
- 6) Unit weight and air content testing results.
- 7) Times of grout placement.
- 8) Designation of cylinder samples prepared that day.
- 9) Compressive strength tests reports from a certified testing laboratory

PART 2 - PRODUCTS

2.1 CONSTITUENTS OF PORTLAND CEMENT GROUT

- A. Portland cement, water and flyash shall conform to the requirements of Section 03 30 01, Reinforced Concrete.
- B. Bentonite or other clay-like materials shall not be used as an admixture.

2.2 SAND

- A. Sand shall conform to the requirements for concrete aggregates specified in Section 03 20 00, Reinforced Concrete, except that it shall be graded as specified in the following table.

Sieve Size	Percent Passing Minimum
No. 16	100
No. 30	60 – 85
No. 50	20 – 50
No. 100	15 – 35
No. 200	0 - 20

2.3 FLUIDIFIER

- A. Fluidifier shall be a compound with characteristics that will hold the solid constituents of the grout in colloidal suspension, be compatible with the cement and water used in the grout mix, and contain a shrinkage compensator. Fluidifier shall not contaminate the groundwater.
- B. Fluidifier shall be furnished in moisture resistant paper sacks shipped in sealed containers and shall be handled and stored so as to avoid absorption of moisture, damage or waste. Material which has become caked due to moisture absorption will be rejected.

2.4 CELLULAR CONCRETE GROUT

- A. Cellular concrete grout shall consist of Portland cement based grout having a homogeneous void or cell structure attained with gas-forming chemicals or foaming agents. Foaming agent shall conform to ASTM C869. Grout shall have a minimum wet density of 45 pounds per cubic foot and minimum compressive strength of 500 psi at 28 days.

2.5 EQUIPMENT

- A. General:
1. The equipment for mixing and injecting foam grout shall be used that is designed for underground backfill grouting service. Maintain equipment in good operating condition, capable of satisfactorily mixing, agitating, and forcing backfill grout into injection ports at a uniform flow rate under the required constant pressure.
 2. Batching, mixing and pumping equipment shall be compatible and of sufficient size and capacity to place cellular grout to distances and volumes required.
 3. An adequate inventory of spare parts or backup equipment shall be provided to ensure that operable backfill grouting equipment is available at all times during the work. Maintain sufficient quantities of spare pressure gauges, stop valves, and other wear parts on site.
 4. Use hose of proper type and diameter to withstand maximum injection pressures used (as submitted, but not exceeding 15 psi for stages below crown of carrier pipe and 60 psi for stages above the crown of the carrier pipe).
 5. Injecting piping shall be a minimum of 2.0 inches in diameter.
 6. Backfill grouting equipment shall be configured so flushing can be accomplished with grout intake valves closed, with water supply valve open, and with grout pump running at full speed.
- B. Foam Generator:
1. A foam generator shall be used to produce a predetermined quantity of preformed foam, which shall be injected into the mixer and blended with the cement slurry. The foam generator shall be timer-controlled to repetitively discharge a pre-selected quantity or to discharge continuously at a fixed rate. Foam generating equipment shall be tested and calibrated for dilution percentage, density, and volume output. Two types of foam generating systems, batch and continuous generating, are acceptable.
 2. The batch system shall consist of a tank in which the foam liquid concentrate and water are first premixed. This dilute solution is then discharged from either a pressurized tank or by means of a mechanical pump through a foam-making nozzle in which this solution is blended with compressed air in fixed proportions.
 3. A continuous generating system container, which continuously draws the concentrate directly from its shipping container, automatically blends it with water and compressed air in fixed proportions, and forms the stable micro-bubbled foam.
 4. Both types utilize foam refining columns or nozzles calibrated for foam quality and discharge rate. The foam nozzles may be timer-controlled to repetitively discharge any preselected quantities or to discharge continuously at a fixed rate.
 5. Provide graphical or digital printout records of batch scale readings, accurate to 1 pound, of the dry mix ingredients before delivery to mixer.
 6. Specially designed batch mixers may also be used in conjunction with surge hopper equipped pumps. The rates of mixing and pumping shall be properly adjusted and a continuous flow of foam grout shall be obtained at the point of placement.
- C. Quality Assurance:
1. The Contractor shall furnish one set of calibrated pressure gauges to be used as a master to check pressure gauges in the field. Proper certifications attesting the same shall be provided to the Engineer. Proper fittings shall be provided for connection of calibrated pressure gauges parallel to field gauges, for periodic checking of field gauges. The Contractor shall also furnish suitable devices for determining the accuracy of all volumetric and flow rate measuring devices, as required.

PART 3 - EXECUTION

3.1 GENERAL

- A. If out of visible contact, continuous telephonic communication shall be maintained between the grout plant and the injection point.
- B. Backfill grouting shall be commenced only after a carrier pipe placement has been performed.
- C. Grout in the mixer and holding tanks shall be continuously agitated. Portland cement grout which is not used within 2 hours after mixing shall be removed from the mixer, holding tank and supply line and shall be wasted.
- D. Grout shall be maintained at temperatures above 50 degrees F until injected. The temperatures of mixing water shall range from 50 degrees F to
- E. 65 degrees F when added to the grout mixer. Grout materials shall be stored at temperatures above freezing. Grouted ground shall be no colder than
- F. 40 degrees F when grout is injected and for a period of 5 days thereafter.

3.2 BACKFILL GROUTING

- A. General:
 - 1. A bulkhead shall be constructed at the open end of each reach of pipe to be backfilled so the annular space will be completely backfilled in accordance with the contractor's submittal as approved by the Engineer. Bulkheads shall incorporate a minimum 1-inch diameter drainpipe in the invert of the tunnel to facilitate drainage of any tunnel water during backfill grouting. This pipe shall be securely capped and plugged once backfill grout begins to flow from the drain line. An opening and piping if necessary shall be provided in the tunnel crown to allow entrapped air to escape. Vent outlets shall be provided as required.
 - 2. Take all necessary precautions to protect and preserve the interior of the pipe from damage. Spills shall be minimized and shall be cleaned up immediately. Any damage to the pipe caused by or occurring during the backfilling operations shall be repaired by a method approved by the Engineer, at no additional cost to the Owner.
- B. Batching and Mixing:
 - 1. Conform to the requirements of accepted submittals and the foaming agent manufacturer's recommendations.
 - 2. All foam grout shall be mechanically mixed to produce a uniform distribution of the materials with a suitable consistency and the specified requirements. Excessive mixing shall be avoided in order to reduce the possibility of changes in unit weight and consistency.
 - 3. In batch mixing operations, follow the manufacturer's recommendations concerning the order of charging the mixer with the various ingredients. The as-cast unit weight shall be monitored at the point of placement. Allowance should be made for any additional mixing that may result from the method of placement, such as mechanical or pneumatic pumping, and for any unit weight changes that may result from these methods.
 - 4. For continuous mixing operations, provision shall be made for reasonably uniform and continuous rate of addition of all mix components at appropriate positions in the mixing machine, and in the correct ratio, to assure uniformity and the specified limiting requirements at the point of placement.
 - 5. Alternative methods for batching and mixing foam grout will be considered by and must be acceptable to the Engineer.
- C. Backfill Grout Placement:
 - 1. All void space outside of the carrier pipe shall be completely filled with backfill grout. Force backfill grout into all irregularities around the tunnel to completely fill the tunnel arch and annulus with backfill grout to the maximum extent possible.

2. Place backfill grout in accordance with approved submittals.
2. Backfilling of the annular space between the pipe and the initial support shall be accomplished by placing backfill in two or more stages (lifts). Monolithic placements (one stage) may be acceptable, provided the contractor can demonstrate that his placement techniques will not induce movement of the pipe, pipe overstressing or excessive deformation.
3. Place backfill grout through horizontal grout pipes inserted into the annular space. Provide positive venting to ensure complete grouting around the carrier pipe, particularly in the invert and crown locations. Begin grouting at a previously completed segment or a bulkhead located most distant from the bulkhead adjacent to open space, and proceed in the direction away from the starting point so as to cause any water remaining in the invert to move ahead of, and not mix with or become trapped by, the backfill grout. Begin grouting at the low end and proceed to the high end. Provide means to allow water and thinned or contaminated grout at the leading edge of the lift to escape.
4. A return port shall be placed at the top of the high end bulkhead. The grout return through the port shall constitute as the termination criteria.
5. Pressure gauges of appropriate range for monitoring the backfill concrete injection pressures shall be located in the line transporting the backfill grout at the point of injection. Injection pressure shall be in accordance with the contractor's submittal as approved by the Engineer, but shall not exceed 15 psi at the point of injection for grouting stages below the crown of the pipe. Injection pressures shall not exceed 60 psi at the point of injection for the final stage that fills the void at the crown of the pipe. Lower pressures may be required to prevent carrier pipe movement or damage.
6. Volume of backfill grout injected shall be measured, recorded and compared with the anticipated volume per foot of pipe backfilled.

3.3 QUALITY

- A. Field control tests, including unit weight (wet density), air content test, and compression tests shall be performed by the contractor and the results submitted to the Engineer. The frequency for testing is specified herein. A greater or lesser number of tests may be made, as required by the Engineer. Assist the Engineer in obtaining additional test cylinders. Supply all materials necessary for fabricating the test cylinders.
- B. Test specimens shall be collected within the tunnel at or near the connection where the backfill grout is being injected.
- C. Provide at or very near the point of injection, a system of valves in the line transporting the foam grout, which will allow easy access for collection of test specimens without disconnecting the line from the outlet. Submit the valve arrangement to the Engineer for review at least 15 days prior to commencing foam grout backfilling operations.
- D. Unit Weight: Unit weight (wet density) tests shall be made from the first batch mixed each day, after a change in mix design, every 30 minutes during pumping, and from each batch of foam grout from which compression test cylinders are made. Unit weight shall be determined in accordance with ASTM C567. Unit weight at the point of placement shall be within plus or minus 5 percent of the unit weight established for the mix design being placed. Adjust mix as required to obtain the specified wet density.
- E. Air Content: An air content test shall be made from the first batch mixed each day, and from each batch of foam grout from which concrete compression test cylinders are made. Air content at the point of placement will be the difference between the wet density at the point of placement less the wet density at the point immediately before the addition of preformed foam. Air content shall be determined in accordance with ASTM C138 except there shall be no vibration or rodding of the sample.

- F. Compression Tests: At least one set of four test cylinders (3 inches by 6 inches) shall be made for each shift when backfill grout is placed. At least one additional set shall be made from each additional 200 cubic yards, or major fraction thereof, placed in any one shift. Two cylinders from each set will be tested at an age of 28 days. Compressive strength of backfill grout shall be considered satisfactory if both of the following requirements are met:
 - 1. Average of three consecutive compressive strength tests equal or exceed the minimum specified unconfined compressive strength.
 - 2. No individual compressive strength test (average of two cylinders) is below the minimum specified unconfined compressive strength by more than 20 percent.
- G. A strength test result shall be the average of two compressive strengths of two cylinders made from the same concrete sample and tested at 28 days. Test cylinders shall be made in the field, cured and stored in the laboratory, and tested in accordance with ASTM C495. Each set of compression test cylinders shall be marked or tagged with the date and time of day the cylinders were made, the location in the work where the backfill grout represented by the cylinder was placed, batch number, unit weight (wet density), and the air content.
- H. Workers, including the Contractor's backfill grouting superintendent and foreman, shall be fully qualified to perform the Work. The grouting superintendent shall have had previous experience under similar ground and tunnel conditions.
- I. The Contractor or subcontractor supplying and placing backfill grout shall be capable of developing a mix design; batching, mixing, handling and placing foam grout under tunnel conditions; have furnished and placed foam grout on at least three tunnels of the general type and the size specified herein that have been in successful operation; and have a record of experience and quality of work using foam grout that is satisfactory to the Engineer. As an alternative, the contractor may employ a manufacturer's representative to supervise supplying and placing of foam grout. The manufacturer's representative shall be capable of complying with the qualifications specified for the contractor and shall be acceptable to the Engineer. The manufacturer's representative shall supervise all backfill grouting operations including training the contractor's personnel, mixing designs, and placement of foam grout in the tunnel.

3.4 CLEANUP

- A. Minimize spilling and prevent the setting of any grout that may escape upon finished pipe or structure surfaces. Remove any spilled grout and restore the pipe or structure surface to its original condition. Properly dispose of all waste materials. Remove all grouting equipment and accessories from the tunnel.

END OF SECTION

SECTION 31 11 00 - SITE PREPARATION

PART 1 - GENERAL

1.1 DEFINITIONS

- A. Interfering or Objectionable Material: Trash, rubbish, and junk; vegetation and other organic matter, whether alive, dead, or decaying; topsoil.
- B. Clearing: Removal of interfering or objectionable material lying on or protruding above ground surface.
- C. Grubbing: Removal of vegetation and other organic matter including stumps, buried logs, and roots greater than 2 inches caliper to a depth of 12 inches below subgrade.
- D. Scalping: Removal of sod without removing more than upper 3 inches of topsoil.
- E. Stripping: Removal of topsoil remaining after applicable scalping is completed.
- F. Project Limits: Areas, as shown or specified, within which Work is to be performed.

1.2 SUBMITTALS

- A. Shop Drawings: Drawings clearly showing clearing, grubbing, and stripping limits.

1.3 QUALITY ASSURANCE

- A. Obtain Engineer's approval of staked clearing, grubbing, and stripping limits, prior to commencing clearing, grubbing, and stripping.

1.4 SCHEDULING AND SEQUENCING

- A. Prepare site only after adequate erosion and sediment controls are in place. Limit areas exposed uncontrolled to erosion during installation of temporary erosion and sediment controls to maximum of 5 acres.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

- A. Clear, grub, and strip areas actually needed for waste disposal, borrow, or site improvements within limits shown or specified.
- B. Do not injure or deface vegetation that is not designated for removal.

3.2 LIMITS

- A. As follows, but not to extend beyond Project limits.
 - 1. Excavation, including trenches, 5 feet beyond top of cut slopes or shored walls.
 - 2. Fill:
 - a. Clearing and Grubbing: 5 feet beyond toe of permanent fill.
 - b. Stripping and Scalping: 2 feet beyond toe of permanent fill.
 - 3. Structures: 15 feet outside of new structures.

- 4. Roadways: Clearing, grubbing, scalping, and stripping 15 feet from centerline.
- 5. Other Areas: As shown.

B. Remove rubbish, trash, and junk from entire area within Project limits.

3.3 CLEARING

- A. Clear areas within limits shown or specified.
- B. Fell trees so that they fall away from facilities and vegetation not designated for removal.
- C. Cut stumps not designated for grubbing to within 6 inches of ground surface.
- D. Cut off shrubs, brush, weeds, and grasses to within 2 inches of ground surface.

3.4 GRUBBING

- A. Grub areas within limits shown or specified.

3.5 SCALPING

- A. Do not remove sod until after clearing and grubbing is completed and resulting debris is removed.
- B. Scalp areas within limits shown or specified.

3.6 STRIPPING

- A. Do not remove topsoil until after scalping is completed.
- B. Strip areas within limits to minimum depths shown or specified. Do not remove subsoil with topsoil.
- C. Stockpile strippings, meeting requirements for topsoil, separately from other excavated material.

3.7 TREE REMOVAL OUTSIDE CLEARING LIMITS

- A. Remove Within Project Limits: Dead, dying, leaning or otherwise unsound trees that may strike and damage Project facilities in falling.
- B. Cut stumps off flush with ground, remove debris and if disturbed, restore surrounding area to its original condition.
- C. Trees subject for removal is at discretion of City Engineer.

3.8 TOPSOIL

- A. Natural, friable, sandy loam, obtained from well-drained areas, free from objects larger than 1-1/2 inches maximum dimension, and free of subsoil, roots, grass, other foreign matter, hazardous or toxic substances, and deleterious material that may be harmful to plant growth or may hinder grading, planting, or maintenance.

3.9 DISPOSAL

- A. Clearing and Grubbing Debris:
 - 1. Dispose of debris
 - 2. Burning of debris will not be allowed.
 - 3. Woody debris may be chipped. Chips may be sold to CONTRACTOR'S benefit or used for landscaping as mulch or uniformly mixed with topsoil, provided that resulting mix will be fertile and not support combustion. Maximum dimensions of chipped material used shall be 1/4-inch by 2 inch. Dispose of chips that are unsaleable or unsuitable for landscaping or other uses with unchipped debris.
 - 4. Limit disposal of clearing and grubbing debris to locations that are approved by federal, state, and local authorities, and that will not be visible from Project.
- B. Scalpings: As specified for clearing and grubbing debris.
- C. Strippings:
 - 1. Dispose of strippings that are unsuitable for topsoil or that exceed quantity required for topsoil
 - 2. Stockpile topsoil in sufficient quantity to meet Project needs. Dispose of excess strippings as specified for clearing and grubbing.

END OF SECTION

SECTION 31 23 16.16 – TRENCHING FOR WATER AND SEWER LINES

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes excavation required for the construction of water and sewer pipes and appurtenances.
- B. Related sections:
 - 1. Section 31 23 23.16 – Trench Backfill
 - 2. Section 31 23 19 - Dewatering
 - 3. Section 33 34 13 – Ductile Iron Water Transmission Pipe and Fittings
 - 4. Section 33 41 19 – Pipe Laying
 - 5. Section 33 34 16 – PVC Pipe and Fittings

1.2 GENERAL

- A. General Requirements: See Division 01, GENERAL REQUIREMENTS, which contains information and requirements that apply to the work specified herein and are mandatory for this project.
- B. Provide and install trench bracing and shoring that conforms to the requirements of 29 CFR Part 1926 Subpart P of the OSHA Standards. Bracing shall be so arranged as not to place any strain on portions of completed work until the construction has proceeded far enough to provide ample strength.
- C. Over excavation, whether by Contractor's negligence or at direction of the Engineer, shall be repaired to required lines and grades.
- D. Trenches shall be dug to the alignment and depth required and shall not advance more than 100 feet ahead of the completed pipe, unless otherwise permitted by the Engineer.

1.3 UTILITIES

- A. Contractor shall call the Texas811 two working days before starting excavation. The Texas811 phone number is 800-344-8377.
- B. The location and/or elevation of existing utilities as shown on these plans is based on records of the various utility companies and, where possible, measurements taken in the field. The information is not to be relied upon as being exact or complete. The Contractor must call each utility owner at least two working days before any excavation to request exact field location of utilities.
- C. Protect utilities encountered during excavation.
- D. Do not interrupt service in utilities encountered during excavation without approval of the utility owner.
- E. If utilities are damaged or utility service is interrupted by work under this section, the utility owner has the first right to repair. If public health or safety is at risk, Contractor shall take appropriate prudent action to repair damage and service interruption. Costs of utility protection and repair shall be at no additional cost to the Owner.

- F. If existing utilities are found to interfere with the permanent facility being constructed, notify the Engineer for instructions. Do not proceed with permanent relocation of utilities without written instructions from the Engineer.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

- A. Shall be as specified in Section 31 23 23.16, TRENCH BACKFILL

PART 3 - EXECUTION

3.1 GENERAL

- A. Notify property residents two working days prior to beginning excavation on property.
- B. Excavated materials not suitable for backfill or embankment shall not be incorporated into the project but shall be disposed of by Contractor.
- C. Excavate with caution so that structures and underground conduits can be protected.
- D. Excavate every type of material encountered to the lines and elevations necessary to complete the project.
- E. Reroute surface water before excavating and protect excavated trench from entrance of surface water.
- F. In general, the sheeting and bracing shall be removed as the trench or excavation is backfilled, and in such a manner as to avoid the caving in of the bank or disturbance of adjacent areas or structures. The voids left by the withdrawal of sheeting shall be backfilled the same as trench excavations.
- G. Provide "before and after" color photographs of lawns and gardens to Engineer.
- H. Comply with Section 33 41 19, PIPE LAYING.

3.2 TRENCH DEPTH

- A. Excavate to the elevation necessary to provide the depth of bedding material under the barrel of the pipe, noted on the plans or in these specifications, whichever is greater.
- B. All over-excavation up to 2 feet shall be backfilled with bedding material in 6-inch layers and tamped to a bearing capacity equal to the adjacent undisturbed earth. Over excavation greater than 2 feet will require excavation operation to stop until an engineered backfill is determined. Over excavation shall not proceed until approved by Engineer. Contractor shall bear all expense involved if he fails to obtain prior approval from the Engineer.

3.3 TRENCH WIDTH

- A. Excavate to the width shown in detail drawings. Specified width dimensions must be maintained from trench bottom to an elevation 12 inches above barrel of pipe. Over-width excavation will require excavation operation to stop until additional earth loads can be compared to strength of pipe. Costs of unauthorized deviation from the specified width will be borne by the Contractor.

3.4 TRENCH LENGTH

- A. Excavate to a maximum distance of 100 feet from the pipe jointing operation. Longer distances will be considered when conditions warrant.

3.5 EXCAVATION IN ROCK

- A. When rock is encountered, excavate to an elevation 6 inches below the pipe and to the trench width as shown in the details at no additional cost to Owner.

3.6 EXCAVATION IN UNSUITABLE SOIL

- A. Where, in the judgment of the Engineer, the planned bottom of trench is found to be unstable, excavation shall stop until an engineered subgrade stabilization method is determined.

3.7 EXCAVATION IN WET CONDITIONS

- A. Where the planned bottom of trench contains water or the trench bottom is soft from excess water, excavation depth shall increase a minimum of 6 inches or as directed by the Engineer.

3.8 EXCAVATION IN UNFORESEEN STRUCTURE

- A. Preserve unforeseen structures encountered in excavation.
- B. Advise the Engineer when unforeseen structure interferes with planned work. Engineer will determine if plan will change or if structure will be abandoned.

3.9 UNAUTHORIZED EXCAVATION

- A. Unauthorized excavation is removal of materials beyond specified elevations or dimensions without the Engineer or Owner's specific prior approval.

3.10 UNSUITABLE AND EXCESS EXCAVATED MATERIAL:

- A. Excavated material not suitable for backfill and excess excavated material shall be disposed of by Contractor in a manner approved by the Engineer and applicable governmental regulations.

3.11 EXCAVATION DEWATERING:

- A. Refer to requirements in Section 31 23 19 DEWATERING
- B. Wellpointing or deep wells, where required to keep the excavation dry and the subgrade stable, shall be installed when the excavation extends to within two (2) feet of the water table, except as herein provided, and shall be in continuous operation until backfill is completed to this level.
- C. When construction equipment is to be operated in an area that has been excavated, and wellpointing or deep wells are required to keep the excavation dry and the subgrade stable, the wellpointing or deep wells shall be installed when the excavation extends to within five (5) feet of the water table.
- D. There shall be sufficient pumping equipment, in good working order, readily available at all times to remove any water that accumulates in excavations to the extent that a stable subgrade is obtained.

- E. Where the excavation crosses natural drainage channels, the work shall be conducted in such a manner that unnecessary damage or delays in the prosecution of the work will be prevented.
- F. Trench dewatering shall discharge to an approved location in conformance with the Stormwater Pollution Prevention Plan.
- G. Wellpoint dewatering for the sewer line construction will not be mandatory where a properly stabilized subgrade can be obtained by use of granular bedding. If granular bedding is utilized by the Contractor for stabilization of the trench bottom in lieu of wellpointing, such bedding material will not be measured for separate payment but will be considered subsidiary to the pipe installation.
- H. Where dewatering might be necessary to properly install the sewer line, such as at drainage channel crossings and tunnel or boring locations, the Contractor shall submit his proposal for this dewatering to the Owner for approval.
- I. Dewatering operations shall continue until pipe has been backfilled and a sufficient cover depth has been reached to prevent flotation of pipe.

END OF SECTION

SECTION 31 23 19 – DEWATERING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Work required to dewater excavations.
- B. Related sections:
 - 1. Section 01 50 00 – Temporary Facilities and Controls.

1.2 WATER CONTROL PLAN

- A. As a minimum, include:
 - 1. Descriptions of proposed groundwater and surface water control facilities including, but not limited to, equipment; methods; standby equipment and power supply, pollution control facilities, discharge locations to be utilized, and provisions for immediate temporary water supply as required by this section.
 - 2. Drawings showing locations, dimensions, and relationships of elements of dewatering system.
- B. If system is modified during installation or operation revise or amend and resubmit Water Control Plan.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

- A. Remove and control surface and subsurface water during periods when necessary to properly accomplish Work.

3.2 SURFACE WATER CONTROL

- A. See Section 01 50 00, TEMPORARY FACILITIES AND CONTROLS.
- B. Remove surface runoff controls when no longer needed.

3.3 DEWATERING SYSTEMS

- A. Provide, operate, and maintain dewatering systems of sufficient size and capacity to permit excavation and subsequent construction in dry and to lower and maintain groundwater level a minimum of 2 feet below the lowest point of excavation. Continuously maintain excavations free of water, regardless of source, and until backfilled to final grade.
- B. Design and Operate Dewatering Systems:
 - 1. To prevent loss of ground as water is removed.
 - 2. To avoid inducing settlement or damage to existing facilities, completed Work, or adjacent property.
 - 3. To relieve artesian pressures and resultant uplift of excavation bottom.
 - 4. Prevent softening, loosening or otherwise disturbing the excavation subgrade.
- C. Provide sufficient redundancy in each system to keep excavation free of water in event of component failure.

- D. Provide supplemental ditches and sumps only as necessary to collect water from local seeps.

3.4 DISPOSAL OF WATER

- A. Obtain discharge permit for water disposal from authorities having jurisdiction.
- B. Treat water collected by dewatering operations, as required by regulatory agencies, prior to discharge.
- C. Discharge water as required by discharge permit and in manner that will not cause erosion or flooding, or otherwise damage existing facilities, completed Work, or adjacent property.
- D. The discharge of ground water into treatment facilities will not be permitted unless specifically authorized by the Owner. Remove solids from treatment facilities and perform other maintenance of treatment facilities as necessary to maintain their efficiency. If Owner allows groundwater discharge into facilities.

3.5 PROTECTION OF PROPERTY

- A. Make assessment of potential for dewatering induced settlement. Provide and operate devices or systems, including but not limited to reinjection wells, infiltration trenches and cutoff walls, necessary to prevent damage to existing facilities, completed Work, and adjacent property.
- B. Securely support existing facilities, completed Work, and adjacent property vulnerable to settlement due to dewatering operations. Support shall include, but not be limited to, sheeting bracing, underpinning, or compaction grouting.

3.6 REMEDIATION OF GROUNDWATER AFTER DEPLETION

- A. If dewatering reduces quantity or quality of water produced by existing wells, temporarily supply water to affected well owners from other sources. Furnish water of a quality and quantity equal to or exceeding the quality and quantity available to the well owner prior to beginning Work or as satisfactory to each well owner.

END OF SECTION

SECTION 31 23 23.13 - FILL AND BACKFILL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Work and materials required for fill and backfill for all excavations other than trench type excavations.
- B. Related sections:
 - 1. Section 02 41 00 – Demolition.
 - 2. Section 03 30 00 – Cast-In-Place Concrete.
 - 3. Section 31 23 23.16 – Trench Backfill.

1.2 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. American Society for Testing and Materials (ASTM):
 - a. ASTM C117, Standard Test Method for Materials Finer Than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing.
 - b. ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - c. ASTM D75, Standard Practice for Sampling Aggregates.
 - d. ASTM D698, Standard Test Methods for Laboratory Characteristics of Soil Using Modified Effort (12,400 ft-lbf/ft³).
 - e. ASTM D1556, Standard Test Method for Density of Soil in Place by the Sand Cone Method.
 - f. ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³).
 - g. ASTM D6938, Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
 - h. ASTM D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
 - i. ASTM D4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

1.3 DEFINITIONS

- A. Relative Compaction:
 - 1. Ratio, in percent, of as-compacted field dry density to laboratory maximum dry density as determined in accordance with ASTM D698.
 - 2. Apply corrections for oversize material to either as-compacted field dry density or maximum dry density, as determined by Engineer.
- B. Optimum Moisture Content:
 - 1. Determined in accordance with ASTM D698 specified to maximum dry density for relative compaction.
 - 2. Determine field moisture content on basis of fraction passing 3/4-inch sieve.
- C. Relative Density: Calculated in accordance with ASTM D4254 based on maximum index density determined in accordance with ASTM D4253 and minimum index density determined in accordance with ASTM D4254.
- D. Prepared Ground Surface: Ground surface after completion of required demolition, clearing and grubbing, scalping of sod, stripping of topsoil, excavation to grade, and preparation.

- E. Completed Course: A course or layer that is ready for next layer or next phase of Work.
- F. Lift: Loose (uncompacted) layer of material.
- G. Geosynthetics: Geotextiles, geogrids, or geomembranes.
- H. Well-Graded:
 - 1. A mixture of particle sizes with no specific concentration or lack thereof of one or more sizes.
 - 2. Does not define numerical value that must be placed on coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters.
 - 3. Used to define material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.
- I. Influence Area: Area within planes sloped downward and outward at 60-degree angle from horizontal measured from:
 - 1. 1-foot outside outermost edge at base of foundations or slabs.
 - 2. 1-foot outside outermost edge at surface of roadways or shoulder.
 - 3. 0.5-foot outside exterior at spring line of pipes or culverts.
- J. Borrow Material: Material from required excavations or from designated borrow areas on or near site.
- K. Selected Backfill Material/Earthfill: Materials available onsite that Engineer determines to be suitable for specific use.
- L. Imported Material: Materials obtained from sources suitable for specified use.
- M. Structural Fill: Fill materials as required under structures, pavements, and other facilities.
- N. Embankment Material: Fill materials required to raise existing grade in areas other than under structures.
- O. Standard Specification: The latest edition, including supplements of the Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges.

1.4 SUBMITTALS

- A. Quality Control Submittals:
 - 1. Catalog and manufacturer's data sheets for compaction equipment.
 - 2. Certified test results from independent testing agency.

1.5 QUALITY ASSURANCE

- A. Notify Engineer when:
 - 1. Structure is ready for backfilling, and whenever backfilling operations are resumed after a period of inactivity.
 - 2. Soft or loose subgrade materials are encountered wherever embankment or site fill is to be placed.
 - 3. Fill material appears to be deviating from Specifications.

1.6 SEQUENCING AND SCHEDULING

- A. Complete applicable Work specified in Sections 02 41 00, DEMOLITION; 31 11 00 and SITE PREPARATION prior to placing fill or backfill.
- B. Backfill against concrete structures only after concrete has attained compressive strength, specified in Section 03 30 00, CAST-IN-PLACE CONCRETE. Obtain acceptance of concrete work and attained strength prior to placing backfill.
- C. Backfill around water-holding structures only after completion of satisfactory leakage tests as specified in Section 03 30 00, CAST-IN-PLACE CONCRETE.

PART 2 - PRODUCTS

2.1 SOURCE QUALITY CONTROL

- A. Gradation Tests: It will be the Contractor's responsibility to conduct testing as necessary to locate acceptable sources of imported material.
- B. Samples: Collected in accordance with ASTM D75: Clearly mark to show source of material and intended use.
- C. Material containing more than 10 percent gravel, stones or shale particles is unacceptable.
- D. Provide imported material of equivalent quality, if required to accomplish Work.

2.2 EARTHFILL

- A. Excavated material from required excavations, free from rocks larger than 3 inches, from roots and other organic matter, ashes, cinders, trash, debris, and other deleterious materials.

2.3 GRANULAR FILL

- A. Type A, 1-inch minus crushed gravel or crushed rock. Free from coarse to fine and containing sufficient fines to bind material when compacted, but with maximum 8 percent by weight passing no.200 sieve.

2.4 SAND

- A. Free from clay, organic matter, or other deleterious material.
- B. Gradation in accordance with ASTM C117 and ASTM C136.

Sieve Size	Percent Passing by Weight
1/4 -inch	100
No.4	95-100
No.200	0-8

2.5 WATER FOR MOISTURE CONDITIONING

- A. Free of hazardous or toxic contaminants, or contaminants deleterious to proper compaction.

2.6 FOUNDATION STABILIZATION ROCK

- A. Crushed rock or pit run rock.
- B. Uniformly graded from coarse to fine.
- C. Free from excessive dirt and other organic material.
- D. Maximum 2-1/2 inches particle size.

PART 3 - EXECUTION

3.1 GENERAL

- A. Keep placement surfaces free of water, debris, and foreign material during placement and compaction of fill and backfill materials.
- B. Place and spread fill and backfill materials in horizontal lifts of uniform thickness, in a manner that avoids segregation, and compact each lift to specified densities prior to placing succeeding lifts. Slope lifts only where necessary to conform to final grades or as necessary to keep placement surfaces drained of water.
- C. During filling and backfilling, keep level of fill and backfill around each structure and buried tank even.
- D. Do not place fill or backfill, if fill or backfill material is frozen, or if surface upon which fill or backfill is to be placed is frozen.
- E. If pipe, conduit, duct bank, or cable is to be laid within fill or backfill:
 1. Fill or backfill to an elevation 2 feet above top of item to be laid.
 2. Excavate trench for installation of item.
 3. Install bedding, if applicable, as specified in Section 31 23 23.16, TRENCH BACKFILL.
 4. Install item.
 5. Backfill envelope zone and remaining trench, as specified in Section 31 23 23.16, TRENCH BACKFILL, before resuming filling or backfilling specified in this section.
- F. Tolerances:
 1. Final Lines and Grades: Within a tolerance of 0.1-foot unless dimensions or grades are shown or specified otherwise.
 2. Grade to establish and maintain slopes and drainage as shown. Reverse slopes are not permitted.
- G. Settlement: Correct and repair any subsequent damage to structures, pavements, curbs, slabs, piping, and other facilities, caused by settlement of fill or backfill material.
- H. Fill and backfill materials shall be conditioned to a water content that is within 2 percentage points (plus or minus) of the optimum required for compaction as determined by ASTM D698.

3.2 BACKFILL UNDER AND AROUND STRUCTURES

- A. Under Facilities: Within influence area beneath structures, slabs, pavements, curbs, piping, conduits, duct banks, and other facilities, backfill with granular fill, unless otherwise shown. Place granular fill in lifts of 6-inch maximum thickness and compact each lift to minimum of 95 percent relative compaction as determined in accordance with ASTM D698, Method C.
- B. Subsurface Drainage: Backfill with granular drain material, where shown. Place granular drain material in lifts of 6-inch maximum thickness and compact each lift to minimum of 90 percent relative density.
- C. Other Areas: Backfill with earthfill to lines and grades shown, with proper allowance for topsoil thickness where shown. Place in lifts of 6-inch maximum thickness and compact each lift to minimum 95 percent relative compaction as determined in accordance with ASTM D698, Method C.

3.3 FILL

- A. Outside Influence Areas Beneath Structures, Tanks, Pavements, Curbs, Slabs, Piping, and Other Facilities: Unless otherwise shown, place earthfill as follows:
 - 1. Allow for 6-inch thickness of topsoil where required.
 - 2. Maximum 9-inch thick lifts.
 - 3. Place and compact fill across full width of embankment.
 - 4. Compact to minimum 95 percent relative compaction as determined in accordance with ASTM D698, Method C.
 - 5. Dress completed embankment with allowance for topsoil, crest surfacing, and slope protection, where applicable.

3.4 SITE TESTING

- A. Gradation:
 - 1. One sample from each 400 tons of finished product or more often as determined by Engineer, if variation in gradation is occurring, or if material appears to depart from Specifications.
 - 2. If test results indicate material does not meet Specification requirements, terminate material placement until corrective measures are taken.
 - 3. Remove material placed in Work that does not meet Specification requirements.
- B. In-Place Density Tests: In accordance with ASTM. During placement of materials, test as follows:
 - 1. One test per every other lift per 200 lineal feet of roadway or trench.
 - 2. A minimum of two tests on granular fill beneath structures.
 - 3. A minimum of two test per 300 cubic yards during backfilling of walls.
- C. Testing shall be the Contractor's responsibility and conducted by persons experienced in such work.

3.5 REPLACING OVEREXCAVATED MATERIAL,

- A. Replace excavation carried below grade lines shown or established by Engineer as follows:
 - 1. Beneath Footings: Concrete of strength equal to that of respective footing.
 - 2. Beneath Fill or Backfill: Same material as specified for overlying fill or backfill.
 - 3. Beneath Slabs-On-Grade: Granular fill.
 - 4. Trenches:

- a. Unauthorized Overexcavation: Either trench stabilization material or granular pipe base material, as specified in Section 31 23 23.16, TRENCH BACKFILL.
 - b. Authorized Overexcavation: Trench stabilization material, as specified in Section 31 23 23.16, TRENCH BACKFILL.
- 5. Permanent Cut Slopes (Where Overlying Area is Not to Receive Fill or Backfill):
 - a. Flat to Moderate Steep Slopes (3: 1, Horizontal Run: Vertical Rise or Flatter): Earthfill.
 - b. Steep Slopes (Steeper than 3: 1):
 - 1) Correct overexcavation by transitioning between areas and designed slope adjoining areas, provided such cutting does not extend offsite or outside easements and right-of-ways, or adversely impacts existing facilities, adjacent property, or completed Work.
 - 2) Backfilling overexcavated areas is prohibited unless, in opinion, backfill will remain stable, and overexcavated material is replaced as compacted earth fill.

END OF SECTION

SECTION 31 23 23.16 - TRENCH BACKFILL

PART 1 - GENERAL

1.1 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. American National Standards Institute (ANSI): 253.1, Safety Color Code.
 2. American Public Works Association (APWA): Uniform Color Code for Temporary Marking of Underground Utility Locations.
 3. American Society for Testing and Materials (ASTM):
 - a. ASTM D448, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
 - b. ASTM C94, Specification for Ready-Mixed Concrete.
 - c. ASTM C117, Standard Test Method for Materials Finer than 75 micrometer (No. 200) Sieve in Mineral Aggregates by Washing.
 - d. ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - e. ASTM C150, Standard Specification for Portland Cement.
 - f. ASTM C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
 - g. ASTM D422, Standard Test Method for Particle-Size Analysis of Soils.
 - h. ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil using Standard Effort (12,400 ft-lbf/cubic ft).
 - i. ASTM D1140, Standard Test Methods for Amount of Material in Soils Finer than the No. 200 (75 micrometer) Sieve.
 - j. ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil using Modified Effort (56,000 ft-lbf).
 - k. ASTM D3776, Standard Test Methods for Mass per Unit Area (Weight) of Fabric.
 - l. ASTM D3786, Standard Test Method for Bursting Strength of Textile Fabrics: Diaphragm Bursting Strength Tester Method.
 - m. ASTM D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
 - n. ASTM D4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
 - o. ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
 - p. ASTM D4533, Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
 - q. ASTM D4832, Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.
 - r. ASTM D4991, Standard Test Method for Leakage Testing of Empty Rigid Containers by Vacuum Method.
 - s. ASTM D5034, Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test).

1.2 DEFINITIONS

- A. Base Rock: Granular material upon which manhole bases and other structures are placed.
- B. Bedding Material: Granular material upon which pipes, conduits, cables, or duct banks are placed.
- C. Imported Material: Material obtained by the Contractor from source(s) offsite.
- D. Lift: Loose (uncompacted) layer of material.

- E. Pipe Zone: Backfill zone that includes full trench width and extends from prepared trench bottom to an upper limit above top outside surface of pipe, conduit, cable or duct bank.
- F. Prepared Trench Bottom: Graded trench bottom after stabilization and installation of bedding material.
- G. Relative Compaction: The ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by ASTM D698. Corrections for oversize material may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the Engineer.
- H. Relative Density: As defined by ASTM D4253 and ASTM D4254.
- I. Selected Backfill Material: Material available that the Engineer determines to be suitable for a specific use.
- J. Well-Graded: A mixture of particle sizes that has no specific concentration or lack thereof of one or more sizes producing a material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids. Well-Graded does not define any numerical value that must be placed on the coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters.

1.3 SUBMITTALS

- A. Shop Drawings: Manufacturer's descriptive literature for marking tapes.
- B. Samples:
 - 1. Trench stabilization material.
 - 2. Bedding and pipe zone material.
 - 3. Granular drain.
 - 4. Granular backfill.
 - 5. Earth backfill.
 - 6. Sand(s).
 - 7. Geotextile.
- C. Quality Control Submittals: Catalog and manufacturer's data sheets for compaction equipment.
- D. Certified Gradation Analysis: Submit not less than 30 days prior to delivery for imported materials or anticipated use for excavated materials, except for trench stabilization material that will be submitted prior to material delivery to site.
- E. Controlled Low Strength Material: Certified mix design and test results. Include material types and weight per cubic yard for each component of mix.

PART 2 - PRODUCTS

2.1 MARKING TAPE

- A. Plastic:
 - 1. Inert polyethylene, impervious to known alkalis, acids, chemical reagents, and solvents likely to be encountered in soil.
 - 2. Thickness: Minimum 4 mils.
 - 3. Width: 12 inches.
 - 4. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.

5. Manufacturers and Products:
 - a. Reef Industries; Terra Tape.
 - b. Allen; Markline.

- B. Color: In accordance with APWA Uniform Color Code for Temporary Marking of Underground Facilities.

Color ^a	Facility
Red	Electric power lines, cables, conduit, and lightning cables
Orange	Communicating alarm or signal lines, cables, or conduit
Yellow	Gas, oil, steam, petroleum, or gaseous materials
Green	Sewers and drain lines
Blue	Water, irrigation, and slurry lines
^a As specified in ANSI Z53.1, Safety Color Code.	

2.2 TRENCH STABILIZATION MATERIAL

- A. Clean, hard, durable 3-inch minus crushed rock gravel, or pit run, free from clay balls, other organic materials, or debris.
- B. Uniformly graded from coarse to fine, less than 8 percent by weight passing the 1/4-inch sieve.

2.3 BEDDING MATERIAL AND PIPE ZONE MATERIAL

- A. Unfrozen, friable, and no clay balls, roots, or other organic material.
- B. Clean or gravelly sand with less than 5 percent passing No. 200 sieve, as determined in accordance with ASTM D1140, or gravel or crushed rock within maximum particle size and other requirements as follows unless otherwise specified.
 1. Duct Banks: 3/4-inch maximum particle size.
 2. PVC Irrigation System Piping, and Ductile Iron Pipe with Polyethylene Wrap: 3/8-inch maximum particle size.
 3. Pipe Under 18 Inches Diameter: 3/4-inch maximum particle size, except 1/4-inch for stainless steel pipe, copper pipe, tubing, and plastic pipe under 3 inches diameter.
 4. Pipe Greater than 18 Inches Diameter: 1-1/2-inch maximum particle size for ductile iron pipe, concrete pipe, welded steel pipe, and pretensioned or prestressed concrete cylinder pipe. 3/4-inch maximum particle size for PVC, FRP, or HDPE Pipe.
 5. Perforated Pipe: Granular drain material.
 6. Conduit and Direct-Buried Cable:
 - a. Sand, clean or clean to silty, less than 12 percent passing the No. 200 sieve.
 - b. Individual Particles: Free of sharp edges.
 - c. Maximum Size Particle: Pass a No. 4 sieve.
 - d. If more than 5 percent passes No. 200 sieve, the fraction that passes No. 40 sieve shall be nonplastic as determined in accordance with ASTM D4318.

2.4 EARTH FILL

- A. As specified in Section 31 23 23.13, FILL AND BACKFILL.

2.5 CONTROLLED LOW STRENGTH FILL

- A. Select and proportion ingredients to obtain compressive strength between 50 and 150 psi at 28 days in accordance with ASTM D4832.
- B. Materials:
 - 1. Cement: ASTM C150, Type I or II.
 - 2. Aggregate: ASTM C33, Size 7.
 - 3. Fly Ash (if used): ASTM C618, Class C.
 - 4. Water: Clean, potable, containing less than 500 ppm of chlorides.

2.6 CONCRETE BACKFILL

- A. Provide as specified in Section 03 30 00, CAST-IN-PLACE CONCRETE.

2.7 TOPSOIL

- A. Topsoil removed and stockpiled from onsite excavation.

2.8 SOURCE QUALITY CONTROL

- A. Perform gradation analysis in accordance with ASTM C136 for:
 - 1. Earth backfill, including specified class(es).
 - 2. Trench stabilization material.
 - 3. Bedding and pipe zone material.
- B. Certify Laboratory Performance of Mix Designs:
 - 1. Controlled low strength fill.
 - 2. Concrete.

PART 3 - EXECUTION

3.1 TRENCH PREPARATION

- A. Water Control: Conform to Section 31 23 19, DEWATERING.
 - 1. Promptly remove and dispose of water entering trench as necessary to grade trench bottom and to compact backfill and install manholes, pipe, conduit, direct-buried cable, or duct bank. Do not place concrete, lay pipe, conduit, direct-buried cable, or duct bank in water.
 - 2. Remove water in a manner that minimizes soil erosion from trench sides and bottom.
 - 3. Provide continuous water control until trench backfill is complete.
- B. Remove foreign material and backfill contaminated with foreign material that falls into trench.

3.2 TRENCH BOTTOM

- A. Firm Subgrade: Grade with hand tools, remove loose and disturbed material, and trim off high areas and ridges left by excavating bucket teeth. Allow space for bedding material if shown or specified.
- B. Soft Subgrade: If it is encountered that it may require removal to prevent pipe settlement, notify Engineer. Engineer will determine the depth of over-excavation, if any, required.

3.3 TRENCH STABILIZATION MATERIAL INSTALLATION

- A. Rebuild trench bottom with trench stabilization material.
- B. Place material over full width of trench in 6-inch lifts to required grade, providing allowance for bedding thickness.
- C. Compact each lift so as to provide a firm, unyielding support for the bedding material prior to placing succeeding lifts.

3.4 BEDDING

- A. Furnish imported bedding material where, in the opinion of the Engineer, excavated material unsuitable for bedding or insufficient in quantity.
- B. Place over the full width of the prepared trench bottom in two equal lifts when the required depth exceeds 8 inches.
- C. Hand grade and compact each lift to provide a firm, unyielding surface.
- D. Minimum Thickness:
 - 1. Pipe, 15-inch and Smaller: 4 inches.
 - 2. Pipe, 18-inch to 36 inch: 6 inches.
 - 3. Pipe, 42-inch and Larger: 12 inches.
 - 4. Conduit: 3 inches.
 - 5. Direct-Buried Cable: 3 inches.
 - 6. Duct Banks: 3 inches.
- E. Check grade and correct irregularities in bedding material. Loosen top 1 to 2 inches of compacted bedding material with a rake or by other means to provide a cushion before laying each section of pipe, conduit, direct-buried cable, or duct bank.
- F. Install to form continuous and uniform support except at bell holes, if applicable, or minor disturbances resulting from removal of lifting tackle.
- G. Bell or Coupling Holes: Excavate in bedding at each joint to permit proper assembly and inspection of joint and to provide uniform bearing along barrel of pipe or conduit.

3.5 BACKFILL PIPE ZONE

- A. Upper limit of pipe zone shall not be less than following:
 - 1. Pipe: 12 inches above top of pipe, unless shown otherwise.
 - 2. Conduit: 3 inches above top of conduit, unless shown otherwise.
 - 3. Direct-Buried Cable: 3 inches above top of cable, unless shown otherwise.
 - 4. Duct Bank: 3 inches above top of duct bank, unless shown otherwise.
- B. Restrain pipe, conduit, cables, and duct banks as necessary to prevent their movement during backfill operations.
- C. Place material simultaneously in lifts on both sides of pipe and, if applicable, between pipes, conduit, cables, and duct banks installed in same trench.
 - 1. Pipes 10 Inches and Smaller Diameter: First lift less than or equal to pipe-diameter.
 - 2. Pipes Over 10 Inches Diameter: Maximum 6-inch lifts.

- D. Thoroughly tamp each lift, including area under haunches, with handheld tamping bars supplemented by "walking in" and slicing material under haunches with a shovel to ensure that voids are completely filled before placing each succeeding lift.
- E. After the full depth of the pipe zone material has been placed as specified, compact the material by a minimum of three passes with a vibratory plate compactor only over the area between the sides of the pipe and the trench walls.
- F. Do not use power-driven impact compactors to compact pipe zone material.

3.6 MARKING TAPE INSTALLATION

- A. Continuously install marking tape along centerline of all buried piping, at depth of 2 feet. Coordinate with piping installation drawings.
 - 1. Metallic Marking Tape: Install with nonmetallic piping
 - 2. Plastic Marking Tape: Install with metallic piping.

3.7 BACKFILL ABOVE PIPE ZONE

- A. General:
 - 1. Process excavated material to meet specified gradation requirements.
 - 2. Adjust moisture content as necessary to obtain specified compaction.
 - 3. Do not allow backfill to free fall into the trench or allow heavy, sharp pieces of material to be placed as backfill until after at least 2 feet of backfill has been provided over the top of pipe.
 - 4. Do not use power driven impact type compactors for compaction until at least 4 feet of backfill is placed over top of pipe.
 - 5. Backfill to grade with proper allowances for topsoil, crushed rock surfacing, and pavement thicknesses, wherever applicable.
 - 6. Backfill around structures with same class backfill as specified for adjacent trench unless otherwise shown or specified.
- B. Select Excavated Backfill:
 - 1. Place in lifts not exceeding 9-inch thickness.
 - 2. Mechanically compact each lift to a minimum of 95 percent relative compaction prior to placing succeeding lifts.
- C. Excavated Backfill: Backfill trench above the pipe zone with granular backfill in lifts not exceeding 8 inches. Compact each lift to a minimum of 95 percent relative compaction prior to placing succeeding lifts.
- D. Concrete Backfill:
 - 1. Place above bedding.
 - 2. Minimum Concrete Thickness: 6 inches on top and sides of pipe.
 - 3. Do not allow dirt or foreign material to become mixed with concrete during placement.
 - 4. Allow sufficient time for concrete to reach initial set before additional backfill material is placed in trench.
 - 5. Prevent flotation of pipe.
 - 6. Begin and end concrete backfill within 4 inches of a pipe joint on each end.
 - 7. Do not encase pipe joints except within the limits of the concrete backfill.
- E. Controlled Low Strength Fill:
 - 1. Discharge from truck mounted drum type mixer into trench.
 - 2. Place in lifts as necessary to prevent uplift (flotation) of new and existing facilities.

3.8 REPLACEMENT OF TOPSOIL

- A. Replace topsoil in top 6 inches of backfilled trench.
- B. Maintain the finished grade of topsoil even with adjacent area and grade as necessary to restore drainage.

3.9 MAINTENANCE OF TRENCH BACKFILL

- A. After each section of trench is backfilled, maintain the surface of the backfilled trench even with the adjacent ground surface until final surface restoration is completed.
- B. Gravel Surfacing Rock: Add gravel surfacing rock where applicable and as necessary to keep the surface of the backfilled trench even with the adjacent ground surface, and grade and compact as necessary to keep the surface of backfilled trenches smooth, free from ruts and potholes, and suitable for normal traffic flow.
- C. Topsoil: Add topsoil where applicable and as necessary to maintain the surface of the backfilled trench level with the adjacent ground surface.
- D. Asphaltic Pavement: Replace settled areas or fill with asphalt as specified in Section 32 12 16, ASPHALT CONCRETE PAVEMENT.
- E. Other Areas: Add excavated material where applicable and keep the surface of the backfilled trench level with the adjacent ground surface.

3.10 SETTLEMENT OF BACKFILL

- A. Settlement of trench backfill, or of fill or facilities constructed over trench backfill, will be considered a result of defective compaction of trench backfill.

END OF SECTION

DIVISION 32

EXTERIOR IMPROVEMENTS

SECTION 32 31 13 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. American Society for Testing and Materials (ASTM):
 - a. ASTM A121, Standard Specification for Metallic-Coated Carbon Steel Barbed Wire.
 - b. ASTM A392, Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
 - c. ASTM A491, Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric.
 - d. ASTM A1018, Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Carbon, Commercial, Drawing, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
 - e. ASTM A824, Standard Specification for Metallic-Coated Steel Marcellled Tension Wire for Use with Chain Link Fence.
 - f. ASTM B6, Standard Specification for Zinc.
 - g. ASTM C94, Standard Specification for Ready-Mixed Concrete.
 - h. ASTM C143, Standard Test Method for Slump of Hydraulic-Cement Concrete.
 - i. ASTM C387, Standard Specifications for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar.
 - j. ASTM F552, Standard Terminology Relating to Chain Link Fencing.
 - k. ASTM F567, Standard Practice for Installation of Chain-Link Fence.
 - l. ASTM F626, Standard Specification for Fence Fittings.
 - m. ASTM F668, Standard Specification for Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric.
 - n. ASTM F900, Standard Specification for Industrial and Commercial Swing Gates.
 - o. ASTM F1043, Standard Specification for Strength and Protective Coatings on Steel Industrial Chain Link Fence Framework.
 - p. ASTM F1083, Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.
 - q. ASTM F1183, Standard Specifications for Aluminum Alloy Chain Link Fence Fabric.
 - r. ASTM F1184, Standard Specifications for Industrial and Commercial Horizontal Slide Gates.
 2. Institute of Electrical and Electronic Engineers (IEEE), Inc.: National Electrical Safety Code.
 3. National Electrical Manufacturers Association (NEMA): 250, Enclosures for Electrical Equipment (1,000 volts max.).

1.2 DEFINITIONS

- A. Terms as defined in ASTM.

1.3 SUBMITTALS

- A. Shop Drawings:
1. Detailed information and specifications for materials, finishes, and dimensions.
 2. Card access system serial communication interface card code message format.
- B. Samples: Approximately 6 inches square, or 6 inches long of posts, rails, braces, fabric, wire, ties, and fittings.

- C. Quality Control Submittals:
 1. Manufacturer's recommended installation instructions.
 2. Evidence of Supplier and installer qualifications.

1.4 SCHEDULING AND SEQUENCING

- A. Complete necessary site preparation and grading before installing chain link fence and gates.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Match style, finish, and color of each fence component with that of other fence components.

2.2 CHAIN LINK FENCE FABRIC

- A. Galvanized fabric conforming to ASTM, Class 1; galvanized after weaving.
- B. Height: 72 inches, unless otherwise shown.
- C. Wire Gauge: No. 9, barewire.
- D. Pattern: 2-inch diamond-mesh.
- E. Diamond Count: Manufacturer's standard and consistent for fabric furnished of same height.
- F. Loops of Knuckled Selvages: Closed or nearly closed with space not exceeding diameter of wire.
- G. Wires of Twisted Selvages:
 1. Twisted in a closed helix three full turns.
 2. Cut at an angle to provide sharp barbs that extend minimum 1/4-inch beyond twist.

2.3 POSTS

- A. General:
 1. Strength and Stiffness Requirements: ASTM F1043, Light Industrial Fence, except as modified in this section.
 2. Steel Pipe: ASTM F1083.
 3. Roll-Formed Steel Shapes: from ASTM A1018, Grade 45, Steel.
 4. Lengths: Manufacturer's standard with allowance for minimum embedment below finished grade of 22 inches plus 3 inches for each 1 foot of fence height greater than 4 feet.
 5. Protective Coatings:
 - a. Zinc Coating: ASTM F1043, Type A external and internal coating.
- B. Line Posts:
 1. Steel Pipe:
 - a. Outside Diameter: 2.375-inch.
 - b. Weight: 3.65 pounds per foot.
- C. End, Corner, Angle, and Pull Posts:
 1. Steel Pipe:
 - a. Outside Diameter: 2.875-inch.
 - b. Weight: 5.79 pounds per foot.

- D. Posts for Swing Gates:
 - 1. ASTM F900.
 - a. Outside Dimensions: 4-inch diameter.
 - b. Weight: 6.56 pounds per foot.

2.4 TOP RAILS AND BRACE RAILS

- 1. Galvanized steel pipe.
- 2. Protective Coatings: As specified for posts.
- 3. Strength and Stiffness Requirements: ASTM F1043, Top Rail, Heavy or Light Industrial Fence.
- 4. Steel Pipe:
 - a. ASTM F1083.
 - b. Outside Diameter: 1.66-inch.
 - c. Weight: 2.27 pounds per foot.

2.5 FENCE FITTINGS

- A. General: In conformance with ASTM F626, except as modified by this article.
- B. Post and Line Caps: Designed to accommodate passage of top rail through cap, where top rail required.
- C. Tension and Brace Bands: No exceptions to ASTM.
- D. Tension Bars:
 - 1. One-piece, no exceptions to ASTM F626.
 - 2. Equal in length to full height of fabric.
- E. Truss Rod Assembly: 3/8-inch diameter.
- F. Barb Arms: 45-degree arms for supporting three strands of barbed wire.

2.6 TENSION WIRE

- A. Zinc-coated steel marcelled tension wire conforming to ASTM A824, Type II, Class 2.

2.7 BARBED WIRE

- A. Zinc-Coated Barbed Wire: ASTM A121, Chain Link Fence Grade:
 - 1. Line Wire: Two strands of No. 12-112 gauge.
 - 2. Barbs:
 - a. Number of Points: Four.
 - b. Length: 318-inch minimum.
 - c. Shape: Round.
 - d. Diameter: No. 14-gauge.
 - e. Spacing: 5 inches.

2.8 GATES

- A. General:
 - 1. Gate Operation: Opened and closed easily by one person.
 - 2. Welded Steel Joints: Paint with zinc-based paint.
 - 3. Chain Link Fabric: Attached securely to gate frame at intervals not exceeding 15 inches.
- B. Swing Gates: ASTM F900.

1. Hinges:
 - a. Furnished with large bearing surfaces for clamping in position.
 - b. Designed to swing either 180 degrees outward, 180 degrees inward, or 90 degrees in or out, as shown, and not twist or turn under action of gate.
2. Latches: Plunger bar arranged to engage stop, except single gates of openings less than 10 feet wide may each have forked latch.
3. Gate Stops: Mushroom type or flush plate with anchors, suitable for setting in concrete.
4. Locking Device and Padlock Eyes: Integral part of latch, requiring one padlock for locking both gate leaves of double gates.
5. Hold-Open Keepers: Designed to automatically engage gate leaf and hold it in open position until manually released.

2.9 CONCRETE

- A. Provide as specified in Section 03 30 00, CAST-IN-PLACE CONCRETE.

2.10 REPAIR AND SALVAGE OF EXISTING FENCE

- A. Non-Salvageable or Non-Reusable Parts:
 1. Fence posts.
 2. Gate posts.
 3. End, corner angle, and pull posts.
 4. Tension and brace bands.
 5. Tension wire.
- B. Salvageable or Reusable Items:
 1. Fence fabric.
 2. Post caps.
 3. Top rails and brace rails.
 4. Truss rod assemblies.
 5. Barb arms.
 6. Barbwire.
- C. All items noted as salvageable shall not be bent, twisted, dented, or damaged in any way. Any such items will not be considered for reuse.
- D. All items not considered for salvage or reuse shall be disposed of offsite at the Contractor's expense. See Section 02 41 00, DEMOLITION.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install chain link fences and gates in accordance with ASTM F567, except as modified in this section, and in accordance with fence manufacturer's recommendations, as approved by Engineer. Erect fencing in straight lines between angle points.
- B. Provide all necessary hardware for a complete fence and gate installation.

3.2 PREPARATION

- A. Establish locations of fence lines, gates, and terminal posts.

3.3 POST SETTING

- A. Driven posts are not acceptable.
- B. Post Hole Depth:
 - 1. Minimum 3 feet below finished grade.
 - 2. 2 inches deeper than post embedment depth below finish grade.
- C. Backfill post holes with concrete to 2 inches above finished grade.
- D. Before concrete sets, crown and finish top of concrete to readily shed water.

3.4 BRACING

- A. Brace gate and corner posts diagonally to adjacent line posts to ensure stability.

3.5 TOP RAILS

- A. Install top rail sleeves with springs at 105 feet maximum spacing to permit expansion in rail.

3.6 CHAIN LINK FABRIC

- A. Do not install fabric until concrete has cured minimum 7 days.
- B. Install fabric with twisted and barbed selvage at top.

3.7 BARBED WIRE

- A. Install three strands of barbed wire on brackets, tighten, and secure at each bracket.

3.8 GATES

- A. Hang gates and adjust hardware so gates operate satisfactorily from open or closed position.
- B. Set gate stops in concrete to engage center drop rod or plunger bar.

3.9 FIELD QUALITY CONTROL

- A. Gate Tests: Prior to acceptance of installed gates and gate operator systems, demonstrate proper operation of gates under each possible open and close condition specified.

3.10 REUSE OF EXISTING FENCE MATERIAL

- A. Existing fence material shall be installed on new posts using new tension bars, brace bands, and tension wire.
- B. Existing fence fabric shall not be spliced to new fence fabric at mid-length between posts where the existing fence fabric ends. A pull post shall be installed with new brace bands, tension bands, and tension wire. Provide a knuckled selvage at the cut portion of the fence as shown on the Drawings.

END OF SECTION

SECTION 32 91 13 - SODDING, SEEDING, FERTILIZING, AND MULCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Sodding.
 - 2. Fertilizer.
 - 3. Mulch.
 - 4. Seed.
 - 5. Preparation.
 - 6. Maintenance.
- B. Related Sections:
 - 1. Section 31 23 16.16 – Trenching for Water and Sewer Lines
 - 2. Section 31 23 23.16 – Trench Backfill
- C. Alternate Methods and Products:
 - 1. Alternate methods from those specified will be considered for use, provided that in the Engineer's opinion the end product will be equal to or exceed that which would result from the specified methods and products.

1.2 DEFINITIONS

- A. Weeds:
 - 1. Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wold Garlic, Perennial Sorrel, and Brome Grass.

1.3 REGULATORY REQUIREMENTS

- A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.4 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

1.5 MAINTENANCE DATA

- A. Submit maintenance data for continuing Owner maintenance.
- B. Include maintenance instruction, cutting method, maximum grass height, types, application frequency, and recommended coverage of fertilizer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- B. Deliver fertilizer in water proof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 - PRODUCTS

2.1 AGRICULTURAL LIMESTONE

- A. Shall be agricultural limestone with not less than 90 percent passing the No. 4 sieve and containing not less than 40 percent calcium carbonate equivalent. Lime shall be applied at the rate recommended by soil test.

2.2 FERTILIZER

- A. Shall be a standard commercial product which when applied at the proper rate will supply the equivalent quantity of total nitrogen, available phosphoric acid and soluble potash specified. Fertilizer shall be delivered to the site in bags or other suitable containers, each fully labeled, conforming to applicable state fertilizer laws, and bearing the name, trade name or trademark, and warranty of the producer.
- B. Requirements per acre:
1. Six hundred pounds of 17-17-17 grade fertilizer or equivalent.

2.3 MULCH

- A. Shall be vegetative mulch consisting of cereal straw from stalks of oats, rye, wheat or barley. Straw shall be free of prohibited weed seeds as stated in State Seed Law and shall be relatively free of all other noxious and undesirable seeds. Straw shall be clean and bright, relatively free of foreign material and be dry enough to be spread properly.

2.4 SEED

- A. Seed shall be a mixture with the specified minimum purity and germination requirements, as follows:

<u>Seed Type</u>	<u>% Mix (By Wt.)</u>	<u>Purity %</u>	<u>Germination %</u>
Kentucky K-31 Fescue	52	97	85
Creeping Red Fescue	18	85	80
Rye Grass	8	98	85
Rye Grain	22	-	-

Variation in the above mix to suit local conditions or time of year may be required.

- B. Seed shall be labeled in accordance with USDA regulations. Care shall be taken during transportation to avoid segregation of seed mixtures.
- C. Seed shall be sown at a rate of 217 pounds of seed mix per acre for drill seeding. Seed mixture shall be thoroughly mixed prior to application.

2.5 SODDING

- A. Sodding shall consist of furnishing, and placing sod at all locations shown on the Plans, where directed by the Engineer, and in conformity with these Specifications. Sod shall consist of a live, dense, well-rooted growth of permanent grasses, free of weeds and weedy grasses. All sod shall be cleanly cut in strips having a reasonably uniform thickness of not less than 1 inch, a reasonable uniform width of not less than 8 inches, and a length not less than 12 inches. Sod shall be Kentucky 31 Fescue, Bluegrass, or Bermuda grass. It shall be the obligation of the Contractor to secure a satisfactory growth of grass before final acceptance of the project.

PART 3 - EXECUTION

3.1 GENERAL

- A. The application of fertilizer, seed, and mulch shall follow each other in successive sequence as closely as possible. Seeding shall be accomplished in the first of the following two periods after completion of earthwork.

February 15 to May 1st
September 1st to October 1st

- B. Seeding outside the specified seeding periods may be permitted at the Engineer's option, provided the Contractor is willing to make appropriate modifications to his seeding operations, and will guarantee the crop.

3.2 INSPECTION

- A. Contractor must request that Engineer inspect site grading, clean-up and surface preparation to determine if site is ready for the seeding, fertilizing and mulching operations.
- B. Upon Engineer's approval operations may begin.

3.3 SURFACE PREPARATION

- A. Immediately in advance of fertilizing, the surface to be seeded shall be repaired, if necessary, to eliminate all damage from erosion or construction operations. The surface shall then be loosened and thoroughly pulverized by discing, harrowing and raking or other approved methods, to such an extent that it is free from sod, stones, clods, or roots. All growth of vegetation that will seriously interfere with planting operations shall be removed and disposed of as directed. The final surface shall be smooth and uniform, and left in such a condition as to prevent formation of low places and pockets.

3.4 FERTILIZING

- A. Fertilizer and lime shall be dressed evenly over the areas to be seeded using approved mechanical type spreading equipment.
- B. Fertilizer and lime after spreading shall be immediately incorporated into the soil to a depth of approximately 2 inches, by chisel, spike tooth harrow, or other approved methods.

3.5 SEEDING METHODS

- A. General methods:
1. The Contractor shall employ a satisfactory method of sowing by use of either approved mechanical hand seeders or mechanical power-driven drills. When delays in operation carry the work beyond the specified planting seasons, or when conditions are such that by reason of drought, high winds, excessive moisture, or other factors, satisfactory results are not likely to be obtained, seeding shall stop. It will be resumed only where the desired results are probable or when approved alternate procedures have been adopted.
- B. Broadcast seeding:
1. When broadcast seeding is utilized, the seed shall be uniformly broadcast by mechanical hand seeder, in two directions at right-angles to each other and at 1/2 of the specified rate per acre in each direction. After the seed is broadcast it shall be covered by an approved method to a depth of 1/3 inch to 3/4 inch. Broadcast seeding shall not be done in windy weather.

- C. Drill seeding:
 - 1. When drilling is utilized, it shall be done with approved equipment best suited to perform the work under prevailing conditions. The seed shall be uniformly drilled to a depth of one-third (1/3) inch to three-fourths (3/4) inch at the rate per acre specified. Drill seeding may be required in windy weather.
- D. Prior to start of seeding, the Contractor shall demonstrate that the application of seed is being made at the specified rate. A final check of the total quantity of seed used shall be made against the area seeded. If the check shows that the Contractor has not applied seed at the specified rate, he shall uniformly distribute seed at a rate calculated to meet the shortage.
- E. The Contractor shall maintain the seeded areas until all fertilizing, seeding and mulching is complete and the work accepted by the Engineer. Areas damaged from the Contractor's own operations shall be repaired at his expense. After acceptance of the work the Contractor will not be held responsible for erosion due to weather, or conditions not due to the Contractor's own operations or negligence. The Contractor is not required to guarantee a crop, if seeding is done during the specified seeding periods.

3.6 MULCHING

- A. Immediately after seeding, the Contractor shall apply vegetative mulch at a rate between 1-1/2 and 2-1/2 tons per acre to all seeded areas. Quantity of mulch shall be adjusted within the above limits, as directed by the Engineer, to the particular area or slope being mulched. Total application of mulch for the project shall average approximately 2 tons per acre. Mulch shall be applied by mechanical mulch spreaders equipped to eject by means of a constant air stream controlled quantities of the vegetative mulch.
- B. Mulch shall be embedded by a disc type roller having flat serrated discs spaced not more than 10 inches apart, with cleaning scrapers for each disc.
- C. Where indicated, or in areas of the project where soil conditions are not suitable for satisfactory crimping, asphalt emulsion shall be applied with the mulching operation. The normal rate of application shall be 100 gallons per ton of straw; however, this rate may be varied as directed by the Engineer to suit the particular area or slope conditions.
- D. All mulch shall be distributed evenly over the areas to be mulched within 24 hours after the seeding operation. Following the mulching operation, suitable precautions shall be taken to prohibit traffic over mulched areas. Displaced mulch shall be replaced immediately, including repair of the underlying seed bed, if damaged as well.

3.7 MAINTENANCE

- A. The Contractor shall maintain all seeded areas until the grass is properly established (not less than 90 days) until satisfactory development. Maintenance shall be continued until final acceptance of the work.
- B. Maintenance of seeded areas shall include protecting, watering, mowing, fertilizing, and such other work as may be necessary to establish a permanent lawn. The Contractor shall reseed those seeded areas in which a satisfactory growth is not obtained, and shall refill any areas which become eroded prior to final acceptance of the work.
- C. Paved areas shall be kept clean while maintenance operations are in progress.

3.8 REPLACEMENT

- A. The Contractor shall replace all trees, shrubs, and flowers damaged by construction activities in the areas designated on the construction plans. The replacement trees and shrubs shall be equal in size to the damaged or removed specimen.

END OF SECTION

DIVISION 33

UTILITIES

SECTION 33 11 11 – PIPING LEAKAGE TESTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Work, materials, and procedures required to test installed piping other than gravity sewer piping.
- B. Related sections:
 - 1. Section 01 33 00 – Submittal Procedures.

1.2 SUBMITTALS

- A. Submittals shall be made as required in Section 01 33 00, SUBMITTAL PROCEDURES. The following specific information shall be provided:
 - 1. Quality Control Submittals:
 - a. Testing Plan: Submit at least 30 days prior to testing and include at least the information that follows.
 - 1) Testing dates.
 - 2) Piping systems and sections(s) to be tested.
 - 3) Test type.
 - 4) Method of isolation.
 - 5) Calculation of maximum allowable leakage for piping sections(s) to be tested.
 - b. Certifications of Calibration: Testing equipment.
 - c. Certified Test Report.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Notify Engineer in writing 5 days in advance of testing. Perform testing in presence of Engineer.
- B. Pressure Piping:
 - 1. Install temporary thrust blocking or other restraint as necessary to protect adjacent piping or equipment and make taps in piping prior to testing.
 - 2. Wait 5 days minimum after concrete thrust blocking is installed to perform pressure tests. If high-early strength cement is used for thrust blocking, wait may be reduced to 2 days.
 - 3. Prior to test, remove or suitably isolate appurtenant instruments or devices that could be damaged by pressure testing.
 - 4. New Piping connected to Existing Piping:
 - a. Isolate new piping with grooved-end pipe caps, spectacle blinds, blind flanges, or as acceptable to Engineer.
 - b. Test joint between new piping and existing piping by methods that do not place entire existing system under test load, as approved by Engineer.
 - 5. Items that do not require testing include: Equipment seal drains, tank overflows to atmospheric vented drains, and tank atmospheric vents.
 - 6. Test Pressure: As indicated on the Piping Schedule.
- C. Test section may be filled with water and allowed to stand under low pressure prior to testing.
- D. Gravity Piping:
 - 1. Perform test as specified hereinafter.

2. Perform testing after service connections, manholes, and backfilling have been completed between stations to be tested.
3. Determine groundwater level at time of testing by exploratory holes or other method acceptable to Engineer.

3.2 HYDROSTATIC TEST FOR PRESSURE PIPING

- A. Test piping as indicated in pipe schedule.
- B. Fluid: Clean water of such quality to prevent corrosion of materials in piping system.
- C. Exposed Piping:
 1. Perform testing on installed piping prior to application of insulation.
 2. Maximum Filling Velocity: 0.25 feet per second, applied over full area of pipe.
 3. Vent piping during filling: Open vents at high points of piping system or loosen flanges, using at least four bolts, or use equipment vents to purge air pockets.
 4. Maintain hydrostatic test pressure continuously for 60 minutes, minimum, and for such additional time as necessary to conduct examinations for leakage.
 5. Examine joints and connections for leakage.
 6. Correct visible leakage and retest as specified.
 7. Empty pipe of water prior to final cleaning.
- D. Buried Piping:
 1. Test after backfilling has been completed.
 2. Expel air from piping system during filling.
 3. Apply and maintain specified test pressure with hydraulic force pump. Valve off piping system when test pressure is reached.
 4. Maintain hydrostatic test pressure continuously for 2 hours minimum, reopening isolation valve only as necessary to restore test pressure.
 5. Determine actual leakage by measuring quantity of water necessary to maintain specified test pressure for duration of test.
 6. Maximum Allowable Leakage:

$$L = \frac{S D \sqrt{P}}{133,200}$$
 Where:
 - L = Allowable leakage, in gallons per hour.
 - S = Length of pipe tested, in feet.
 - D = Nominal diameter of pipe, in inches.
 - P = Test pressure during leakage test, in pounds per square inch.
 7. Correct leakage greater than allowable, and retest as specified.

3.3 PNEUMATIC TEST FOR PRESSURE PIPING

- A. Test piping as indicated in pipe schedule.
- B. Do not perform on:
 1. PVC or CPVC pipe.
 2. Piping larger than 18 inches.
 3. Buried and other non-exposed piping.
- C. Fluid: Oil-free, dry air.
- D. Procedure:

1. Apply preliminary pneumatic test pressure of 25 psig maximum to piping system prior to final leak testing, to locate visible leaks. Apply soap bubble mixture to joints and connections, examine for leakage.
 2. Correct visible leaks and repeat preliminary test until visible leaks are corrected.
 3. Gradually increase pressure in system to half of specified test pressure. Thereafter increase pressure in steps of approximately one-tenth of specified test pressure until required test pressure is reached.
 4. Maintain pneumatic test pressure continuously for minimum of 10 minutes and for such additional time as necessary to conduct soap bubble examination for leakage.
 5. Correct visible leakage and retest as specified.
- E. Allowable Leakage: Piping system, exclusive of possible localized instances at pump or valve packing, shall show no visual evidence of leakage.
- F. After testing and final cleaning, purge with nitrogen those lines that will carry flammable gases to assure no explosive mixtures will be present in system during filling process.
- 3.4 HYDROSTATIC TEST FOR 18-INCH THROUGH 30-INCH GRAVITY PIPING.
- A. Testing Equipment Accuracy: Plus or minus 1/2-gallon of water leakage under specified conditions.
- B. Maximum Allowable Leakage: 0.16 gallons per hour per inch diameter per 100 feet. Include service connection footage in test section, subjected to minimum head specified.
- C. Exfiltration Test:
1. Hydrostatic Head:
 - a. At least 6 feet above maximum estimated groundwater level in section being tested.
 - b. No less than 6 feet above inside top of highest section of pipe in test section, including service connections.
 2. Length of Pipe Tested: Limit length such that pressure on invert of lower end of section does not exceed 30 feet of water column.
- D. Infiltration Test:
1. Groundwater Level: At least 6 feet above inside top of highest section of pipe in test section, including service connections.
- E. Piping with groundwater infiltration rate greater than allowable leakage rate for exfiltration will be considered *defective* even if pipe previously passed a leakage test.
- F. *Defective* Piping Sections: Replace or test and seal individual joints, and retest as specified.
- 3.5 PNEUMATIC TEST FOR GRAVITY PIPING 12-INCH AND SMALLER
- A. Equipment:
1. Calibrate gauges with standardized test gauge at start of each testing day.
 2. Install gauges, air piping manifolds, and valves at ground surface.
 3. Provide pressure release device, such as rupture disc or pressure relief valve, to relieve pressure at 6 psi or less.
 4. Restrain plugs used to close sewer lines to prevent blowoff.
- B. Procedure:
1. Require that no person enter manhole where pipe is under pressure.
 2. Slowly introduce air into pipe section until internal air pressure reached 4 psi greater than average back pressure of groundwater submerging pipe.

3. Allow 2 minutes minimum for air temperature to stabilize.

- C. Allowable Leakage: Test section will be considered *defective* when time required for pressure to decrease from 3.5 to 2.5 psi greater than average back pressure of groundwater submerging pipe is less than that computed utilizing values from following table:

D.

TABLE 1*					
A	B	C	D	E	F
Pipe Diameter (Inches)	Time per Foot up to Length in Col C (Seconds)	Test Length (Feet)	Test Time for any Length Between Col C & E	Length at Which time in Col F Applies (Feet)	Time per Foot for Total Length (Seconds)
	0.18	636	1:54	1.114	0.10
	0.40	424	2:50	743	0.23
	0.71	318	3:47	557	0.41
10	1.11	255	4:43	446	0.63
12	1.60	212	5:40	371	0.91
15	2.50	170	7:05	297	1.42
18	3.62	141	8:30	248	2.06
21	4.92	121	9:55	212	2.81
24	6.42	106	11:20	187	3.67
EXAMPLE: 15-inch diameter pipe: For 150 feet, T = 2.50 sec (Col B) x 150 ft = 375 sec – 6:15 For 250 feet, T = 7:05 (Col D) For 500 feet, T = 1.42 sec (Col F) x 500 ft = 710 sec = 11:50					
* Based on 0.003 cfm per square foot with a minimum significant loss of 2 cfm and a maximum loss of 3.5 cfm.					

- E. Piping with groundwater infiltration rate greater than allowable leakage rate for exfiltration will be considered *defective* even if pipe previously passed a leakage test.
- F. *Defective* Piping Sections: Replace or test and seal individual joints, and retest as specified.

3.6 JOINT TESTING FOR 36-INCH AND LARGER GRAVITY PIPING

- A. The Contractor shall develop a numbering system for the pipeline joints so that the test logs can be tied to the tested joint.

- B. The Contractor shall develop a test system that allows the Engineer reasonable access for witnessing the joint testing. The contractor shall submit his proposed testing plan to the Engineer for approval prior to the start of testing.
- C. Pressurize the void at the joint with air to 3.5 psi greater than the pressure exerted by groundwater above the pipe. Allow the air pressure and temperature to stabilize before shutting off the air supply, and start of test timing. If pressure holds, or drops less than 1 psi in 5 seconds, the joint is acceptable.
- D. If there is any visible leakage within the pipeline after the joint testing, repairs will be required before the pipeline is accepted.

3.7 FIELD QUALITY CONTROL

- A. Test Report Documentation:
 - 1. Test date.
 - 2. Description and identification of piping tested.
 - 3. Test fluid.
 - 4. Test pressure.
 - 5. Remarks, including:
 - a. Leaks (type, location).
 - b. Repair/replacement performed to remedy excessive leakage.
 - 6. Signed by Contractor and Engineer to represent that test has been satisfactorily completed.

END OF SECTION

SECTION 33 13 00 - DISINFECTION OF WATER SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Work, material, and procedures for disinfection of installed potable water lines.
- B. Related sections:
 - 1. Section 01 33 00 – Submittal Procedures.

1.2 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. American Water Works Association (AWWA):
 - a. AWWA B300, Hypochlorites.
 - b. AWWA B301, Liquid Chlorine.
 - c. AWWA B303, Sodium Chlorite.
 - d. AWWA C651, Disinfecting Water Mains.
 - e. AWWA C652, Disinfection of Water-Storage Facilities.
 - f. AWWA C653, Disinfection of Water Treatment Plants.
 - g. AWWA C654, Disinfection of Wells.
 - 2. Standard Methods for the Examination of Water and Wastewater, as published by American Public Health Association, American Water Works Association, and the Water Environment Federation.

1.3 QUALITY ASSURANCE

- A. Independent Testing Agency: Certified in the state of Texas, with 10 years' experience in field of water sampling and testing. Agency shall use calibrated testing instruments and equipment, and documented standard procedures for performing specified testing.

1.4 QUALITY CONTROL SUBMITTALS

- A. Procedures and plans for disinfection and testing.
- B. Type of disinfecting solution and method of preparation.

1.5 SEQUENCING AND SCHEDULING

- A. Commence disinfection after completion of following:
 - 1. Completion and acceptance of internal painting of system(s).
 - 2. Hydrostatic and pneumatic testing, pressure testing, functional and performance testing and acceptance of pipelines, pumping systems, structures, and equipment.

PART 2 - PRODUCTS

2.1 WATER FOR DISINFECTION AND TESTING

- A. Clean, uncontaminated, and potable.
- B. Owner will supply potable quality water, Contractor shall convey in disinfected pipelines or containers.

2.2 CONTRACTOR'S EQUIPMENT

- A. Furnish chemicals and equipment, such as pumps and hoses, to accomplish disinfection.
- B. Water used to fill pipeline may be supplied using temporary connection to existing distribution system. Provide protection against cross-connections as required by AWWA C651.

2.3 MIXING DISINFECTANT.

- A. Prepare solution by mixing any of following as described below. The purpose of the stock solution is to facilitate mixing and dilution to ensure a uniform disinfecting solution. The Contractor will not be required to mix a stock solution if a liquid chlorine gas feed system that can accurately feed a desired amount of chlorine to mix a final (dilute) disinfecting solution is used.
 - 1. Liquid chlorine gas conforming to AWWA B301 and water mixture.
 - 2. Dry chlorine gas conforming to AWWA B301.
 - 3. Calcium hypochlorite conforming to AWWA B300 or sodium hypochlorite conforming to AWWA B303 powder or liquid and water mixture.
- B. Feed dry chlorine gas through devices to regulate the rate of flow and ensure uniform diffusion of gas into water within the pipe or vessel being treated. Chlorinating devices for feeding chlorine gas solution or the gas itself shall prevent of water into chlorine cylinder.
- C. Use following proportions of hypochlorite or chlorine to water:
 - 1. Chlorine Gas or Liquid (100 Percent Cl): 1 pound per 1 1.75 gallons water.
 - a. Apply liquid chlorine gas-water solution by means of a solution feed chlorinating device.
 - 2. Calcium Hypochlorite (65 to 70 Percent Cl): 1 pound per 7.5 gallons water.
 - a. If calcium hypochlorite is used, first mix dry powder with water to make a thick paste, then thin to a 1 percent solution (10,000 ppm chlorine).
 - 3. Sodium Hypochlorite (5.25 Percent Cl): 1 gallon per 4.25 gallons water.
 - a. If sodium hypochlorite procedure is used, dilute the liquid with water to obtain a 1 percent solution.

PART 3 - EXECUTION

3.1 GENERAL

- A. Conform to AWWA C651 for pipes and pipelines, except as modified in these specifications.
- B. Disinfect pumps and pipelines, installed or modified under this Project, intended to hold, transport, or otherwise contact potable water:
 - 1. Disinfect new pipelines that connect to existing pipelines up to the point of connection.
 - 2. Disinfect surfaces of materials that will contact finished water, both during and following construction using spray method described below.
 - 3. Disinfect prior to contact with finished water. Take care to avoid recontamination following disinfection.
- C. Prior to application of disinfectants, clean equipment and pipelines of loose and suspended material. Flush pipelines until clear of suspended solids and color. Use water suitable for flushing and disinfecting.
- D. Conform to AWWA C651 for pipes and pipelines, C652 for tanks and reservoirs, and AWWA C654 for wells, except as modified in these Specifications.

- E. Allow freshwater and stock disinfectant solution to flow into the pipe or vessel at a measured rate so that the chlorine-water solution is at the specified strength. Do not place concentrated commercial disinfectant in the pipeline or vessel before it is filled with water.

3.2 PIPING AND PIPELINES

- A. Flushing:
 1. Before disinfecting, flush all foreign matter from pipeline. Provide hoses, temporary pipes, ditches, and other conduits as needed to dispose of flushing water without damage to adjacent properties. Flushing velocities shall be at least 2.5 fps. For large diameter pipe, where it is impractical or impossible to flush the pipe at specified velocity, clean the pipeline in-place from the inside by brushing and sweeping, then flush the line.
 2. Flush pipelines through flushing branches and remove branches after flushing is completed. Operate valves during flushing process at least twice during each flush.
 3. Flush service connections and hydrants. Flush distribution lines prior to flushing hydrants and service connections.
- B. Disinfecting Solution: Chlorine-water solution having a free chlorine concentration of not less than 50 ppm.
- C. Disinfecting Procedure: In accordance with AWWA C651, unless herein modified.
- D. Pipelines larger than 24 may be disinfected by spraying in accordance with method described in AWWA C652.
- E. Point of Application:
 1. Inject chlorine mixture into pipeline to be treated at beginning of line through corporation stop or suitable tap in top of pipeline.
 2. Control water from existing system to flow slowly into pipeline during application of chlorine.
 3. Control rate of chlorine solution flow in proportion to rate of water entering pipe so that combined mixture shall contain not less than 50 ppm of free available chlorine.
 4. Prevent of chlorine solution into line supplying water.
- F. Retention Period:
 1. Retain treated water in pipeline for at least 24 hours to destroy all nonspore-forming bacteria. At end of 24 hour period, disinfecting solution shall contain at least 10 ppm of free chlorine or the pipeline shall be recleaned, disinfecting solution shall be reapplied, and specified procedure repeated.
 2. Operate valves, hydrants, and appurtenances during disinfection to ensure that disinfecting solution is dispersed into all parts of pipeline, including dead-ends and areas that otherwise may not be treated.
 3. After disinfection, flush water from the permanent source until water through the pipeline is equal chemically and bacteriologically to permanent source of supply.

3.3 PUMPS

- A. Disinfecting Solutions: Minimum free chlorine concentration of 200 ppm.
- B. Disinfecting Procedure: In accordance with AWWA unless herein modified.
- C. Application:
 1. Inject the disinfecting solution into the pump and associated piping and circulate for a minimum 2 hour period of time. At the end of the 2 hour period, the solution shall have a strength of at least 100 ppm free chlorine.

2. Operate valves and/or pump appurtenances during disinfection to ensure that the disinfecting solution is dispersed into all parts of the pumps and lines.
3. If the disinfecting solution contained in the pumps has a residual free chlorine concentration less than 100 ppm after the 2 hour retention period, reclean the pump, reapply disinfecting solution, and retest until a satisfactory test result is obtained.
4. After chlorination, flush the water from the pumps until the water through the units is chemically and bacteriologically equal to the permanent source of supply.

3.4 DISPOSAL OF DISINFECTING WASTEWATER

- A. Do not allow flow into a waterway without neutralizing disinfectant residual.
 1. See AWWA C652 for acceptable neutralization methods.

3.5 TESTING

- A. Test Equipment:
 1. Clean containers and equipment used in sampling and assure they are free of contamination.
 2. Obtain sampling bottles with instructions for handling from and independent testing laboratory.
- B. Chlorine Concentration Sampling and Analysis:
 1. Sampling Frequency for Disinfecting Solution: Two samples per disinfecting procedure.
 2. Residual Free Chlorine Samples: Two samples per disinfecting procedure.
 3. Dechlorinated Disinfecting Wastewater Residual Samples: Two samples per disinfecting procedure.
 4. Sampling Locations: Each 1,000 feet of pipeline or each building.
 5. Analysis to be performed by the Owner's laboratory.
- C. After pipelines have been cleaned, disinfected, and refilled with potable water, Owner will take water Samples and have them analyzed for conformance to bacterial limitations for public drinking water supplies. Samples shall be analyzed for coliform concentrations in accordance with the latest edition of Standard Methods for the Examination of Water and Wastewater.
 1. A minimum of two Samples on each of 2 consecutive days from each separable structure every 1,000 feet of pipeline will be obtained and analyzed by standard procedures outlined by state and local regulatory agencies.
- D. If the minimum Samples required above are not bacterially negative, the disinfecting procedures and bacteriological testing shall be repeated on the respective facilities until bacterial limits are met.

END OF SECTION

SECTION 33 31 13 – STEEL ENCASEMENT PIPE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the Work necessary to provide and install steel encasement pipe for water and sewer lines.
- B. Related sections:
 - 1. Section 13 47 13 – Cathodic Protection
 - 2. Section 31 23 16.13 – Trenching for Water and Sewer Lines
 - 3. Section 31 23 23.16 – Trenching Bedding and Backfill for Water and Sewer Lines
 - 4. Section 33 41 19 – Pipe Laying

1.2 SUBMITTALS

- A. General: Administrative, shop drawings, samples, quality control, and contract closeout submittals shall conform to the requirements of Section 01 33 00, SUBMITTAL PROCEDURES.
- B. In addition to the requirements of Section 01 33 00, SUBMITTAL PROCEDURES, submit the following additional specific information:
 - 1. Quality Control Submittals:
 - a. Steel encasement diameter, and thickness.
 - b. End seal shop drawings.
 - c. Coating materials
 - d. Casing spacer shop drawings.
 - e. Special shipping, storage and protection, and handling instructions.
 - f. Test procedures.
 - g. Test results, reports, and certifications.

PART 2 - PRODUCTS

2.1 ENCASEMENT PIPE

- A. Encasement pipe shall be used to provide a conduit for the carrier pipe passing below roadways, railroads, or other surfaces where the encasement pipe must be installed by jack and boring or at times open cut. Details for steel encasement are shown on the Plans.
- B. Encasement pipe shall also be used to isolate new water lines in the proximity of existing sewer line to prevent possible sewage contamination of the water system. The locations, lengths and diameters are shown on the Plans.
- C. Steel encasement pipes shall be of the lengths shown on the Drawings and meet the requirements as specified herein. The encasement pipe shall be a smooth wall, welded steel pipe conforming to the latest requirements of ASTM A139, Grade B, ASTM A211 or ASSA C202, Grade B with minimum yield strength of 35,000 psi. The encasement pipe shall be new. USED PIPE SHALL NOT BE ALLOWED. The minimum diameter wall thickness for various nominal diameters of carrier pipes is shown below:

Carrier Pipe Nominal Diameter (inches)	Steel Encasement Pipe Diameter (inches)	Steel Encasement Pipe Minimum Wall Thickness (inches)
6	12	0.2500
8	16	0.3125
10	20	0.3750
12	20	0.3750
14	24	0.4375
16	24	0.4375
18	30	0.5000
20	30	0.5000
24	36	0.5625
30	42	0.6250
36	48	0.6880

- D. In instances where encasement pipe is being used to isolate the water line, the minimum length of encasement pipe shall be 20 linear feet. The encasement pipe shall be centered on the crossing water or sewer line.
- E. Casing pipe shall have a red oxide primer inside and out (from manufacturer) in accordance with AWWA C-210.

2.2 CASING SPACERS

- A. Shall be HDPE spacers manufactured by RACI, or approved equal per the City of Celina Approved Product List.
- B. Spacers shall be designed to support the carrier within the casing and to maintain a maximum clearance of one (1) inch between the casing pipe and runner. Spacers shall be 8 inches wide for carrier pipes up to 14 inches in diameter and 12 inches wide for carrier pipes greater than 14 inches in diameter.
- C. The quantity of runners shall be dependent on the carrier pipe diameter as follows, unless otherwise approved:

Carrier Pipe Nominal Diameter	Quantity of Runners
≤ 14 inches	4
16-36 inches	6
42-48 inches	8

- D. Runners shall be abrasion resistant glass-filled polymer or ultra-high weight molecular polyethylene, with a minimum length of seven (7) inches and a minimum width of one (1) inch. Risers, when required, shall be stainless steel and welded to the band. Interior surfaces of the circular stainless steel band shall be lined with a minimum thickness of 0.09 inches of EPDM or PVC, or approved alternative.

2.3 RUBBER END SEALS

- A. Rubber end seals shall be installed on both ends of the encasement pipe. They shall be the Pull-On type secured to the encasement pipe and the carrier pipe via T-304 stainless steel worm gear bands. The rubber end seals shall be as manufactured by CCI Piping Systems; model ESC, Cascade Waterworks Mfg. Co.; model CCES. or approved equal.

PART 3 - EXECUTION

3.1 EXCAVATION

- A. Highway Bore: Do not set up equipment or begin excavating pit on state highway right-of-way without permission of Texas Department of Transportation Division Engineer or his authorized representative.
- B. Railroad Bore: Do not set up equipment or begin excavating pit on or near railroad property without permission of the respective railroad company.
- C. Highway and railroad permits will be obtained by the Owner. Contractor shall coordinate with Engineer on obtaining Right-of-Way permit from railroad and shall conform to all requirements there in.

3.2 INSTALLATION, ENCASEMENT PIPE

- A. General
 - 1. Install encasement pipe at grade and alignment shown on Plans. Allow for height of casement spacers when establishing grade for gravity line encasement pipe. Refer to Standard Details.
- B. Bores
 - 1. Excavate pits and trenches required at each side of crossing to minimum width and length necessary for boring and jacking operation and carrier pipe installation.
 - 2. Carefully set steel guide rails in pit to attain specified grade and alignment.
 - 3. Keep pit pumped free of standing water. Maintain pit bottom to provide stable base for rails and equipment and firm footing for workmen. Granular material used in bottom of pit will not be paid for as extra work, it is subsidiary to encasement pipe.
 - 4. Provide temporary sheeting and bracing as necessary to prevent earth slides.
 - 5. Bore tunnel and simultaneously jack encasement pipe forward one section at a time. Connect sections by full penetration butt welding performed in accordance with AWS D1.1.
 - 6. Remove excavated soil from boring operation as it enters pit and dispose of it offsite.
 - 7. All bored encasement pipe shall be installed by the dry boring and jacking method. Wet boring shall not be allowed.
 - 8. Installation of the encasement shall be carried out in such manner that there will be no settlement of the ground surface above the encasement. The Contractor shall take all precautions to prevent caving of the soils ahead of the pipe. During encasement installation, the Contractor shall use all care to minimize annular space (voids) between the outside of the encasement pipe and the surrounding ground. Therefore, the outside of encasement pipe installed by boring and jacking shall be pressure grouted to eliminate voids as specified below, unless excepted therein. Only the dry bore method shall be used. WATER JETTING OR SIMILAR METHODS USING WATER ARE STRICTLY PROHIBITED.
 - 9. The Contractor shall inspect the locations where the encasement pipe and bore pits are to be installed and familiarize himself with the conditions under which the work will be performed and with all necessary details for the orderly prosecution of the work. The omission of any details in the Plans and/or herein for installation of the encasement and carrier pipe shall not relieve the Contractor of full responsibility for the proper execution and integrity of the work.
 - 10. The Contractor shall satisfy himself of soils condition by any means he deems necessary, i.e., exploratory boring or exploratory pit excavations at bore ends. Any such exploratory work shall be done in such manner as to not jeopardize railroad or highway roadbeds and rights-of-way and shall be backfilled and cleaned up to the satisfaction of the right-of-way owner. The Contractor shall be responsible to obtain his own permission and to furnish bonds, etc. as may be required by private landowners or the public authority having

jurisdiction at the site of any such exploratory work unless otherwise indicated on the Plans or by the Owner/Engineer.

11. The Contractor shall perform all excavation required to complete the work regardless of the material encountered. Excavation from the access shafts (bore pits) in excess of that required to backfill the access shafts and open cut portion of the line shall be disposed of by the Contractor outside the limits of the construction site and at an approved location. Pits and trenches shall be properly shored, sheeted, and braced according to Section 31 50 00, EXCAVATION SUPPORT SYSTEMS, of these Specifications.
12. Any damage to the encasement pipe coating during shipment or handling shall be repaired by the Contractor. Boring and installation of smooth wall pipe shall be by competent supervisors and workmen specializing in this type of work.
13. IN ORDER TO MAINTAIN THE DESIGNED SLOPE OF THE SEWER GRADIENT, THE HORIZONTAL AND VERTICAL ALIGNMENT AT ALL POINTS ON THE ENCASEMENT PIPE SHALL BE HELD TO A TOLERANCE OF ONE-TENTH (0.10) OF A FOOT OF THE DESIGNED LINE AND GRADE. ENCASEMENT PIPES NOT MEETING THIS TOLERANCE SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

C. Open-Cut

1. Steel encasement shall be installed in an open-cut trench as specified in Section 31 23 16.13, TRENCHING FOR WATER AND SEWER LINES and shall be backfilled as specified in Section 31 23 23.16, TRENCH BEDDING AND BACKFILL FOR WATER AND SEWER LINES.
2. Steel encasement installed by open-cut shall conform to this specification.
3. Pipe joints shall be welded in accordance with AWWA C-206.
4. When practical, the carrier pipe, the end seals, the casing spacers, and the encasement pipe shall be assembled outside of the trench and shall be installed as a single unit.
5. Extreme care shall be used by the Contractor to assure that the rubber end caps are not damaged during installation and backfilling. It is essential that a water-tight seal exist where the rubber end seals contact the carrier pipe and the encasement pipe.

3.3 INSTALLATION, CARRIER PIPE

- A. Installation of the carrier pipe in the encasement shall be accomplished in such manner that neither the pipe nor the encasement is damaged. Care must be exercised to assure that the joints of the pipe are not over-deflected or pulled out during the process. The pipe shall be jointed and pushed or jacked through the encasement. Cables, chains, jacks or other equipment or devices used shall not be in direct contact with the pipe unless thoroughly padded.
- B. The carrier pipe barrel, regardless of its diameter, shall be centered diametrically in the encasement pipe by the use of casing spacers compatible with the material of the carrier pipe. Also, all carrier pipe bell/spigot joints inside the encasement shall be restrained from movement in the axial direction by the use restrained casing spacers. There shall be a restrained casing spacer installed at each carrier pipe joint and another casing spacer without axial restraint (non-restrained) installed at the midpoint of each carrier pipe barrel or at a maximum interval of 10'. All casing spacers, whether restrained or non-restrained, shall also function as hold-down jacks to prevent the carrier pipe from floating.
- C. If, after installation of the carrier pipe, adequate stability has not been provided, in the opinion of the Owner, the annular space between the carrier pipe and the inside of the encasement pipe shall be filled with sand or other material approved by the Owner.
- D. After the carrier pipe has been installed in the encasement pipe, both ends of the encasement pipe shall be sealed with end seals.

3.4 PRESSURE GROUTING

- A. During installation of bored encasement pipe, care shall be exercised to prevent voids between the encasement and the surrounding ground.
- B. On encasement pipes of 12" and larger nominal diameter, the annular space between the encasement pipe and the ground shall be pressure grouted to eliminate all voids. ENCASEMENT PIPES SMALLER THAN 12" SHALL ALSO BE GROUTED IF SO DIRECTED BY THE OWNER DEPENDING ON SOIL CONDITIONS AT THE BORE SITE IDENTIFIED AT THE TIME OF ENCASEMENT INSTALLATION.
- C. When grouting encasement pipes of such diameter that entry by a worker is possible, the grout shall be injected through the encasement pipe wall through 1.5" diameter holes from the inside at one location for each 5.0-foot linear interval over the entire length of the encasement pipe. The sequence for grout injection locations shall be as follows:

*Locations (5' Spaces)	"Clock" Positions
1 st	12:00
2 nd	3:00
3 rd	12:00
4 th	9:00
5 th	12:00

*Repeat 2nd through 5th locations at 5-foot intervals for each location to the end of the encasement pipe.

NOTE: THE CONTRACTOR SHALL BE RESPONSIBLE TO SEE THAT ALL REQUIREMENTS OF OSHA CONCERNING ENTRY OF WORKERS INTO CONFINED SPACES ARE FOLLOWED AS WELL AS ANY OTHER REQUIREMENTS FOR THIS TYPE OF WORK.

- D. For encasement pipes too small to be entered for grouting as addressed above, the annular space may be pressure grouted by means of an external grout pipe attached to the outside of the encasement pipe. After the encasement pipe and the grout pipe are in place, the grout pipe shall be withdrawn as the grout is introduced into the annular space.
- E. The grout material to be installed between the casing pipe and existing ground to fill voids shall be sand cement slurry with a minimum of two sacks of cement per cubic yard and a minimum of water to assure satisfactory placement.

3.5 BORE PITS

- A. Excavation and backfill shall be as specified in Sections 31 23 16.13, trenching for water and sewer lines and 31 23 23.16, trench bedding and backfill for water and sewer lines.
- B. The bore pits or access shafts for encasement installation shall be rectangular in plain view, approximately 20'x10', with the longer dimension being in the direction of the encasement pipe. The bore pits shall be sheeted, shored, and braced on all sides as addressed herein. Sheet piling shall be timber or steel piling of ample strength to safely withstand all structural loading of whatever nature

due to site and soil condition. The top of the sheeting shall be at a minimum elevation equal to the natural ground line as it existed prior to construction.

END OF SECTION

SECTION 33 31 26 – TESTING WATER DISTRIBUTION SYSTEMS

PART 1 - GENERAL

1.1 GENERAL

- A. See Section 33 11 11, PIPING LEAKAGE TESTING, which contains information and requirements that apply to the work specified herein and are mandatory for this project.

1.2 SUBMITTALS

- A. Submittals shall be made as required in Section 01 33 00, SUBMITTALS. The following specific information shall be provided:
 - 1. Quality Control Submittals:
 - a. Testing Plan: Submit at least 30 days prior to testing and include at least the information that follows.
 - 1) Testing dates.
 - 2) Piping systems and sections(s) to be tested.
 - 3) Test type.
 - 4) Method of isolation.
 - 5) Calculation of maximum allowable leakage for piping sections(s) to be tested.
 - b. Certifications of Calibration: Testing equipment.
 - c. Certified Test Report.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Notify Engineer in writing 5 days in advance of testing. Perform testing in presence of Engineer.
- B. Pressure Piping:
 - 1. Install temporary thrust blocking or other restraint as necessary to protect adjacent piping or equipment and make taps in piping prior to testing.
 - 2. Wait 5 days minimum after concrete thrust blocking is installed to perform pressure tests. If high-early strength cement is used for thrust blocking, wait may be reduced to 2 days.
 - 3. Prior to test, remove or suitably isolate appurtenant instruments or devices that could be damaged by pressure testing.
 - 4. New Piping connected to Existing Piping:
 - a. Isolate new piping with grooved-end pipe caps, spectacle blinds, blind flanges, or as acceptable to Engineer.
 - b. Test joint between new piping and existing piping by methods that do not place entire existing system under test load, as approved by Engineer.
 - 5. Items that do not require testing include: Equipment seal drains, tank overflows to atmospheric vented drains, and tank atmospheric vents.
 - 6. Test Pressure: 200 PSI.
- C. Test section may be filled with water and allowed to stand under low pressure prior to testing.

3.2 HYDROSTATIC TEST FOR PRESSURE PIPING

- A. Test piping as indicated in pipe schedule.

- B. Fluid: Clean water of such quality to prevent corrosion of materials in piping system.
- C. Test pressure shall be the lesser of 200 psi or the maximum pressure of all components in the system.
- D. All piping shall be tested in accordance with AWWA C600, latest revision.
- E. All tests shall be performed by the contractor in the presence of a City Inspector and the Engineer of Record.
- F. Contractor shall provide all equipment required to perform tests. Including but not limited to, gauges, meters, and pumps. The contractor shall also make all taps and connections required to perform testing.
- G. Exposed Piping:
 - 1. Perform testing on installed piping prior to application of insulation.
 - 2. Maximum Filling Velocity: 0.25 feet per second, applied over full area of pipe.
 - 3. Vent piping during filling: Open vents at high points of piping system or loosen flanges, using at least four bolts, or use equipment vents to purge air pockets.
 - 4. Maintain hydrostatic test pressure continuously for 60 minutes, minimum, and for such additional time as necessary to conduct examinations for leakage.
 - 5. Examine joints and connections for leakage.
 - 6. Correct visible leakage and retest as specified.
 - 7. Empty pipe of water prior to final cleaning.
- H. Buried Piping:
 - 1. Test after backfilling has been completed.
 - 2. Flush piping and expel air from piping system during filling.
 - 3. Apply and maintain specified test pressure with hydraulic force pump. Valve off piping system when test pressure is reached.
 - 4. Maintain hydrostatic test pressure continuously for 2 hours minimum, if the test pressure falls more than 5 psi within the 2 hour period the test will be terminated and considered a failure due to assumed leaks.
 - 5. Determine actual leakage at the end of the 2 hour test period by restoring the pressure to the initial test pressure and measuring the quantity of water necessary to restore pressure to the initial test pressure.
 - 6. Maximum Allowable Leakage:

$$L = \frac{SD\sqrt{P}}{133,200}$$
 Where:
 - L = Allowable leakage, in gallons per hour.
 - S = Length of pipe tested, in feet.
 - D = Nominal diameter of pipe, in inches.
 - P = Test pressure during leakage test, in pounds per square inch.
 - 7. Correct leakage greater than allowable, and retest as specified.

3.3 PRESSURE TEST FOR TAPPING SLEEVES

- A. The contractor shall provide pumps and all other equipment necessary to test the tapping sleeves. Tapping sleeves shall be tested prior to making any taps. The duration of the hydrostatic test shall be thirty (30) minutes at 225 psi with zero leakage.

3.4 FIELD QUALITY CONTROL

- A. Test Report Documentation:

1. Test date.
2. Description and identification of piping tested.
3. Test fluid.
4. Test pressure.
5. Test start/stop times.
6. Calculated leakage
7. Remarks, including:
 - a. Leaks (type, location).
 - b. Repair/replacement performed to remedy excessive leakage.
8. Signed by Contractor and Engineer to represent that test has been satisfactorily completed.

END OF SECTION

SECTION 33 34 13 – DUCTILE IRON WATER TRANSMISSION PIPE AND FITTINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the Work necessary to completely furnish and install Ductile Iron water transmission pipe and fittings.
- B. Related sections:
 - 1. Section 13 47 13 – Cathodic Protection
 - 2. Section 31 23 16.16 – Trenching for Water and Sewer Lines.
 - 3. Section 31 23 23.16 – Trench Backfill.
 - 4. Section 33 31 26 – Testing Water Distribution Systems.
 - 5. Section 33 31 13 – Steel Encasement Pipe.
 - 6. Section 33 41 19 – Pipe Laying.

1.2 GENERAL

- A. Like items of ductile iron pipe provided hereinafter shall be the end products of one manufacturer to achieve standardization of appearance, operation, maintenance, and manufacturer's services.
- B. General Requirements: See Division 01, GENERAL REQUIREMENTS, which contains information and requirements that apply to the work specified herein and are mandatory for this project.
- C. All pipe shall be circular and shall be of the sizes shown on the Plans and/or listed in the Unit Price Schedule. All pipe shall be new. Used pipe is prohibited.
- D. At the discretion of the Engineer, all pipe line and materials are subject to inspection and approval at the plant of the manufacturer.
- E. All materials shall equal or exceed the standards specified herein.
- F. During the process of unloading, all pipe materials shall be inspected by the Contractor and any damaged pipe set aside.
- G. After pipe lines are laid, the Contractor shall test for defects and leakage as specified in Section 33 31 26, TESTING WATER DISTRIBUTION SYSTEMS of these specifications.
- H. Inspection of pipe at the manufacturer's plant, at the point of delivery, on the job site, or in place shall not relieve the Contractor of his responsibility and the material may be subject to rejection until final acceptance of the completed project.

1.3 SUBMITTALS

- A. General: Administrative, shop drawings, samples, quality control, and contract closeout submittals shall conform to the requirements of Section 01 33 00, SUBMITTAL PROCEDURES.
- B. In addition to the requirements of Section 01 33 00, SUBMITTAL PROCEDURES, submit the following additional specific information:
 - 1. Quality Control Submittals:
 - a. Pipe size, class, and thickness.
 - b. Special shipping, storage and protection, and handling instructions.
 - c. Test procedures.

- d. Test results, reports, and certifications.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Ductile iron water transmission pipe shall be provided to conform to materials of construction as specified herein.
- B. All force mains shall be installed with tracer wire as specified in Section 33 41 19, PIPE LAYING.
- C. Weights and Marking:
 - 1. Weights of pipe and fittings shall conform strictly to the requirements of ANSI Specifications. The class designations for the various classes of pipe and fittings shall be cast onto fittings in raised numerals, and cast or stamped on the outside of each joint of pipe. Weights shall be plainly and conspicuously painted in white on the outside of each joint of pipe and each fitting after the exterior coating has hardened.
- D. Certification:
 - 1. The Contractor shall upon request furnish the Engineer with certified reports stating that inspection and specified tests have been made and that the results thereof comply with the applicable ANSI Specifications for each.

2.2 DUCTILE WATER TRANSMISSION PIPE

- A. All pipe and pipe fittings furnished for underground water piping shall have either push-on, restrained, or mechanical type joints.
- B. Flanged DIP and DI fittings shall be used only as indicated on the Plans. Flanged pipe and pipe fittings shall conform to ANSI/AWWA C115/21.15, Class 200 psi. Flanged drilling shall conform to ANSI B16.1, Class 125 flange.
- C. All DIP, 4-inch through 36-inch, shall conform to the requirements of ANSI/AWWA C150/A21.50 (Thickness Design of Ductile-Iron Pipe) and ANSI/AWWA C151/A21.51 (Ductile Iron, Centrifugally-Cast for Water).
- D. Ductile iron pipe for transmission mains shall have a minimum Pressure Class of 150 unless otherwise described above.
- E. Standard laying lengths shall be 20 feet $\pm$ 1 inch, unless otherwise specified.

2.3 FITTINGS FOR DUCTILE IRON WATER TRANSMISSION PIPE

- A. All fittings over 3-inches shall be ductile iron, mechanical joint polywrapped fittings and shall conform to the requirements of AWWA C153. All fittings shall have a minimum pressure rating of 350 pounds per square inch and shall be lightweight (compact) fittings unless otherwise shown on the Plans. Domestic fittings and castings are required for this project.
- B. All fittings shall be furnished with gaskets. MJ fittings shall also be furnished with bolts, nuts, and iron glands. All plugs, caps, tees, and bends deflecting 22-1/2° or more shall be provided with reaction backing.
- C. All casting and mating surfaces shall be smooth and of a workmanlike quality, free from cracks, holes, scale, shrinkage, distortion, grooves, scratches, and other defects. Fittings and other

castings may be rejected if found to be unacceptable by the Engineer in accordance with these Specifications.

- D. Joints shall be mechanical joint, shall conform to ANSI/AWWA C111, and shall be furnished with Mega-lug type retainer glands and gaskets.
- E. Special fittings shall be in accordance with the pipe manufacturer's recommendations and as approved by the Engineer.
- F. All fittings and appurtenances placed on water lines shall meet with the requirements of the type of pipe used and shall be installed in accordance with the manufacturer's recommendations and as approved by the Engineer.
- G. Connections between different kinds of pipe shall be detailed on the Plans and provide self-cleansing sanitary flow and watertight joints and connections.
- H. All fittings shall be fusion-bonded epoxy coated inside and outside in accordance with ANSI/AWWA C116/A21.16.
- I. All valves and fittings (including in-line valves) shall have Megalug style retainer glands or approved equal. Valves, bends, reducers and other hardware near bends shall be positively bolted, all-threaded, or mechanically joined to each other. Bolted includes single and double flanged adapters (such as Foster Adapters or Swivel Adapters) which provide a solid bolted or mechanical joint type connection.

2.4 DUCTILE IRON PIPE JOINTS

- A. Joints shall be mechanical joints (MJ), restrained joints (RJ), or push-on type joints which conform to ANSI/AWWA C111/A21.11 (Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings), unless otherwise specified.
- B. Joints shall have the same pressure rating of the pipe or fittings of which they are a part.
- C. All pipe joints other than those specified herein shall be made in strict accordance with the manufacturer's recommendations and as approved.
- D. All joints shall be made watertight in accordance with the latest applicable AWWA and ASTM standards.
- E. Maximum joint deflection shall be 75% of manufacturer's recommended maximum joint deflection.

2.5 GASKETS FOR DUCTILE IRON JOINTS AND FITTINGS

- A. Gaskets shall be made of vulcanized styrene butadiene rubber (SBR).
- B. Gaskets shall be marked for nominal pipe size, manufacturer, and year of manufacture.
- C. Gaskets shall comply with the requirements of ANSI/AWWA C111 (Rubber-Gasket joints for Ductile Iron Pressure Pipe and Fittings).

2.6 DUCTILE IRON JOINT AND FITTING LUBRICANT

- A. Lubricant shall be provided by the pipe manufacturer and applied as per the manufacturer's recommendations in accordance with ANSI/AWWA C111/A21.11 (Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings).

- B. Lubricant shall be non-toxic, not support the growth of bacteria and have no deteriorating effects on the gasket or pipe material.
- C. Lubricant containers shall be appropriately identified and labeled with the manufacturer's name.
- D. Each lubricant container shall have printed instructions for usage and joint assembly.

2.7 COATINGS

- A. Interior Coatings
 - 1. All ductile iron pipe shall be cement mortar lined in accordance with ANSI/AWWA C104.
- B. Exterior Coatings
 - 1. All ductile iron pipe shall have an exterior coating as set forth below.
 - a. Factory Primed Pipe
 - 1) Unless otherwise shown on the Plans, all exposed pipe and fittings within the limits of structure walls or exposed pipe and fittings located aboveground shall be delivered to the job site factory-blasted, cleaned, and primed with one (1) coat of Tnemec Series N140 Pota-Pox Plus, or approved equal compatible paint system.
 - b. Bituminous Coating
 - 1) All pipe indicated for buried service shall have a petroleum asphaltic coating approximately one (1) mil thick factory-applied to the outside of all pipe and fittings. The finished coating shall be continuous, smooth, neither brittle when exposed to the cold nor sticky when exposed to the sun, and shall be strongly adherent to the pipe or fitting. The bituminous coating shall not be applied to the first six (6) inches of the exterior of the spigot ends.
 - c. Epoxy Coating
 - 1) All fittings shall be epoxy coated per ANSI/AWWA C-116.

PART 3 - EXECUTION

3.1 GENERAL

- A. All pipe and fittings shall be installed in accordance with these specifications and the Plans.

3.2 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 01 60 00, PRODUCT REQUIREMENTS.
- B. Delivery of Materials: Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer.
- C. Storage: Products shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.

3.3 FIELD QUALITY CONTROL

- A. Contractor shall visually inspect all pipe and fittings upon delivery and set aside and damaged or flawed materials and shall not install any damaged or flawed material.
- B. Contractor shall test for defects and leakage as specified in Section 33 31 26, TESTING WATER DISTRIBUTION SYSTEMS.

3.4 INSTALLATION

- A. Installation shall be as specified in Section 33 41 19, PIPE LAYING.
- B. All ductile iron pipe and fittings shall be encased per Section 40 42 13.16 POLYETHYLENE ENCASEMENT FOR DIP AND CIP
- C. Pipe trenching shall be as specified in Section 31 23 16.16, TRENCHING FOR WATER AND SEWER LINES.
- D. Pipe bedding and backfill shall be as specified in Section 31 23 23.16, TRENCH BACKFILL.
- E. Pipe installed within steel encasement shall conform to Section 33 31 13, STEEL ENCASEMENT PIPE.

END OF SECTION

SECTION 33 34 16 – PVC WATER TRANSMISSION PIPE AND FITTINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes the Work necessary to completely furnish and install Polyvinyl Chloride (PVC) water transmission pipe and related fittings.
- B. Related Sections
 - 1. Section 31 23 16.13, TRENCHING FOR WATER AND SEWER LINES
 - 2. Section 31 23 23.19, TRENCH BEDDING AND BACKFILL FOR WATER AND SEWER LINES
 - 3. Section 33 31 26, TESTING WATER DISTRIBUTION SYSTEMS
 - 4. Section 33 31 13, STEEL ENCASMENT PIPE
 - 5. Section 33 34 13 DUCTILE IRON WATER TRANSMISSION PIPE AND FITTINGS
 - 6. Section 33 41 19, PIPE LAYING

1.2 GENERAL

- A. Like items of PVC pipe provided hereinafter shall be the end products of one manufacturer to achieve standardization of appearance, operation, maintenance, and manufacturer's services.
- B. General Requirements: See Division 01, GENERAL REQUIREMENTS, which contains information and requirements that apply to the work specified herein and are mandatory for this project.
- C. All pipe shall be circular and shall be of the sizes shown on the Plans and/or listed in the Unit Price Schedule. All pipe shall be new. Used pipe is prohibited.
- D. At the discretion of the Engineer, all pipe line and materials are subject to inspection and approval at the plant of the manufacturer.
- E. All materials shall equal or exceed the standards specified herein.
- F. During the process of unloading, all pipe materials shall be inspected by the Contractor and any damaged pipe set aside.
- G. After pipe lines are laid, the Contractor shall test for defects and leakage as specified in Section 33 31 26, TESTING WATER DISTRIBUTION SYSTEMS of these specifications.
- H. Inspection of pipe at the manufacturer's plant, at the point of delivery, on the job site, or in place shall not relieve the Contractor of his responsibility and the material may be subject to rejection until final acceptance of the completed project.

1.3 SUBMITTALS

- A. General: Administrative, shop drawings, samples, quality control, and contract closeout submittals shall conform to the requirements of Section 01 33 00, SUBMITTAL PROCEDURES.
- B. In addition to the requirements of Section 01 33 00, SUBMITTAL PROCEDURES, submit the following additional specific information:
 - 1. Quality Control Submittals:
 - a. Pipe size, class, and thickness.
 - b. Special shipping, storage and protection, and handling instructions.

- c. Test procedures.
- d. Test results, reports, and certifications.

PART 2 - PRODUCTS

2.1 GENERAL

- A. PVC water transmission pipe shall be provided to conform to materials of construction as specified herein or as shown on the plans.
- B. All transmission mains shall be installed with tracer wire as specified in Section 33 41 19, PIPE LAYING.
- C. All plastic pipe and couplings shall bear identification markings in accordance with AWWA C-900, which shall include the National Sanitation Foundation (NSF) seal of approval. In addition, the plain end of each pipe length shall have two (2) rings, one (1) inch apart, painted around the pipe at the proper location to allow field checking of the correct setting depth of the pipe in the bell or coupling.

2.2 PVC WATER TRANSMISSION PIPE

- A. The material used in making the pipe shall be clean, virgin, Cell Classification 12454 PVC compound as specified in ASTM D1784, Standard Specification of Rigid Polyvinyl Chloride Compounds and Chlorinated Polyvinyl Chloride Compounds.
- B. All PVC pipe, 4 inch through 48 inch, shall conform to ANSI/AWWA C900-16, PVC Pressure Pipe and Fabricated Fitting, 4 inch through 48 inch, for Water Transmission and Distribution.
- C. All PVC Pipe shall conform to AWWA C-900 pressure class 200 psi (DR 21).
- D. Standard laying lengths shall be 20 feet $\pm$ 1 inch, unless otherwise specified.
- E. Each PVC water pipe length shall be clearly marked with the manufacturer's name, nominal pipe size, cell classification, AWWA/ASTM designation, and DR.

2.3 FITTINGS FOR PVC WATER TRANSMISSION PIPE

- A. Shall be as specified in Section 33 34 13, Ductile Iron WATER TRANSMISSION PIPE and FITTINGS.

2.4 PVC PIPE JOINTS

- A. Joints shall be of the push-on, elastomeric gasket type, conforming to ASTM D3139 (Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals), and/or Uni-Bell UNI-B-01 (Recommended Specification for Thermoplastic Pipe Joints, Pressure and Non-Pressure Applications).
- B. All bells shall be formed integrally with the pipe and shall contain a positively retained, factory installed elastomeric gasket and have a raceway or groove specially formed to accept and retain the gasket.
- C. Wall thickness of the bell at any point shall not be less than the required minimum for the pipe barrel. Pipe spigots shall be beveled and have insertion stop marks.

- D. The use of solvent cement or chemically welded joints shall not be permitted in field construction, except as specifically authorized by the Engineer.
- E. All pipe joints other than those specified herein shall be made in strict accordance with the manufacturer's recommendations and as approved by the Engineer.
- F. All joints shall be made watertight in accordance with the latest applicable AWWA and ASTM standards.
- G. Maximum joint deflection shall be 75% of manufacturer's recommended maximum joint deflection.

2.5 GASKETS FOR PVC JOINTS AND FITTINGS

- A. Gaskets shall be molded or extruded from a high grade, vulcanized, elastomeric compound consisting of either a basic natural or synthetic rubber.
- B. Gaskets shall be marked for nominal pipe size, manufacturer, and year of manufacture.
- C. Gaskets shall comply with the requirements of ASTM F477 (Elastomeric Seals (Gaskets) for Joining Plastic Pipe) and ASTM D3139.

2.6 PVC JOINT AND FITTING LUBRICANT

- A. Lubricant shall be provided by the pipe manufacturer and applied as per the manufacturer's recommendations.
- B. Lubricant shall be non-toxic, not support the growth of bacteria and have no deteriorating effects on the gasket or pipe material.
- C. Lubricant containers shall be appropriately identified and labeled with the manufacturer's name.
- D. Each lubricant container shall have printed instructions for usage and joint assembly.

2.7 PVC TO DIP JOINTS

- A. Joints connection PVC Pipe to Ductile Iron Pipe shall be EBAA Iron Series 3800 Restrained Coupling, or Approved Equal.

PART 3 - EXECUTION

3.1 GENERAL

- A. All pipe and fittings shall be installed in accordance with these specifications and the Plans.

3.2 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Delivery of Materials: Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer.
- B. Storage: Products shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.

3.3 FIELD QUALITY CONTROL

- A. Contractor shall visually inspect all pipe and fittings upon delivery and set aside and damaged or flawed materials and shall not install any damaged or flawed material.
- B. Contractor shall test for defects and leakage as specified in Section 33 31 26, TESTING WATER DISTRIBUTION SYSTEMS

3.4 INSTALLATION

- A. Installation shall be as specified in Section 33 41 13, PIPE LAYING.
- B. Pipe trenching shall be as specified in Section 31 23 16.13, TRENCHING FOR WATER AND SEWER LINES.
- C. Pipe bedding and backfill shall be as specified in Section 31 23 23.19, TRENCH BEDDING AND BACKFILL FOR WATER AND SEWER LINES.
- D. Pipe installed within steel encasement shall conform to Section 33 31 13, STEEL ENCASEMENT PIPE

END OF SECTION

SECTION 33 41 19 – PIPE LAYING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: the Work necessary to install gravity sewer, force main pipe, water pipe and appurtenances.
- B. Related sections:
 - 1. Section 01 60 00 – Product Requirements
 - 2. Section 31 23 16.16 – Trenching for Water and Sewer Lines
 - 3. Section 31 23 23.19 – Trench Bedding and Backfill for Water and Sewer Lines
 - 4. Section 33 31 26 – Testing Water Distribution Systems
 - 5. Section 33 31 13 – Steel Encasement Pipe
 - 6. Section 33 34 13 – Ductile Iron Water Transmission Pipe and Fittings
 - 7. Section 33 34 16 – PVC Water Transmission Pipe and Fittings

1.2 GENERAL

- A. General Requirements: See Division 01, GENERAL REQUIREMENTS, which contains information and requirements that apply to the work specified herein and are mandatory for this project.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All pipe materials shall be as specified on the Plans and conforming to these specifications.

2.2 WARNING TAPE

- A. Non-metallic sanitary sewer marking tape shall be warning tape as manufactured by Rhino Marking and Protection Systems, Harris Industries, Inc., or approved equal.
- B. Tape shall have a minimum thickness of 4 mils and manufactured with heavy metal-free polyethylene tape that is impervious to all known alkalis, acids, chemical reagents, and solvents found in soil. The minimum overall width of the tape shall not be less than 3-inches. Standard rolls shall be 1000' length.
- C. The tape for sewer lines shall be color coded Green and imprinted with the following message: Caution Buried Sewer Line Below.
- D. The tape for water lines shall be color coded Blue and imprinted with the following message: Caution Buried Water Line Below.

2.3 TRACER WIRE

- A. Tracer wire shall be 12-gauge, stranded coated copper for underground burial.
- B. Jacket color shall be GREEN, and made of High Density Polyethylene (HDPE) or High Molecular Weight Polyethylene (HMWPE) designed for direct burial.
- C. Connectors shall be used for all splices or repairs. Connectors shall be moisture displacement style as manufactured by 3M DBR, or equal.

- D. A locate or conductivity test shall be performed prior to signing off on the project.

2.4 PIPE BEDDING AND BACKFILL

- A. Shall be in accordance with 31 23 23.19, TRENCH BEDDING AND BACKFILL FOR WATER AND SEWER LINES.

PART 3 - EXECUTION

3.1 GENERAL

- A. All pipe, fittings, bedding, backfill, and all other appurtenances shall be installed in accordance with these specifications and the Plans.

3.2 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 01 60 00, PRODUCT REQUIREMENTS.
- B. Delivery of Materials: Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer.
- C. Storage: Products shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.
- D. Pipe and accessories shall be handled in such a manner that will ensure their condition after installation to be sound and undamaged. Equipment, tools and methods used in unloading, reloading, hauling and laying pipe and fittings shall be such that they are not damaged. Under no circumstances shall loading forks, or other equipment, be inserted into the barrel of the pipe or fitting.
- E. Pipe having pre-molded joint rings shall be handled in such a manner that no weight, including the weight of the pipe itself, will bear on or be supported by the spigot rings at any time. Care shall be taken to avoid dragging the spigot ring on the ground or allowing it to come in contact with gravel, crushed stone, rocks, or other hard objects. Joint rings which have been damaged in any way will not be accepted and shall not be incorporated in the work.

3.3 FIELD QUALITY CONTROL

- A. Provide skilled workmen to insure embedment of pipe.
- B. Contractor shall test for defects and leakage as specified in Section 33 31 26, TESTING WATER DISTRIBUTION SYSTEMS.

3.4 TRACE WIRE

- A. Regardless of pipe material, a trace wire shall be laid on top of the pipe and shall be looped around the pipe at least once every 10-feet and connected to all valves and fittings. At valves, the trace wire shall be brought up into the valve box as indicated in the plans. A tracing test of trace wire will be required prior to final acceptance.

3.5 PIPE DETECTION TAPE

- A. Pipe detection tape shall be provided in all trenches for force main and water line construction. Installation shall be per manufacturer's recommendations and shall be as close as practical to

finished grade while maintaining a required minimum of 18 inches between the detection tape and the top of any pipe.

3.6 LAYING PIPE

- A. Proper means and equipment shall be used for lowering pipe into the trenches.
- B. The Contractor shall have full responsibility for any diversion of drainage and for dewatering trenches.
- C. Recesses for the pipe bells are mandatory and shall be hand excavated so that the entire pipe barrel is uniformly supported by the bedding material.
- D. Pipe shall be protected from lateral displacement by means of pipe embedment material installed as provided in this specification. Under no circumstances shall pipe be laid in water and no pipe shall be laid under unsuitable weather or trench conditions.
- E. When jointed in the trench, the pipe shall form a true and smooth line. Pipe shall not be trimmed except for closures, and pipe not making a good fit shall be removed.
- F. Unless otherwise approved by the Engineer, the laying of pipe shall begin at the lowest point, and the pipe shall be installed so that the spigot ends point in the direction of flow.
- G. Pipe which is a part of a gravity sewer line shall be aligned and constructed to grades as shown on the plans. Lines not conforming to these grades shall be subject to removal and replacement at the Contractor's expense. Force main pipe shall match the horizontal alignment and shall closely match the grades shown on the plans.
- H. Pipe lines or runs intended to be straight shall be laid straight.
- I. During installation, each pipe and fitting shall be inspected for defects. All defective, damaged, or unsound pipe and fittings shall be rejected and removed from the site of the work.
- J. Dependent on type of application, gravity or pressure, place thrust blocking at all pipe fittings, including bends and reducers, as shown on the Plans.
- K. Prior to joining the pipe, the plain ends of the pipe and the bells of the pipe shall be thoroughly cleaned using a soapy water and cloth, removing all foreign materials from the bells, especially the gasket seats. Any burrs or imperfections in that part of the plain end or bell which will be in contact with the gasket shall be removed.
- L. The clean gasket shall be inserted in the bell and a thin film of lubricant shall be applied to the inside surface of the gasket.
- M. The cleaned plain end shall initially be entered in the bell straight. The plain end shall be forced inside the gasket and bell until the limit mark is just visible. The pipe may then be deflected as allowed by the manufacturer.
- N. Lubricants shall be supplied by the pipe manufacturer in sufficient quantities. No substitutes shall be made.
- O. The Contractor shall furnish such jacks, or other devices as are necessary for forcing the pipe into the bell and gasket. Care shall be exercised to avoid damage to the pipe where the pushing device or machine part contacts the pipe. A wood block or suitable pad shall be placed between the pipe and that part of the pushing device which contacts the pipe.

- P. All plain ends that enter a push on bell shall be beveled at 30° for at least one eighth (1/8) inch. All cut pieces or ends of pipe of other classifications shall be so beveled.

3.7 PIPE BEDDING NON-FERROUS PIPE

- A. Non-ferrous pipe includes PVC, Polyethylene and FRP.
- B. Bedding material shall be as specified in Section 31 23 23.19, TRENCH BEDDING AND BACKFILL FOR WATER AND SEWER LINES.
- C. Place 6-inches, minimum, of bedding between excavated trench bottom or stabilized trench bottom and bottom of pipe or fitting. Provide depression in bedding for joints so that barrel of pipe or fitting rests on bedding. Place bedding in 6-inch maximum layers, compacted to 95% standard maximum density, to 6-inches over the top of pipe and fittings.
- D. Bedding is considered to be an integral part of the pipe installation. Therefore particular care shall be given to insure that bedding is in intimate contact with the pipe in all directions and that no portion of the bedding shall be compacted to less than the specified density, particularly the area below the springline of the pipe.
- E. Place bedding a minimum of 6-inches over the top of pipe and fittings. Bedding shall be compacted to 95% maximum density.
- F. For areas undercut, whether by Contractor's negligence or by direction of Engineer, provide and place crushed aggregate, compacted to 95% standard maximum density, to bottom elevation of pipe bedding.
- G. When used, the bottom of trench boxes will be above the level of pipe bedding before bedding is compacted. In no case will pipe bedding be compacted against the trench box or before the trench box is raised to allow compaction of bedding.

3.8 PIPE BEDDING DUCTILE IRON PIPE

- A. Bedding material shall be as specified in Section 31 23 23.19, TRENCH BEDDING AND BACKFILL FOR WATER AND SEWER LINES.
- B. Place 6-inches, minimum, of bedding between excavated trench bottom or stabilized trench bottom and bottom of pipe or fitting. Provide depression in bedding for joints so that barrel of pipe or fitting rests on bedding. Place bedding in 6-inch maximum layers, compacted to 95% standard maximum density, to a minimum total depth of 3/4 (75%) of the outside diameter of the pipe as indicated on the drawings.
- C. Bedding is considered to be an integral part of the pipe installation. Therefore particular care shall be given to insure that bedding is in intimate contact with the pipe in all directions and that no portion of the bedding shall be compacted to less than the specified density, particularly the area below the springline of the pipe.
- D. For areas undercut, whether by Contractor's negligence or by direction of Engineer, provide and place crushed aggregate, compacted to 95% standard maximum density, to bottom elevation of pipe bedding.
- E. When used, the bottom of trench boxes will be above the level of pipe bedding before bedding is compacted. In no case will pipe bedding be compacted against the trench box or before the trench box is raised to allow compaction of bedding.

3.9 TRENCH BACKFILL

- A. Shall be as specified in Section 31 23 23.19, TRENCH BEDDING AND BACKFILL FOR WATER AND SEWER LINES.

3.10 ALIGNMENT AND GRADE

- A. All pipe shall be laid straight between changes in alignment, except as shown on the Plans, and at a uniform grade between changes in grade. All lines shall be laid so that each section between manholes will lamp.

3.11 JOINTING

- A. Boltless gasketed joints: All instructions and recommendations of the pipe manufacturer, relative to gasket installation and other jointing operations, shall be observed and followed by the Contractor. All joint surfaces shall be lubricated as recommended by the manufacturer immediately before the joint is completed.
- B. Mechanical joints: Mechanical joints shall be carefully assembled in accordance with the manufacturer's recommendations. If effective sealing is not obtained, the joint shall be disassembled, thoroughly cleaned and reassembled. Overtightening bolts to compensate for poor installation practice will not be permitted.

3.12 CUTTING PIPE

- A. Cutting of pipe shall be done in a neat manner, without damage to the pipe or to the lining therein. Pipe cuts shall be smooth, straight and at right angles to the pipe axis. All cutting of pipe shall be done with mechanical pipe cutters of an approved type except that in locations where the use of mechanical cutters would be difficult or impracticable, existing pipe may be cut with diamond point chisels, saws, or other tools which will cut the pipe without damaging impact or shock.

3.13 CLEANING

- A. The interior of all pipe shall be cleaned of all foreign matter before being installed and shall be kept clean until the work has been accepted. All lumps, blisters and excess coating shall be removed from exterior spigot and interior bell surfaces. Such surfaces shall be wire brushed and wiped clean, dry, and free from oil and grease before placing the spigot in the bell. All joint contact surfaces shall be kept clean until the jointing is completed.
- B. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being installed. No debris, tools, clothing, or other materials shall be placed in the pipe.
- C. Whenever pipe laying is stopped, the open end of the line shall be sealed with a watertight plug.

3.14 WATER AND SEWER LINE CROSSINGS

- A. Water and sewer lines crossing shall maintain compliance with the requirements set forth in TCEQ §217.53. Pipe Design.
- B. In general water lines shall be above sewer lines, however if water line cannot be above sewer line because of cover limitations or other obstructions. The water line may be below the sewer line but either the water or sewer line shall be encased 18 feet centered of the crossing line in steel encasement as specified in Section 33 31 13, STEEL ENCASEMENT PIPE.
- C. Water lines shall not pass through manholes.

3.15 PARALLEL WATER AND SEWER LINES

- A. Water and sewer line shall have a minimum 10 feet horizontal separation.
- B. Water and sewer lines shall not be installed within the same trench.

3.16 TESTING

- A. Acceptance testing for water mains shall conform to the relevant portions of Section 33 31 26, TESTING WATER DISTRIBUTION SYSTEMS.

3.17 TRENCHING

- A. Pipe trenching shall be as specified in Section 31 23 16.16, TRENCHING FOR WATER AND SEWER LINES.

3.18 STEEL ENCASEMENT

- A. Pipe installed within steel encasement shall conform to Section 33 31 13, STEEL ENCASEMENT PIPE.

END OF SECTION

DIVISION 40

PROCESS INTEGRATION

SECTION 40 23 43 – PROCESS VALVES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Basic requirements for Valves.
- B. Related sections:
 - 1. Section 01 33 00 – Submittal Procedures.
 - 2. Section 01 60 00 – Product Requirements.
 - 3. Section 01 78 23 – Operation and Maintenance Data.
 - 4. Section 33 34 13 – Ductile Iron Water Transmission Pipe and Fittings

1.2 SUBMITTALS

- A. Submittals shall be made as required in Section 01 33 00, SUBMITTALS. The following specific information shall be provided:
 - 1. Shop Drawings:
 - a. Product data sheets for make and model.
 - b. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.
 - c. Refer to specific valve type for additional submittal requirements.
 - 2. Quality Control Submittals:
 - a. Tests and inspection data.
 - b. Manufacturer's Certificate of Proper Installation.
 - c. Manufacturer's printed installation instructions.
 - d. Special shipping, storage and protection, and handling instructions.
 - e. Suggested spare parts list to maintain the equipment in service for a period of 5 years. Include a list of special tools required for checking, testing, parts replacement, and maintenance with current price information.
 - f. List special tools, materials, and supplies furnished with equipment for use prior to and during startup and for future maintenance.

1.3 OPERATION AND MAINTENANCE DATA

- A. O&M Manuals: Content, format, and schedule for providing as specified in Section 01 78 23, OPERATION AND MAINTENANCE DATA.
- B. Maintenance Summary Forms: As specified in Section 01 78 23, OPERATION AND MAINTENANCE DATA.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Valve to include operator, actuator, hand wheel, chain wheel, extension stem, floor stand, worm and gear operator, operating nut, chain, wrench, and accessories for a complete operation.
- B. Valve shall be suitable for intended service. Renewable parts not to be of a lower quality than specified.
- C. Valve shall be the same size as adjoining pipe.
- D. Valve ends to suit adjacent piping.

- E. Resilient seated valves shall have no leakage (drip-tight) in either direction at valve rated design pressure. All other valves shall have no leakage (drip-tight) in either direction at valve rated design pressure, unless otherwise allowed for in this section or in stated valve standard.
- F. Size operators and actuators to operate valve for full range of pressures and velocities.
- G. Valve shall open by turning counterclockwise unless otherwise specified.
- H. Operator, actuator, and accessories shall be factory mounted.
- I. Supply certification product is certified as suitable for contact with drinking water by an accredited certification organization in accordance with NSF 61. Provide certification for each valve type used for drinking water service.
- J. EFFECTIVE JANUARY 4, 2014 ANY VALVE, PIPE, FITTING, SOLDER, OR FLUX USED OR IN CONTACT WITH POTABLE WATER MUST COMPLY WITH THE REDUCTION OF LEAD IN DRINKING WATER ACT, AN AMENDMENT TO SECTION 1417 OF THE SAFE DRINKING WATER ACT (SDWA). VALVES SPECIFIED IN THIS SECTION MAY NOT MEET REQUIREMENTS OF THIS ACT, HOWEVER THIS DOES NOT RELIEVE THE CONTRACTOR FROM PROVIDING A VALVE TO MEET REQUIREMENTS OF THE (SDWA) AND THE SAME FUNCTIONAL REQUIREMENTS OF THIS SPECIFICATION.

2.2 SCHEDULE

- A. Requirements relative to this section for certain type of actuated or process valves are shown on the Valve Schedules attached as Supplements to the related Sections.

2.3 MATERIALS

- A. Brass and bronze valve components and accessories that have surfaces in contact with water shall be alloys containing less than 16% zinc and 2% aluminum.
- B. Approved alloys are of the following ASTM designations:
 1. B61, B62, B98 (Alloy UNS No.C65100, C65500, or C66100), B139 (Alloy UNS No.C51000), B584 (Alloy UNS No.C90300 or C94700), B164, B194, and B127.
 2. Stainless steel, AISI Type 316 may be substituted for bronze.

2.4 FACTORY FINISHING

- A. Epoxy Lining and Coating:
 1. Interior coatings for valves shall be in accordance with AWWA C550 unless otherwise specified. Coating shall be either two-part liquid material or heat-activated (fusion) material except only heat-activated material if specified as "fusion" or "fusion bonded" epoxy.
 2. Material in contact with potable water shall conform to NSF 61.
 3. Minimum 7-mil dry film thickness except where limited by valve operating tolerances.
 4. Exterior coatings for valves and fittings shall be in accordance with requirements of ANSI/AWWA C-116.

2.5 VALVES:

- A. General:
 1. AWWA gate valves to be in full compliance with stated AWWA standard and the following requirements:
 2. Provide 2-inch operating nut and handwheel for AWWA gate valves 12 inches and smaller.
 3. Provide Affidavit of Compliance per the applicable AWWA standard for AWWA gate valves.

4. Mark AWWA gate valves with manufacturer's name or mark, year of valve casting, valve size, and working water pressure.
5. Repaired AWWA gate valves shall not be submitted or supplied.

B. Gate Valves:

1. Type V141: Buried Gate Valve, 3 Inches and Larger
 - a. Valve shall be resilient wedge type, of non-rising stem design and rated for 250 psig cold water working pressure.
 - b. Valve shall meet or exceed all requirements of the latest revision of AWWA C515.
 - c. Valve shall have mechanical joint ends, except tapping valves may be flanged by mechanical joint.
 - d. Stem shall be sealed by three O-Rings. O-Rings set in a cartridge shall not be allowed.
 - e. Each valve shall have maker's name, pressure rating, and year in which it was manufactured cast in the body. Country of origin to be clearly cast into body & cover castings.
 - f. Materials:
 - 1). All cast ferrous components shall be ductile iron, ASTM A536.
 - 2). The body, bonnet and O-ring plate shall be fusion-bonded epoxy coated, both interior and exterior on body and bonnet. Epoxy shall be applied in accordance with AWWA C550 and be NSF 61 Certified.
 - 3). Wedge shall be ductile iron fully encapsulated in EPDM rubber.
 - 4). Hardware shall be 304 stainless steel
 - 5). Stems shall be cast copper alloy with integral collars in full compliance with AWWA. All stems shall operate with copper alloy stem nuts independent of wedge and of stem
 - 6). Provide standard AWWA 2-inch operating nut, matching valve key, and valve box for operating stem.
 - g. Manufacturers and Products:
Reference SECTION 00 73 00.1 – CITY OF CELINA APPROVED MATERIALS LIST

C. Butterfly Valves:

- a. General:
 - 1). In full compliance with AWWA C504 and following requirements:
 - 2). Suitable for throttling operations and infrequent operation after periods of inactivity.
 - 3). Elastomer seats which are bonded or vulcanized to the body shall have adhesive integrity of bond between seat and body assured by testing, with minimum 75-pound pull in accordance with ASTM D429, Method B.
 - 4). Bubble-tight with rated pressure applied from either side. Test valves with pressure applied in both directions.
 - 5). No travel stops for disc on interior of body.
 - 6). Self-adjusting V-type or O-ring shaft seals.
 - 7). Isolate metal-to-metal thrust bearing surfaces from flowstream.
 - 8). Provide traveling nut or worm gear actuator with handwheel. Valve actuators to meet the requirements of AWWA C504.
 - 9). Buried service operators shall withstand 450 foot-pounds of input torque at fully open and fully closed positions.
 - 10). Provide linings and coatings per AWWA, unless otherwise indicated on Drawings or specified herein.
 - 11). Valves to be in full compliance with NSF/ANSI 61. [Provide NSF/ANSI 61 certificate for each valve.]
2. Butterfly Valve, 4 Inches and Larger

- a. Valve Style: Flanged end, short body type, Mechanical joint end, flanged by mechanical joint ends
- b. Flanged end connections shall fully conform with ANSI B16.1 Class 125 or Class 250, or AWWA C207 Class D.
- c. Mechanical joint end connections
- d. Materials:
 - 1). Body: Class 150B valve bodies shall be ASTM A126, Class B gray iron or ASTM A536 Grade 65-45-12 ductile iron. Class 250B valve bodies shall be ASTM A536 Grade 65-45-12 ductile iron.
 - 2). Disc: Valve disc shall be made from cast iron ASTM A-126 Class B or stainless steel ASTM A351 in sizes 20" and smaller. Sizes 24" and larger shall be built from ductile iron in conformance to ASTM A-536. Disc shall be furnished with Type 316 stainless steel seating edge to mate with the rubber seat on the body.
 - 3). Shafts: Shafts shall be Stainless Steel. ASTM A276 Type 304, or Type 316, or ASTM A564, grade 630.
 - 4). Seat: Valve seat shall be Buna-N rubber located on the valve body. In sizes 20" and smaller, valves shall have bonded seats that meet test procedures outlined in ASTM D-429 Method B. Sizes 24" and larger shall be retained in the valve body by mechanical means without use of metal retainers or other devices located in the flow stream.
 - 5). Bearings: Shall be sleeve type that is corrosion resistant and self-lubricating.
 - 6). Manual Actuators: Shall be fully grease packed and have stops in the open/close position. The actuator shall have a mechanical stop which will withstand an input torque of 450 ft. lbs. against the stop. The traveling nut shall engage alignment grooves in the housing. The actuators shall have a built in packing leak bypass to eliminate possible packing leakage into the actuator housing.
 - 7). Hardware: All seat retaining hardware shall be Type 316 stainless steel.
- e. Manufacturers and Products:
Reference SECTION 00 73 00.1 – CITY OF CELINA APPROVED MATERIALS LIST

2.6 OPERATORS AND ACTUATORS

- A. Manual Operators:
 - 1. General:
 - a. For AWWA valves, operator force not to exceed requirements of applicable valve standard. Provide gear reduction operator when force exceeds requirements.
 - b. For non-AWWA valves, operator force not to exceed applicable industry standard or 80 pounds, whichever is less, under operating condition, including initial breakaway. Provide gear reduction operator when force exceeds requirements.
 - c. Operator self-locking type or equipped with self-locking device.
 - d. Position indicator on quarter-turn valves.
 - e. Worm and gear operators one-piece design, worm-gears of gear bronze material. Worm of hardened alloy steel with thread ground and polished. Traveling nut type operator's threaded steel reach rod with internally threaded bronze or ductile iron nut.
 - 2. Exposed Operator:
 - a. Galvanized and painted handwheel.
 - b. Cranks on gear type operator.
 - c. Chain wheel operator with tieback, extension stem, floor stand, and other accessories to permit operation from normal operation level.
 - d. Valve handles to take a padlock, and wheels a chain and padlock.
 - 3. Buried Operator:

- a. Buried service operators on valves larger than 2-1/2 inches shall have a 2-inch AWWA operating nut. Buried operators on valves 2 inches and smaller shall have cross handle for operation by forked key. Enclose moving parts of valve and operator in housing to prevent contact with the soil.
- b. Buried service operators to be grease packed and gasketed to withstand submersion in water to 20 feet minimum.
- c. Buried valves shall have extension stems, bonnets, and valve boxes.

2.7 ACCESSORIES

- A. T-Handled Operating Wrench:
 - 1. 2 each galvanized operating wrenches, 4 feet long.
 - 2. Manufacturers and Products:
 - a. Mueller; No. A-24610.
 - b. Clow No.; F-2520.
 - 3. 2 each galvanized operating keys for cross handled valves.
- B. Cast Iron Valve Box: Designed for traffic loads, sliding type, with minimum of 6" ID shaft.
 - 1. Box: Cast iron with minimum depth of 9".
 - 2. Lid: Cast iron, minimum depth 3", marked for the appropriate service.
 - 3. Extensions: Cast iron.

PART 3 - EXECUTION

3.1 SHIPPING, STORAGE, HANDLING, AND PROTECTION

- A. As specified in Section 01 60 00, PRODUCT REQUIREMENTS.

3.2 INSTALLATION

- A. Flange Ends:
 - 1. Flanged valve bolt holes shall straddle vertical centerline of pipe.
 - 2. Clean flanged faces, insert gasket and bolts, and tighten nuts progressively and uniformly.
- B. Mechanical Joint Ends:
 - 1. Clean ends by wire brush or swabbing
 - 2. Apply necessary joint compound.
- C. Screwed Ends:
 - 1. Clean threads by wire brushing or swabbing.
 - 2. Apply joint compound.
- D. Valve Orientation:
 - 1. Install operating stem vertical when valve is installed in horizontal runs of pipe having centerline elevations 4' 6" or less above finished floor, unless otherwise shown.
 - 2. Install operating stem horizontal in horizontal runs of pipe having centerline elevations between 4' 6" and 6' 9" above finish floor, unless otherwise shown.
 - 3. Orient butterfly valve shaft so that unbalanced flows or eddies are equally divided to each half of the disc, i.e., shaft is in the plane of rotation of the eddy.
 - 4. If no plug valve seat position is shown, locate as follows:
 - a. Horizontal Flow: The flow shall produce an "unseating" pressure, and the plug shall open into the top half of valve.
 - b. Vertical Flow: Install seat in the highest portion of the valve.

- E. Install a line size ball valve and union upstream of each solenoid valve, in-line flow switch, or other in-line electrical device, excluding magnetic flow meters, for isolation during maintenance.
- F. Install safety isolation valves on compressed air.
- G. Locate valve to provide accessibility for control and maintenance. Install access doors in finished walls and plaster ceilings for valve access.
- H. Extension Stem for Operator: Where the depth of the valve is such that its centerline is more than 3 feet below grade. Furnish an operating extension stem with 2" operating nut to bring the operating nut to a point 6" below the surface of the ground and/or box cover.
- I. Torque Tube: Where operator for quarter-turn valve is located on floor stand. Furnish extension stem torque tube of a type properly sized for maximum torque capacity of the valve.
- J. Floor Box and Stem: Steel extension stem length shall locate operating nut in floor box.

3.3 TESTS AND INSPECTION

- A. Valve may be either tested while testing pipelines, or as a separate step.
- B. Test that valves open and close smoothly with operating pressure on one side and atmospheric pressure on the other, in both directions for two-way valve and applications.
- C. Inspect air and vacuum valves as pipe is being filled to verify venting and seating is fully functional.
- D. Count and record number of turns to open and close valve; account for any discrepancies with Manufacturer's data.
- E. Set, verify, and record set pressures for all relief and regulating valves.
- F. Automatic valve to be tested in conjunction with control system testing.
- G. Test hydrostatic relief valve seating; record leakage. Adjust and retest to maximum leakage of 0.1 gpm per foot of seat periphery.

3.4 MANUFACTURER'S SERVICES

- A. A Manufacturer's representative for the equipment specified herein shall be present at the jobsite for the minimum person-days listed for the services herein under, travel time excluded:
 - 1. One person-days for installation assistance, inspection, and certification of the installation. Provide certificate.
 - 2. 1 person-days for functional and performance testing.
 - 3. 1 person-days for pre-startup classroom or jobsite training of OWNER'S personnel.
- B. Training of OWNER'S personnel shall be at such times and at such locations as requested by OWNER.

3.5 MANUFACTURER'S CERTIFICATE(S)

- A. Provide Manufacturer's certificate(s) in accordance with Section 01 79 00.

END OF SECTION

SECTION 40 42 13.16 – POLYETHYLENE ENCASEMENT FOR DUCTILE IRON AND CAST IRON PIPE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes polyethylene encasement to be used on all underground ductile iron and cast iron pipe, fittings, valves, and appurtenances.

1.2 QUALITY CONTROL

- A. Supervision: Provide full time supervisor trained and familiar with the work to be undertaken.
- B. Workmanship: All workmen shall be skilled and experienced in the specified work.

1.3 SUBMITTALS

- A. General: Administrative, shop drawings, samples, quality control, and contract closeout submittals shall conform to the requirements of Section 01 33 00, SUBMITTAL PROCEDURES.
- B. In addition to the requirements of Section 01 33 00, SUBMITTAL PROCEDURES, submit the following additional specific information:
 - 1. Complete catalog information, descriptive literature, specifications, and identification of materials.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Polyethylene encasement materials shall be manufactured of virgin polyethylene possessing the following characteristics:
 - 1. Polyethylene encasement shall be V-BIO ENHANCED POLYWRAP by U.S. PIPE, or approved equal.
 - 2. The minimum tube size for each pipe diameter shall be as listed in Table 1. For pipe sizes greater than 24 inches, tube size may be determined by multiplying the nominal pipe diameter by 2.25 to obtain minimum flat tube width.
 - 3. Polyethylene tube material shall have a thickness of 0.008 inches (8 mils). The minus tolerance on thickness shall not exceed 10 percent of the nominal thickness.
 - 4. The minimum tube size for each pipe diameter shall be as listed in Table 1. For pipe sizes greater than 24 inches, tube size may be determined by multiplying the nominal pipe diameter by 2.25 to obtain minimum flat tube width.

TABLE 1

NOMINAL PIPE DIAMETER (INCHES)	POLYETHYLENE FLAT TUBE WIDTH (INCHES)
4	16
6	20
8	24
10	27
12	30
14	34
16	37
18	41
20	45
24	53
30	67.5
36	81

B. Tape

1. Tape used in field application of polyethylene encasement shall be Polyken #900 as manufactured by Covalence Adhesives, Scotchrap #50 as manufactured by 3M, or approved equal. Tape shall be at least two (2) inches wide.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Polyethylene encasement shall be installed on all buried ductile iron pipe and fittings. Although not intended to be a completely air- and water-tight enclosure, the polyethylene shall prevent contact between the pipe and the surrounding backfill.

B. Pipe:

- a. Cut polyethylene tube to a length approximately 2 feet longer than the length of the pipe section. Slip the tube around the pipe, centering it to provide a 1 foot overlap on each adjacent pipe section, and bunching it accordion-fashion lengthwise until it clears the pipe ends.
- b. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at joints to facilitate installation of the polyethylene tube.
- c. After assembling the pipe joint, make the overlap of the polyethylene tube. Pull the bunched polyethylene from the preceding length of pipe, slip it over the end of the new length of pipe, and secure in place with one circumferential turn of adhesive tape plus enough overlap to assure firm adhesion. Then slip the end of the polyethylene from the new pipe section over the end of the polyethylene from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe. Tape it in place. Take up the slack width to make a snug, but not tight, fit along the barrel of the pipe, securing the fold at quarter points with adhesive tape.
- d. Repair any rips, punctures, or other damage to the polyethylene with adhesive tape or with a short length of polyethylene tube cut open, wrapped around the pipe, and secured with adhesive tape. Proceed with installation of the next section of pipe in the same manner.

B. Pipe-shaped appurtenances:

1. Bends, reducers, offsets, and other pipe-shaped appurtenances shall be covered with polyethylene in the same manner as the pipe.
- C. Odd-shaped appurtenances:
 1. Valves, tees, crosses, and other odd-shaped pieces which cannot practically be wrapped in a tube shall be wrapped with a flat sheet or split length of polyethylene tube. The sheet shall be passed under the appurtenance and brought up around the body. Seams shall be made by bringing the edges together, folding over twice, and taping down. Slack width and overlaps at joints shall be handled as described in B.1. Tape polyethylene securely in place at valve stem and other penetrations.
- D. Openings in encasement:
 1. Openings for branches, service taps, blow-offs, air valves, and similar appurtenances shall be made by making an x-shaped cut in the polyethylene and temporarily folding the film back. After the appurtenance is installed, tape the slack securely to the appurtenance and repair the cut as well as any other damaged areas in the polyethylene with tape.
- E. Junctions between wrapped and unwrapped pipe:
 1. Where polyethylene wrapped pipe joins a pipe which is not wrapped, extend the polyethylene tube to cover the unwrapped pipe a distance of at least 2 feet. Secure the end with circumferential turns of tape.
- 3.2 PRODUCT DELIVERY, STORAGE, AND HANDLING
 - A. Comply with Section 01 60 00, PRODUCT REQUIREMENTS.
 - B. Delivery of Materials: Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer.
 - C. Storage: Products shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.
 - D. The encasement shall be protected from prolonged exposure to sunlight to prevent deterioration of the PE film.

END OF SECTION

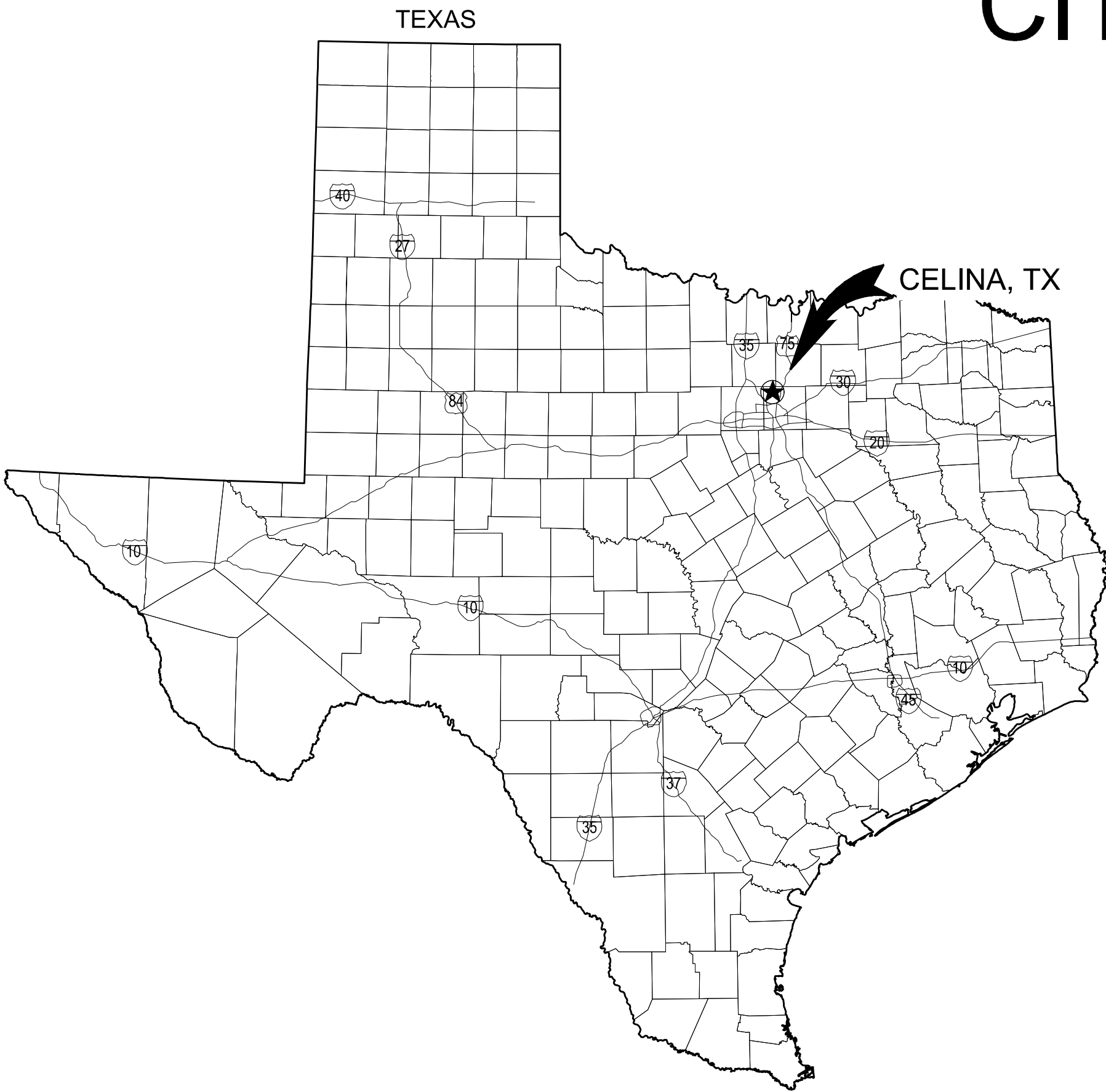
CELINA

WATER TRANSMISSION IMPROVEMENTS

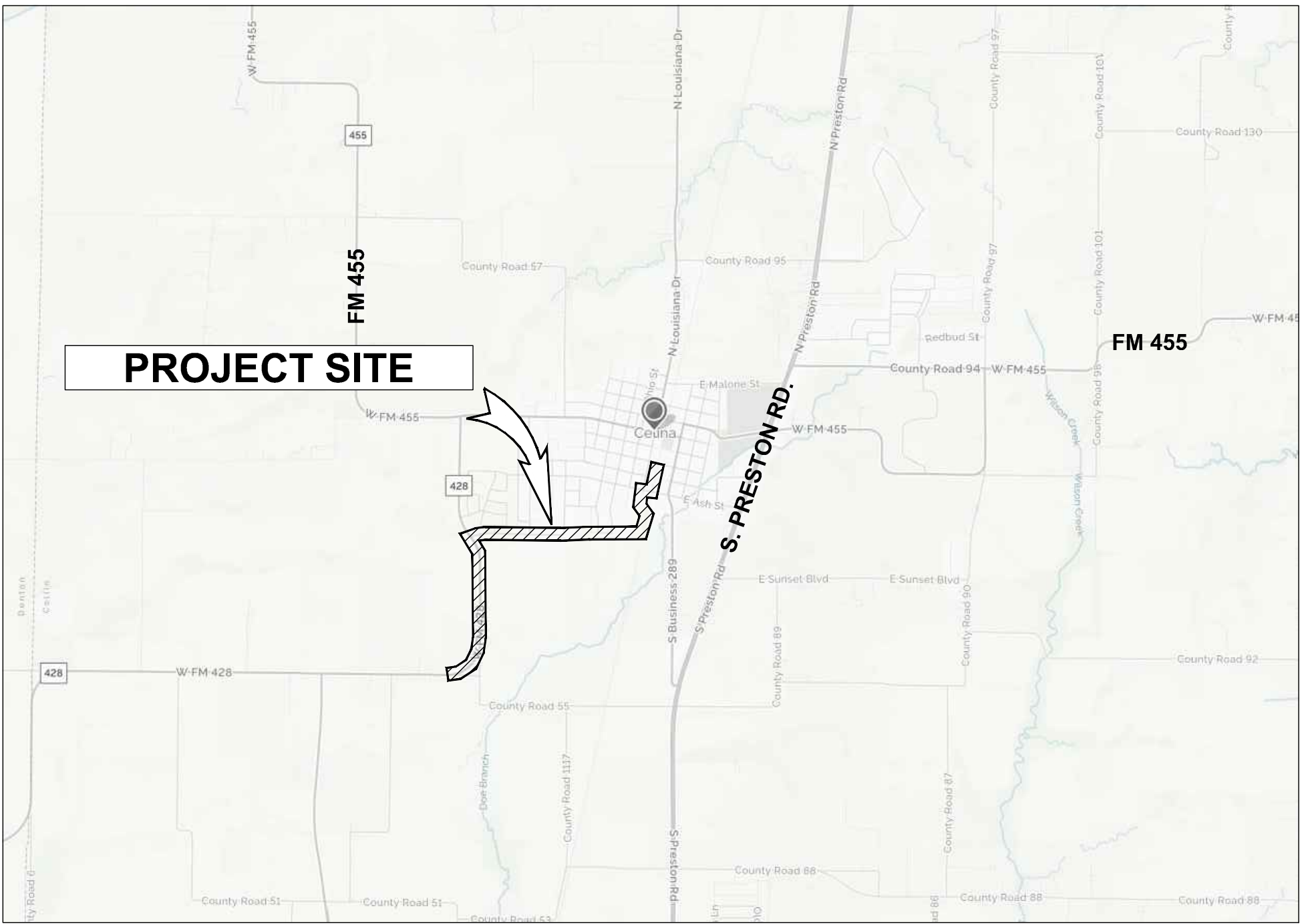
PACKAGE - B

CITY OF CELINA

CELINA, TEXAS



LOCATION MAP



VICINITY MAP

NO SCALE

VOLUME 2 OF 2 - DRAWINGS
GARVER PROJECT NO. 18088205
JANUARY 2019



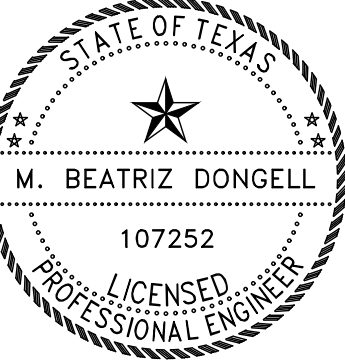
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REGISTRATION NO.
F-5713

M. Beatriz Dongell



Digitally Signed 01/11/2019

REV.	DATE	DESCRIPTION	BY



CITY OF CELINA
CELINA, TEXAS
WATER TRANSMISSION
IMPROVEMENTS
PACKAGE-B

COVER SHEET

JOB NO.: 18088205
DATE: JAN. 2019
DESIGNED BY: MBD
DRAWN BY: EAF/KDW

BAR IS ONE INCH ON
ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET,
ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER
G001

SHEET
NUMBER **01**



Engineering
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Kim Brawner, Director of Engineering
CC: Swapna Konda, Engineer
Date: February 12, 2019
Re:

Action Requested:

Consider and act to authorize the City Manager to execute a contract between the City of Celina and Viking Industrial Painting in the amount of \$459,800.00 (includes 10% contingency) for the Downtown elevated storage tank repair and rehab project. (Brawner)

Background Information:

The City of Celina, plans to rehabilitate, paint and light up a 75,000 gallon downtown elevated water storage tank located at 107 E. Elm street to serve as a monument.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

2018 Bond Issuance

Legal Review:

Supporting Documents:

Engineer's letter of recommendation & bid tab
Agreement
Lighting

Staff Recommendation:

Approve

February 4, 2019

Ms. Dawn Berry
City of Celina
Via email to: dberry@celina-tx.gov.

Re: Recommendation of Contractor for Downtown EST Rehabilitation
Project No. 2019-0002

The purpose of this letter is to recommend a contractor for the above referenced project. A bid tabulation from the January 29th, 2019 public bid opening is attached. This project involves the repair and repainting of a 75,000-gallon elevated steel water storage tank in the city of Celina, TX.

1. Bid Tabulation Sheet – Four (4) contractors participated in the bidding process. The bids received were checked for mathematical errors and/or bid irregularities. The project was bid with a Base Bid, and three (3) Alternate Bid items. Copy of bid tabulation attached.
2. Qualifications and References – The lowest responsive and responsible bidder, Viking Industrial Painting, of Omaha, Nebraska provided an acceptable list of qualifications and references.

The lowest, responsive and responsible bidder, Viking Industrial Painting is recommended for award for a total contract price not to exceed \$418,000.00. Dunham Engineering has interviewed Viking Industrial Painting's Project Manager, and reviewed submitted references for similar projects, and has found all to be satisfactory.

If you should have any questions regarding the above recommendations, please feel free to call anytime.

Sincerely,



Wesley A. Oatman, P.E.

Downtown EST Bid Tabulation Sheet
City of Celina
Bids opened January 29, 2019 @ 2:00 p.m.

Contractor	Base Bid	Item 1 & 2	Alt. 3	
Viking Industrial Painting	\$ 407,000	NB	\$ 11,000	
N.G. Painting	\$ 420,000	NB	\$ 75,000	
D&M Tank	\$ 516,750	NB	\$ 9,500	
TMI	\$ 693,000	NB	\$ 19,800	

Attachment: Celina Downtown ESTRehab Award Recommendation (Downtown Elevated Storage Tank Repair & Rehab)

SECTION 00400
EJCDC STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
ON THE BASIS OF A STIPULATED PRICE

THIS AGREEMENT is by and between _____ (hereinafter called OWNER) and _____, (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1 – WORK

1.01 CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

City of Celina
DownTown Elevated Storage Tank Repair / Remodel
Bid 2019-0002

ARTICLE 2 – THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

Rehabilitating and painting a 75,000 gallon elevated water storage tank located at 107 E. Elm Street, Celina, Texas 75009.

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by:

Dunham Engineering
6102 Imperial Loop
College Station, TX 77845
979-690-6555

which hereinafter called ENGINEER and which is to act as OWNER'S representative, assume all duties and responsibilities, and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 Days to Achieve Substantial Completion and Final Payment

A. The Work will be substantially completed within 120 days after the date when the Contract Times commence to run as provided in paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions within 150 days after the date when the Contract Times commence to run.

4.03 Liquidated Damages

A. CONTRACTOR and OWNER recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidate damages for delay (but not as a penalty), CONTRACTOR shall pay OWNER \$250 for each day that expires after the time specified in paragraph 4.02 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if CONTRACTOR shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER \$250 for each day that expires after the time specified in paragraph 4.02 for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

5.01 OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraphs 5.01.A below:

For all Work other than Unit Price Work, a Lump sum of: \$418,000.00
All specific cash allowances are included in the above price and have been computed in
accordance with paragraph 11.02 of the General Conditions.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

A. CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

6.02 Progress Payments; Retainage

A. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment through the last day of each month during performance of the Work as provided in paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established in paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements:

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously

made and less such amounts as ENGINEER may determine or OWNER may withhold, in accordance with paragraph 14.02 of the General Conditions:

- a. 95% of Work completed (with the balance being retainage).
 - b. 95% of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
2. Upon Substantial Completion, OWNER shall pay an amount sufficient to increase total payments to CONTRACTOR to 95% of the Work completed, less such amounts as ENGINEER shall determine in accordance with paragraph 14.02.B.5 of the General Conditions and less 100% of ENGINEER's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 Final Payment

A. Upon final completion and acceptance of the Work in accordance with paragraph 14.07 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.07.

ARTICLE 7 – INTEREST

7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the rate of 0% per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

A. CONTRACTOR has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.

B. CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. CONTRACTOR is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

D. CONTRACTOR has carefully studied all: (1) Geotechnical Investigations, explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions.

E. CONTRACTOR does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

F. CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Contract Documents.

G. CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

H. CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that CONTRACTOR has discovered in the Contract Documents, and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.`

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 Contents

A. The Contract Documents consist of the following:

1. This Agreement;
2. Performance Bond;
3. Payment Bond;
4. Other bonds;
5. General Conditions;
6. Supplementary Conditions;
7. Specification as listed in the table of contents of the Project Manual;
8. Drawings;
9. Addenda;
10. Exhibits to this Agreement (enumerated as follows):
 - a. CONTRACTOR'S Bid Response;
 - b. Notice of Award;
 - c. Notice to Proceed
11. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Written Amendments;
 - b. Work Change Directives;
 - c. Change Order(s).

B. The documents listed in paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in paragraph 3.04 of the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 Terms

A. Terms used in this Agreement will have the meanings indicated in the General Conditions.

10.02 Assignment of Contract

A. No assignment by a party hereto of any rights under or interests on the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 Successors and Assigns

A. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 Severability

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law of Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 Contractor's Certifications

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have assigned this Agreement in duplicate. One counterpart each has been delivered to OWNER and CONTRACTOR. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or on their behalf.

This Agreement will be effective on _____, 2019 (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR:

By: _____
Jason Laumer, City Manager
[CORPORATE SEAL]

By: _____
[CORPORATE SEAL]

Attest _____

Attest _____

Address for giving notices:

Address for giving notices:

142 N Ohio

City of Celina, Texas 75009

(If OWNER is a corporation, attach evidence of authority to sign. If OWNER is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of Owner-CONTRACTOR Agreement.)

License
No. _____

(Where applicable)

Agent for service of process: _____

(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)

Designated Representative:

Designated Representative:

Name: Jason Laumer

Name: _____

Title: City Manager

Title: _____

Address: 142 N Ohio

Address: _____

City of Celina, Texas 75009

Phone 972-382-2682

Phone: _____

Facsimile: _____

Facsimile: _____

Email: Contracts@celina-tx.gov

E-mail: _____

Attachment: 400 - Standard Form of Agreement (Downtown Elevated Storage Tank Repair & Rehab)



**NOTICE OF
CITY COUNCIL REGULAR MEETING
CELINA ISD ADMIN BLDG., BOARD ROOM 205 S. COLORADO STREET, CELINA, TX
75009
Tuesday, February 12, 2019 AT 5:00 PM**

AGENDA

I. CALL TO ORDER AND ANNOUNCE A QUORUM PRESENT:

II. PLEDGE OF ALLEGIANCE/INVOCATION:

III. PROCLAMATIONS/PRESENTATIONS/OATHS OF OFFICE:

IV. OPEN FORUM:

Open Forum is for information only. If you wish to speak, please sign the "Speaker List" with the City Secretary. Speakers are limited to three (3) minutes. The Council can take no action. No charges and/or complaints will be heard against any elected official or employee of the city.

Please note Anyone wishing to furnish the City Council with copies/handouts regarding their item of interest must provide 9 copies and present them to the City Secretary for distribution to the City Council.

V. WORKSESSION/COMMITTEE REPORTS/STAFF REPORTS:

- A. New employee introductions. (McAfee) (Shaw)
- B. Master Trails Plan Presentation. (Norris Design)
- C. Discussion regarding 2015 Model Code. (McAfee)
- D. Comprehensive Plan update. (McAfee)
- E. General locations for future fire and police stations. (Metdker, Griggs, DeBuff)
- F. Staff Reports attached
- G. Discussion regarding any and/or all agenda items.

VI. EXECUTIVE SESSION:

The Celina City Council will convene into Executive Session pursuant to Texas Government Code 551.071, Consultation with Attorney, on a matter in which the duty of the attorney to the governmental body under the Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with this Chapter.

- A. Discussion regarding a resolution supporting proposed legislation related to the creation of a the North Celina Municipal Management District #3 (Dynavest).

Reconvene Into Open Session

- B. Consider and act upon any items discussed in executive session.

VII. CONSENT AGENDA: Items are considered self-explanatory and will be enacted with one motion. No separate discussion of these items will occur unless so requested by at least one member of the City Council.

A. Minutes Approval:

- 1. City Council - Regular Meeting - Jan 8, 2019 5:00 PM
- 2. City Council - Special Meeting - Jan 22, 2019 5:00 PM

- B. Consider and act upon approval of a Joint General Election Contract for election services by and among the City of Celina, Celina Independent School District and Collin County, and a Joint General Election Agreement by and among the City of Celina, Denton County Elections Administrator and political subdivisions of Denton County. (Faulkner)
- C. Consider and act upon a Professional Service Agreement with Ideation Planning, LLC for a Comprehensive Plan and authorize and empower the City Manager to execute the same. (Comprehensive Plan) (McAfee)
- D. Consider and act to appoint Corbett Howard as the City-appointed director for Celina Municipal Management District No. 2 Board of Directors for a term ending May 1, 2022. (Laumer)
- E. Consider and act to authorize the City Manager to execute a contract by and between the City of Celina and Archer Western Construction LLC in the amount of \$3,656,576.99 for the construction of improvements to the Celina Road and Downtown Pump Stations. (Brawner)
- F. Consider and act to authorize the Mayor to execute a contract by and between the City of Celina and Marilee Special Utility District for the fifth addendum to the Full and Final Settlement Agreement and Release executed on April 24, 2001. (Laumer)
- G. Consider and act to authorize the City Manager to execute a contract between the City of Celina and McKee Utility Contractors in the amount of \$3,525,254.00 for the construction of 36-inch and 30-inch water line and appurtenances (Brawner)
- H. Consider and act to authorize the City Manager to execute a contract between the City of Celina and Viking Industrial Painting in the amount of \$459,800.00 (includes 10% contingency) for the Downtown elevated storage tank repair and rehab project. (Brawner)

VIII. PUBLIC HEARING/ACTION:

- A. The City Council will conduct the second of two public hearings, and act upon an ordinance of the City of Celina, Texas, adopting the annexation of certain territory contiguous to and adjoining the City of Celina, Texas, to wit: being an approximately 7.426 acre tract of land generally located on the north side of Frontier Parkway and approximately 900 feet east of Prairie Crossing. (All Storage Annexation) (McAfee)

- B. The Celina City Council will conduct a public hearing to consider testimony and act upon an ordinance amending Ordinance No. 2006-57, as heretofore amended, the same being the Comprehensive Zoning Ordinance, and amending the official zoning map of the City by designating the zoning of an approximately 7.4 acre tract of land from AG, Agricultural zoning district to PD, Planned Development District No. 95 (PD-95) with a base zoning designation of RO, Retail Office zoning, generally located on the north side of Frontier Parkway approximately 900 feet east of Prairie Crossing. (All Storage Celina Zoning Request) (McAfee)
- C. The City Council will conduct the first of two public hearings on the City-Initiated annexation of an approximately 4.0 acre tract of land owned by the City of Celina, and generally located on the north side of Light Farms Way and approximately 350 feet east of the Dallas North Tollway. (Fire Station No. 2 Annexation) (McAfee)

IX. ACTION ITEM:

- A. Consider and act upon a resolution declaring an expectation to reimburse expenditures with proceeds of future debt, and all matters incident and related thereto. (Toutounchian)
- B. Consider and act to authorize the City Manager to execute a contract between the City of Celina and Lee Engineering in the amount of 174,202.00 for the design of Preston Road lights from the south city limits to the North City Limits. (Brawner)
- C. Consider and act to authorize the City Manager to execute an amendment to the Construction Manager at Risk Agreement to Establish the Guaranteed Maximum Price for by and between the City of Celina and Hill & Wilkinson in the amount of \$6,669,613.00 (Brawner)
- D. Consider and act upon an Office of the Governor Criminal Justice Program (JAG) grant resolution of support. (Griggs)
- E. Consider and act upon a resolution of the City of Celina Texas supporting the creation of the Celina Municipal Management District Number 3. (Sorrells MMD) (Laumer)

X. ADJOURNMENT:

City Council Chambers is wheelchair accessible. Persons with disabilities who plan to attend this meeting and who may need auxiliary aids or services such as interpreters for persons who are deaf, or hearing impaired, or readers of large print, are requested to contact the City Secretary's Office at 972-382-2682, or fax 972-382-3736 at least two (2) working days prior to the meeting so that appropriate arrangements can be made.

The City Council reserves the right to adjourn into executive session at any time during the course of this meeting to discuss any of the matters listed above, as authorized by the Texas Government Code, Chapter 551. "I, the undersigned authority do hereby certify that the Notice of Meeting was posted on the bulletin board at City Hall of the City of Celina, Texas, a place convenient and readily accessible to the general public at all times and said Notice was posted on the following date and time: _____ at ____ p.m. and remained so posted continuously for at least 72 hours prior to the scheduled time of said meeting."

Vicki Faulkner, TRMC
City Secretary, City of Celina, TX

Date Notice Removed



Development Services
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Dusty McAfee AICP, Director of Development Services
 CC: Jason Laumer, City Manager
 Date: February 12, 2019
 Re: All Storage Celina Annexation 2nd Public Hearing, Adoption

Action Requested:

The City Council will conduct the second of two public hearings, and act upon an ordinance of the City of Celina, Texas, adopting the annexation of certain territory contiguous to and adjoining the City of Celina, Texas, to wit: being an approximately 7.426 acre tract of land generally located on the north side of Frontier Parkway and approximately 900 feet east of Prairie Crossing. (All Storage Annexation) (McAfee)

Applicant:

All Storage Celina, LLC
 82 W. Armstrong Drive
 Mustang, OK 73064

Background Information:

Below is the anticipated annexation schedule for the property:

~~December 11, 2018 – City Council acted upon a resolution to set the public hearing dates.~~

~~January 8, 2019 – First Public Hearing was held.~~

February 12, 2019 - Second Public Hearing to be held.

February 12, 2019 - City Council acts on an ordinance annexing the property.

Board Review/Citizen Input:

Notice of the second public hearing was published in *The Celina Record* on February 1, 2019.

Legal Review:

The City Attorney has reviewed the ordinance and deemed it acceptable.

Supporting Documents:

- Location Map
- Staff Presentation
- Annexation Ordinance

Staff Recommendation:

Staff recommends approval.



Attachment: Location Map (All Storage Celina Annexation 2nd Public Hearing, Adoption)



All Storage Location Map

Date: 11/26/2018

Legend

- Roads
- AllStorage
- City Limits
- Parcels

North arrow and scale bar (0, 150, 300 Feet).

Packet Pg. 1167

All-Storage

Annexation

City Council

February 12, 2019



Background

- All Storage Celina, LLC is voluntarily requesting the annexation of the 7.4 acre tract of land
- The City Council approved a Development Agreement in November, 2017 outlining its future annexation and zoning, both of which are being considered tonight
- All Storage is requesting annexation in conjunction with zoning, in conformance with the governing Development Agreement





Location Map

The tract is located on the north side of Frontier Parkway and approximately 450 feet east of the BNSF Railroad.

Annexation Schedule

- December 11, 2018 - City Council acted upon the resolution and set the public hearing dates
- January 8, 2019 – 1st Public Hearing was held
- February 12, 2019 – 2nd Public Hearing and adoption of the annexation ordinance

FYI - the associated zoning case shall be considered concurrently this evening



Recommendation

- Notices were published in compliance with State and local law
- Staff recommends approval as presented, in conformance with the approved Development Agreement



CITY OF CELINA, TEXAS

ORDINANCE NO. 2019-_____
ALL STORAGE ANNEXATION

AN ORDINANCE OF THE CITY OF CELINA, TEXAS, ADOPTING THE ANNEXATION OF CERTAIN TERRITORY CONTIGUOUS TO AND ADJOINING THE CITY OF CELINA, TEXAS, TO WIT: BEING AN APPROXIMATELY 7.426 ACRE TRACT OF LAND LOCATED IN THE COLLIN COUNTY SCHOOL LAND SURVEY #14, ABSTRACT NO. 167, COLLIN COUNTY, TEXAS, AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS IN EXHIBIT "A" AND GRAPHICALLY DEPICTED IN EXHIBIT "B" ATTACHED HERETO AND INCORPORATED HEREIN, SUCH TRACT IS GENERALLY LOCATED ON THE NORTH SIDE OF FRONTIER PARKWAY AND APPROXIMATELY 900 FEET EAST OF PRAIRIE CROSSING; PROVIDING FOR INCORPORATION OF PREMISES; PROVIDING FOR AMENDING OF THE OFFICIAL CITY MAP; PROVIDING FOR A SERVICE PLAN; REQUIRING THE FILING OF THIS ORDINANCE WITH THE COUNTY CLERK; PRESCRIBING FOR EFFECT ON TERRITORY, GRANTING AS APPROPRIATE TO ALL THE INHABITANTS OF SAID PROPERTY ALL THE RIGHTS AND PRIVILEGES OF OTHER CITIZENS AND BINDING SAID INHABITANTS BY ALL OF THE ACTS, ORDINANCES, RESOLUTIONS, AND REGULATIONS OF THE CITY OF CELINA, TEXAS; PROVIDING A CUMULATIVE REPEALER CLAUSE; PROVIDING FOR SEVERABILITY; PROVIDING FOR ENGROSSMENT AND ENROLLMENT; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City of Celina is a Home Rule Municipality located in Collin and Denton County, Texas, created in accordance with the provisions of the Texas Local Government Code and operating pursuant to the enabling legislation of the State of Texas and the Celina City Charter; and

WHEREAS, two separate public hearings were conducted in accordance with Section 43.052 of the Texas Local Government Code, the first hearing being held on the 8th day of January, 2019 in the City Council Chambers located at 112 N. Colorado, and the second hearing being held on the 12th day of February, 2019 in the Celina ISD Administration Building Board Room located at 205 S. Colorado, both locations in the City of Celina to consider the annexation of the property being more particularly described in Exhibit "A", attached hereto and incorporated herein; and

WHEREAS, any and all required written notices and offers were timely sent to all property owners and others entitled to same; and

WHEREAS, the public hearings were conducted and held no more than forty (40) days nor less than twenty (20) days prior to the institution of annexation proceedings; and

WHEREAS, the notices of the public hearings were published in *The Celina Record*, a newspaper of general circulation within the City of Celina, Texas, on the 28th day of December, 2018 and on the 1st day of February, 2019, such dates being not more than twenty (20) days nor less than ten (10) days prior to each public hearing; and

WHEREAS, all required statutory notices pursuant to Chapter 43 of the Texas Local Government Code have been accomplished; and

WHEREAS, the City Council of the City of Celina, Texas has determined that such territory is contiguous to and adjoins the City of Celina, Texas; and

WHEREAS, the City Council of the City of Celina, Texas has investigated into, has determined and officially finds that no part of such territory is within the extraterritorial jurisdiction of any other incorporated city or town; and

WHEREAS, to the extent that this Ordinance would cause an unincorporated area to be entirely surrounded by the City of Celina's limits, the City Council has found - and incorporates herein its finding - that surrounding the area is in the public interest; and

WHEREAS, metes and bounds descriptions of the property to be annexed is attached hereto as Exhibit "A" and incorporated herein for all purposes; and

WHEREAS, the service plan for such territory is attached hereto as Exhibit "C" and incorporated herein for all purposes.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS, THAT:

SECTION 1 **INCORPORATION OF PREMISES**

The above and foregoing premises are true and correct and are incorporated herein and made a part hereof for all purposes.

SECTION 2 **OFFICIAL CITY MAP AMENDED**

1. The official map and boundaries of the City are hereby amended so as to include the property being more particularly described in Exhibit "A", which is incorporated herein as if written word for word, and that such territory shall be and is hereby annexed into the corporate limits of the City.
2. The Mayor is hereby directed and authorized to perform or cause to be performed all acts necessary to correct the official map of the City to add the territory hereby annexed as required by law.

SECTION 3 **SERVICE PLAN**

The municipal service plan for the herein annexed territory, attached hereto as Exhibit "C", was submitted in accordance with Chapter 43 of the Texas Local Government Code and is hereby approved as part of this ordinance, and is made a part hereof.

SECTION 4 **FILING OF ORDINANCE REQUIRED**

The Mayor shall file or cause to be filed a certified copy of this Ordinance in the office of the County Clerk of Denton County, Texas, and any other necessary agencies, including the United States Department of Justice.

SECTION 5 **EFFECT ON TERRITORY**

From and after the passage of this Ordinance, the territory referenced in Exhibit "A", attached hereto and incorporated herein for all purposes, shall be a part of the City of Celina, Texas, and subject to the municipal service plan referenced in Section 3 of this Ordinance. The inhabitants thereof shall be entitled to all of the rights, privileges and immunities as all other citizens of the City of Celina, Texas, and shall be bound by all of the Ordinances and regulations enacted pursuant to and in conformity with the general laws of the State of Texas.

SECTION 6 **CUMULATIVE REPEALER**

This Ordinance shall be cumulative of all other Ordinances and shall not repeal any of the provisions of such Ordinances except for those instances where there are direct conflicts with the provisions of this Ordinance. Ordinances, or parts thereof, in force at the time this Ordinance shall take effect and that are inconsistent with this Ordinance are hereby repealed to the extent that they are

inconsistent with this Ordinance.

SECTION 7
SEVERABILITY

If any section, article, paragraph, sentence, clause, phrase or word in this Ordinance, or application thereof to any person or circumstance, is held invalid or unconstitutional by a Court of competent jurisdiction, such holding shall not affect the validity of the remaining portions of the Ordinance, and the City Council hereby declares it would have passed such remaining portions of the Ordinance despite such invalidity, which remaining portions shall remain in full force and effect.

SECTION 8
ENGROSSMENT AND ENROLLMENT

The City Secretary of the City of Celina is hereby directed to engross and enroll this Ordinance by copying the Caption in the minutes of the City Council of the City of Celina and by filing this Ordinance in the Ordinance records of the City.

SECTION 8
EFFECTIVE DATE

This Ordinance shall be in full force and effect from and after its date of passage.

AND IT IS SO ORDAINED.

PASSED AND APPROVED by the City Council of the City of Celina, Texas, on this 12th day of February, 2019.

Sean Terry, Mayor
City of Celina, Texas

ATTEST:

APPROVED AS TO FORM:

Vicki Faulkner, City Secretary
City of Celina, Texas

City Attorney
City of Celina, Texas

Attachment: Annexation Ordinance (All Storage Celina Annexation 2nd Public Hearing, Adoption)

Exhibit "A"
Legal Description

BEING a tract of land situated in the Collin County Land Survey #14, Abstract No. 167, Collin County, Texas and being all of a called 7.426 acre tract of land described in Special Warranty Deed to All Storage Celina, LLC recorded in Instrument No. 20170817001100390, Official Public Records of Collin County, Texas, and being more particularly described as follows:

BEGINNING at a 5/8-inch iron rod with plastic cap stamped "KHA" found in the north right-of-way line of Frontier Parkway (60-foot wide right-of-way at this point), for the southwest corner of The Cypress Neighborhood, an addition to the City of Celina, Texas according to the plat thereof recorded in Cabinet 2015, Page 149, Map Records of Collin County, Texas;

THENCE with said north right-of-way line of Frontier Parkway, South 89°29'27" West, a distance of 480.98 feet to a point for corner; from said point a 1/2-inch iron rod found bears North 2°45'06" West, a distance of 0.65 feet;

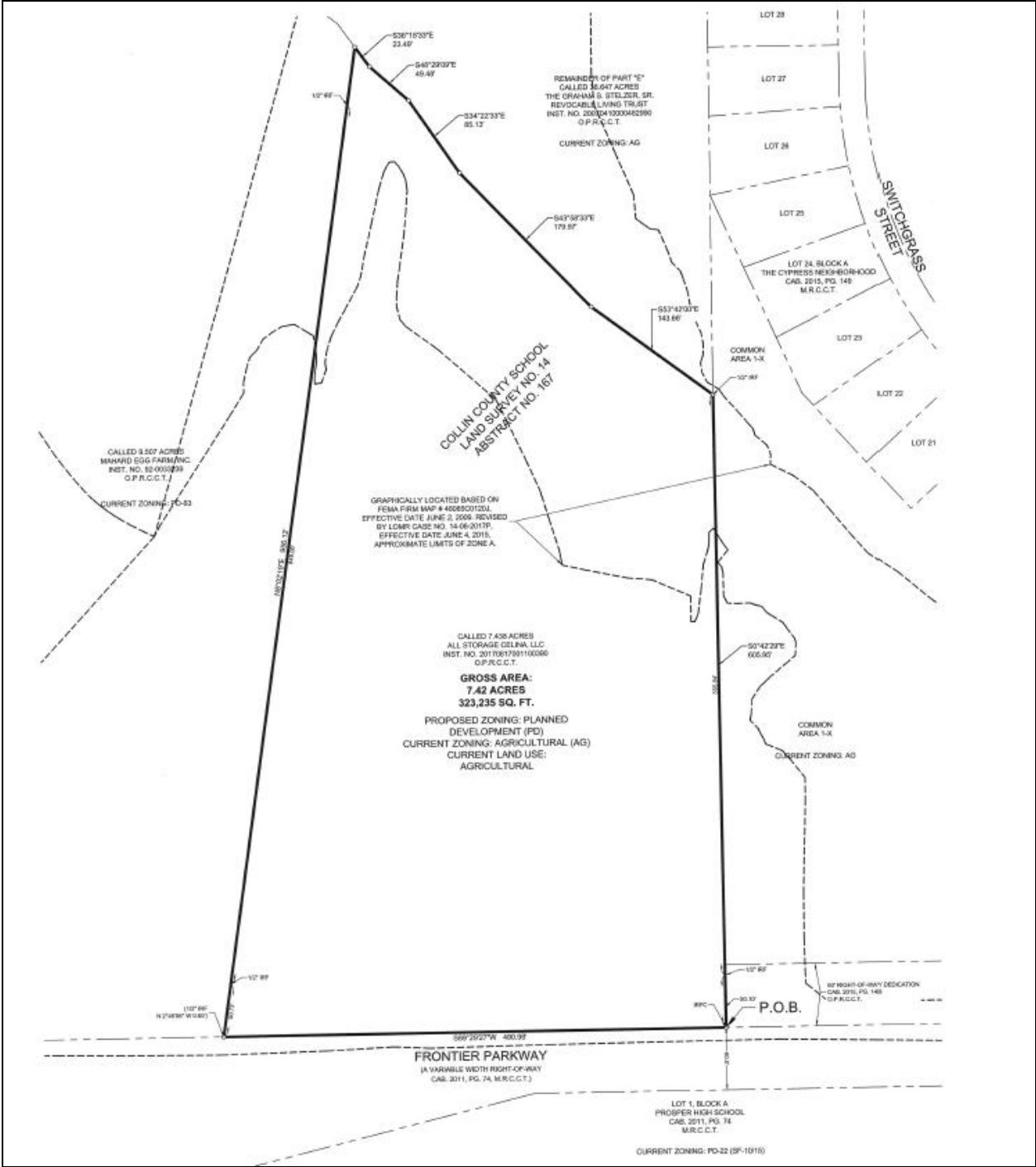
THENCE departing said north right-of-way line of Frontier Parkway and with the east line of a called 9.507 acre tract of land described in Special Warranty Deed to Mahard Egg Farm, Inc. recorded in Instrument No. 92-0033239 of said Official Public Records, North 8°02'19" East, at a distance of 50.73 passing a 1/2-inch iron rod found, continuing with said east line at a distance of 849.06 passing a 1/2-inch iron rod found, in all a total distance of 956.12 feet to a point for corner in the centerline of a branch;

THENCE with the centerline of said branch, the following courses and distances to wit:

South 36°18'33" East, a distance of 23.49 feet to a point for corner;
South 48°29'09" East, a distance of 49.48 feet to a point for corner;
South 34°22'33" East, a distance of 85.13 feet to a point for corner;
South 43°58'33" East, a distance of 179.97 feet to a point for corner;
South 53°42'00" East, a distance of 143.66 feet to a 1/2-inch iron rod found for an angle point in the west line of said The Cypress Neighborhood Addition;

THENCE with the west line of said The Cypress Neighborhood Addition, South 0°42'29" East, at a distance of 555.84 a 1/2-inch iron rod found, in all a total distance of 605.95 feet to the **POINT OF BEGINNING** and containing 7.42 acres or 323, 235 square feet of land.

Exhibit “B”
Property Exhibit



Attachment: Annexation Ordinance (All Storage Celina Annexation 2nd Public Hearing, Adoption)

**Exhibit “C”
Service Plan**

A) SERVICE PLAN GENERALLY

- 1) This service plan has been prepared in accordance with the Texas Local Government Code (“LGC”), Sections 43.021; 43.065 and 43.056(b)-(o). Municipal facilities and services to the annexed area will be provided or made available on behalf of the City of Celina in accordance with the following plan. The City of Celina shall provide the annexed tract the levels of service, infrastructure, and infrastructure maintenance that are comparable to the levels of service, infrastructure, and infrastructure maintenance available in other parts of the City of Celina with similar topography, land use, and population density. The provisions of the service plan were made available for public inspection and explained at the two public hearings held by the City Council in accordance with LGC Section 43.056(j).
- 2) For purposes of this service plan, to “provide” services include having services provided by any method or means by which the City provides municipal services to any other areas of the City, and may include causing or allowing private utilities, governmental entities and other public service organizations to provide such services by contract or right, in whole or in part, and may include duties on part of the private landowner with regard to such services.

B) EMERGENCY SERVICES

- 1) Police Protection
 - a) Police protection from the City of Celina Police Department shall be provided to the annexed area at a level consistent with current methods and procedures presently provided to similar areas on the effective date of the annexation ordinance. Some of these services include:
 - i) Normal patrol and responses;
 - ii) Handling of complaints and incident reports;
 - iii) Special units, such as traffic enforcement and investigations; and
 - iv) Coordination with other public safety support agencies.
 - b) As development commences in these areas, sufficient police protection, including personnel and equipment will be provided to furnish these areas with the level of police services consistent with the characteristics of topography, land utilization and population density of the areas.
 - c) Upon ultimate development, police protection will be provided at a level consistent with other similarly situated areas within the city limits.
- 2) Fire Protection
 - a) The Celina Fire Department will provide emergency and fire prevention services to the annexed area. These services include:
 - i) Fire suppression and rescue;
 - ii) Pre-hospital medical services including triage, treatment and transport by Advanced Life Support (ALS) fire engines, trucks and ambulances;
 - iii) Hazardous materials response and mitigation;
 - iv) Emergency prevention and public education efforts;
 - v) Technical rescue response; and
 - vi) Constriction Plan Review and required inspections.
 - b) Fire protection from the City of Celina shall be provided to the annexed area at a level consistent with current methods and procedures presently provided to similar areas of the City of Celina on the effective date of the annexation ordinance.
 - c) As development commences in these areas, sufficient, fire protection, including personnel

and equipment will be provided to furnish these areas with the level of services consistent with the characteristics of topography, land utilization and population density of the areas. It is anticipated that fire stations planned to service areas currently with the City of Celina will be sufficient to serve the annexed area.

- d) Upon ultimate development, fire protection will be provided at a level consistent with similarly situated areas within the city limits.

3) Emergency Medical Services

- a) The Celina Fire Department will provide emergency and safety services to the annexed area. These services include:
 - i) Emergency medical dispatch and pre-arrival First Aid instructions;
 - ii) Pre-hospital emergency Advanced Life Support (ALS) response; and transport; and
 - iii) Medical rescue services.
- b) Emergency Medical Services (EMS) from the City of Celina shall be provided to the annexed area at a level consistent with current methods and procedures presently provided to similar areas of the City of Celina on the effective date of the annexation ordinance.
- c) As development commences in these areas, sufficient EMS, including personnel and equipment, will be provided to furnish these areas with the level of services consistent with the characteristics of topography, land utilization and population density of the areas.
- d) Upon ultimate development, EMS will be provided at a level consistent with similarly situated areas within the city limits.

C) SOLID WASTE

- 1) Solid Waste and Recycling Collection Services will be provided to the annexed area immediately upon the effective date of the annexation at a level consistent with current methods and procedures presently provided to similar areas within the City. Private solid waste collection service providers operating in the affected area immediately prior to annexation and currently providing customers with service may continue to provide their existing service for up to two (2) years in accordance with Texas Local Government Code Section 43.056(n).

D) WASTEWATER FACILITIES

- 1) As development commences in these areas, sanitary sewer mains as defined by the Certificate of Convenience and Necessity (CCN) Number 20764, as issued by the Texas Commission on Environmental Quality (TCEQ) will be extended in accordance with the provisions of the City's codes, ordinances, regulations and policies. City participation in the costs of these extensions shall be in accordance with applicable City codes, ordinances, regulations and policies. Capacity and extensions shall be provided consistent with the characteristics of topography, land utilization and population density of the areas. If the annexed area is in the CCN of another provider, wastewater service shall be provided in accordance with the policies of the CCN holder. In some instances, the City might acquire the CCN rights and become the new wastewater provider, in time.
- 2) Sanitary sewer mains and lift stations installed or improved to City standards, and accepted by the City, within the annexed area which are located within dedicated easement, rights-of-way, or any other acceptable location approved by the City Manager or his designee, shall be maintained by the City on the effective date of this ordinance.
- 3) Operation and maintenance of wastewater facilities in the annexed area that are within the certificated service area of another wastewater utility will be the responsibility of that utility. Operation and maintenance of private wastewater facilities in the annexed area will be the responsibility of the owner.

E) WATER FACILITIES

- 1) Connections to existing City of Celina water distribution mains for water service as defined by Certificate of Convenience and Necessity (CCN) Number 12667, as issued by the Texas Commission on Environmental Quality (TCEQ) will be provided in accordance with existing City codes, ordinances, regulations and policies. Upon connection to existing distribution mains, water service will be provided at rates established by city ordinance. If the annexed area is in the CCN of another provider, water service shall be provided in accordance with the policies of the CCN holder. In some instances, the City might acquire the CCN rights and become the new water provider, in time.
- 2) As development commences in these areas, water distribution mains will be extended in accordance with City of Celina codes, ordinances, regulations and policies. City participation in the costs of these extensions shall be in accordance with the City of Celina's codes, ordinances, regulations and policies. Water service extensions and capacity shall be provided consistent with the characteristics of topography, land utilization and population density of the area.
- 3) Operation and maintenance of existing water facilities in the annexed area that are within the service area of another water utility will be the responsibility of that utility. Operation and maintenance of private water facilities in the annexed area will be the responsibility of the owner.

F) ROAD AND STREETS

- 1) Emergency street maintenance shall be provided within the annexed area on the effective date of the applicable ordinance of acceptance. Routine maintenance will be provided within the annexed area and will be scheduled as part of the City's annual program and in accordance with the City's current codes, ordinances, regulations, policies and procedures defined therein and/or as established by the City Council.
- 2) Any construction or reconstruction will be considered within the annexed area on a City-wide basis and within the context of the City's Capital Improvement Plan and/or yearly fiscal budgetary allotments by the City Council. As development, improvement or construction of streets to City standards commences within this property, the policies of the City of Celina with regard to participation in the costs thereof, acceptance upon completion and maintenance after completion shall apply.
- 3) Roadway signage and associated posts will be replaced in priority of importance starting with regulatory signs, then warning signs, then informational signs and in conformance with fiscal allotments by the City Council. If a sign remains, it will be reviewed and placed on the City's inventory listed for routine re-placement. All existing signs will be reviewed for applicability and based upon an engineering study. New signs will be installed when necessary and based upon an engineering study.
- 4) Routine maintenance of road/street markings will be placed on a priority listing and scheduled within the yearly budgetary allotments by the City Council.
- 5) The City will coordinate any request for improved road and street lighting with the local electric provider. Any and all road and street lighting will be pursuant to the rules, regulations and fees of such electric utility and shall be maintained by the applicable utility company.

G) ENVIRONMENTAL HEALTH, INSPECTIONS AND CODE ENFORCEMENT SERVICES

- 1) Enforcement of the City's environmental health ordinances and regulations, including but not limited to, weed and brush ordinances, junked and abandoned vehicle ordinances and animal control ordinances, shall be provided within this area sixty (60) days of the effective date of the annexation ordinance. These ordinances and regulations will be enforced through the use of existing personnel.
- 2) Inspection services including the review of building plans, the issuance of permits and the

inspection of all buildings, plumbing, mechanical and electrical work to ensure compliance with City codes and ordinances will be continue to be provided after the effective date of the annexation ordinance. Existing personnel will be used to provide these services.

- 3) The City's zoning, subdivision, sign and other ordinances shall be enforced in this area beginning upon the effective date of the annexation.
- 4) All inspection services furnished by the City of Celina, but not mentioned above, will be provided to this area beginning within sixty (60) days of the effective date of the annexed ordinance.
- 5) As development and construction commence in this area, sufficient personnel will be provided to furnish this area the same level of environmental health, inspection and code enforcement services as are furnished throughout the City.

H) PLANNING AND ZONING SERVICES

- 1) The Planning and zoning jurisdiction of the City will extend to this area upon the effective date of the annexation ordinance. City planning will thereafter encompass this property, and it shall be entitled to consideration for zoning in accordance with the City's Zoning Ordinance and Comprehensive Plan.

I) PARKS, PLAYGROUNDS, LIBRARIES, SWIMMING POOLS

- 1) Residents within the annexed area may utilize all existing park and recreation facilities, on the effective date of this ordinance. Fees for such usage shall be in accordance with current fees established by ordinance.
- 2) As development commences in the area, additional park and recreation facilities shall be constructed based on park policies defined in the Park Master Plan and as specified in the Park Dedication Ordinance. The general planned locations and classifications of parks will ultimately serve residents from the current City limits and residents from areas being considered for annexation.

J) PUBLICLY OWNED FACILITIES

- 1) Any publicly owned facility, building, or service located within the annexed area, and not otherwise owned or maintained by another governmental entity, shall be maintained by the City of Celina on the effective date of the annexation ordinance.

K) OTHER SERVICES

- 1) Other services that may be provided by the City of Celina, such as municipal and general administration will be made available on the effective date of the annexation. The City of Celina shall provide levels of service, infrastructure, and infrastructure maintenance that are comparable to the levels of services, infrastructure, and infrastructure maintenance available in other parts of the City of Celina with similar topography, land use, and population density similar to those reasonably contemplated or projected in the area.

L) UNIFORM LEVEL OF SERVICES IS NOT REQUIRED

- 1) Nothing in this Service Plan shall require the City of Celina to provide a uniform level of full municipal services to each area of the City, including the annexed areas, if different characteristics of topography, land use, and population density are considered a sufficient basis for provided different levels of service. The City Council finds and determines that this Service Plan will not provide any fewer services, and it will not provide a lower level of services, than were in existence in the annexed area at the time immediately preceding the annexation process.
- 2) The City of Celina's codes, ordinances, regulations and policies that apply throughout the City may be reviewed at City Hall and at <http://www.franklinlegal.net/codes.html>.

M) TERM

- 1) This Service Plan shall be valid for a term of ten (10) years. Renewal of the Service Plan shall be at the discretion of the City Council and must be approved by ordinance.

N) AMENDMENTS

- 1) This Service Plan may be amended if the City Council determines at a public hearing that changed conditions or subsequent occurrences make this Service Plan unworkable or obsolete. The City Council may amend the Service Plan to conform to the changed conditions, subsequent occurrences or any other legally sufficient circumstances exist pursuant to the LGC or other Texas or Federal laws that make this service plan unworkable, obsolete or unlawful.



Development Services
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Dusty McAfee AICP, Director of Development Services
 CC: Jason Laumer, City Manager
 Date: February 12, 2019
 Re: All Storage Celina Zoning Request

Action Requested:

The Celina City Council will conduct a public hearing to consider testimony and act upon an ordinance amending Ordinance No. 2006-57, as heretofore amended, the same being the Comprehensive Zoning Ordinance, and amending the official zoning map of the City by designating the zoning of an approximately 7.4 acre tract of land from AG, Agricultural zoning district to PD, Planned Development District No. 95 (PD-95) with a base zoning designation of RO, Retail Office zoning, generally located on the north side of Frontier Parkway approximately 900 feet east of Prairie Crossing. (All Storage Celina Zoning Request) (McAfee)

Owner:

All-Storage Celina, LLC
 82 W. Armstrong Drive
 Mustang, OK 73064

Applicant:

Kimley-Horn & Associates
 5750 Genesis Court, Suite 200
 Frisco, TX 75034

Background:

This property is currently in the process of being annexed into Celina's corporate city limits. This process is anticipated to be completed at the February 12, 2019 City Council meeting, at which time the Council will also hear this rezoning request. At that time of annexation, the property is automatically zoned as an AG, Agricultural zoning district.

The applicant is requesting a zoning change from an AG, Agricultural to a Planned Development zoning district (PD-95). The PD will have a base zoning designation of RO, Retail Office to accommodate the retail and restaurant uses along Frontier Parkway with several added land uses, including self-storage.

There will be one proposed access point into the site along Frontier Parkway to accommodate the proposed buildings. A bridge spanning the BNSF Railroad is currently being designed. Access issues during and after the bridge construction will be managed by the Engineering Department, along with Collin County and the Town of Prosper.

The self-storage building will be a four-story 181,200 square foot building located at the rear of the site. A one-story building, approximately 7,000 square feet in size, is proposed for retail and restaurant uses and will be located facing Frontier Parkway.

Conformance with the Comprehensive Plan:

The City's Comprehensive Plan shows this property to be within the Suburban Moderate-High Residential or "Suburban Mix." This includes residential developments and the services and businesses that support the citizens living there. This future land use accounts for sixty-four percent (64%) of the land area in Celina. The rezoning request conforms to the Comprehensive Plan in that self-storage, retail, and restaurant uses are compatible with the expansion of services necessary to the citizens of Celina.

Board Review/Citizen Input:

At the regular meeting of the Planning & Zoning Commission, the Commission voted unanimously to recommend approval of the rezoning request.

A notice of the City Council public hearing was published in *The Celina Record* on December 28, 2018. Notices of the public hearing have been sent to all owners of property residing within the city limits, as indicated by the most recently approved Collin County tax rolls, who are located within 200 feet of the subject property. As of the time of packet preparation, staff had received no comments either for or against the proposal.

Legal Review:

The City Attorney has reviewed the ordinance and deemed it acceptable for form.

Supporting Documents:

Location Map

Staff Presentation

Proposed Ordinance

Staff Recommendation:

Staff recommends approval as presented.



Attachment: All Storage Location Map (All Storage Celina Zoning Request)



All Storage Location Map

Date: 11/26/2018

Legend

- Roads
- AllStorage
- City Limits
- Parcels

North arrow and scale bar (0, 150, 300 Feet).

Packet Pg. 1185

Vicki Faulkner

From: Dustin McAfee
Sent: Thursday, February 07, 2019 8:59 AM
To: Vicki Faulkner
Cc: Raha Pouladi; Madhuri Mohan

Vicki, can you kindly look in MInuteTraq and verify that all the Planning related items have everything? Raha is out this morning, so I'm just wanting to triple check since we'll all be at a day conference tomorrow. So today is our last day in the office. Thanks!

Master Trails Plan: no attachments
Comp Plan (award contract): Professional Services Agreement
2015 Model Codes: Presentation & Ordinance (no action)
All-Storage Annexation: Presentation & Ordinance
All-Storage PD: Presentation & Ordinance
Fire Station #2 Annexation: Presentation

Attachment: Staff Presentation (All Storage Celina Zoning Request)

CITY OF CELINA, TEXAS

ORDINANCE 2019-____

ALL STORAGE – PD-95

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS, AMENDING ORDINANCE NO. 2006-57, AS HERETOFORE AMENDED, THE SAME BEING THE COMPREHENSIVE ZONING ORDINANCE, AND AMENDING THE OFFICIAL ZONING MAP OF THE CITY BY DESIGNATING THE ZONING OF LAND THAT IS AN APPROXIMATELY 7.426 ACRE TRACT OF LAND SITUATED IN THE COLLIN COUNTY SCHOOL LAND SURVEY #14, ABSTRACT NO. 167, COLLIN COUNTY, TEXAS, AND GENERALLY LOCATED ON THE NORTH SIDE OF FRONTIER PARKWAY AND APPROXIMATELY 900 FEET EAST OF PRAIRIE CROSSING, COLLIN COUNTY, TEXAS; AS DESCRIBED IN EXHIBIT “A” AND DEPICTED IN EXHIBIT “B” ATTACHED HERETO AND INCORPORATED HEREIN TO BE ZONED “PD” PLANNED DEVELOPMENT DISTRICT NO. 95; PROVIDING FOR INCORPORATION OF PREMISES; PROVIDING FINDINGS; PROVIDING FOR AMENDMENT OF ZONING CLASSIFICATION; PROVIDING FOR ZONING DESIGNATION AND DEVELOPMENT STANDARDS; PROVIDING FOR REVISION OF ZONING MAP; PROVIDING FOR COMPLIANCE; PROVIDING FOR A PENALTY NOT TO EXCEED \$2,000.00 AND A SEPARATE OFFENSE SHALL BE DEEMED COMMITTED EACH DAY DURING OR ON WHICH A VIOLATION OCCURS OR CONTINUES AND INCLUDING PROVISIONS FOR THE AUTHORIZATION TO SEEK INJUNCTIVE RELIEF TO ENJOIN VIOLATIONS WHICH CONSTITUTE AN IMMINENT HAZARD OR DANGER TO PUBLIC HEALTH AND SAFETY; PROVIDING A CUMULATIVE REPEALER CLAUSE; PROVIDING FOR SAVINGS; PROVIDING FOR SEVERABILITY; PROVIDING FOR PUBLICATION; PROVIDING FOR ENGROSSMENT AND ENROLLMENT; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City of Celina is a home rule municipality located in Collin and Denton County, Texas created in accordance with the provisions of the Texas Local Government Code, The Texas Constitution and operating pursuant to the enabling legislation of the state of Texas; and

WHEREAS, the City Council of the City of Celina, Texas is empowered under Local Government Code 54.001 to do all acts and make all regulations which may be necessary or expedient for the promotion of the public health, safety and general welfare; and

WHEREAS, Title 7 Chapter 211.003 of the Texas Local Government Code, empowers a municipality to, among other things, establish and amend zoning districts, classifications of land use, adopt a comprehensive plan to regulate the use of land and open spaces, adopt and amend zoning regulations, regulate population density, and regulate the use and location of buildings; and

WHEREAS, the establishment of a zoning classification has been requested for the property more specifically described in Exhibit “A” attached hereto and incorporated herein; and

WHEREAS, the property has been depicted in detail in Exhibit “B” attached hereto; and incorporated herein; and

WHEREAS, the concept plan and development regulations set forth in Exhibit “C” and Exhibit “D” attached hereto and incorporated herein define the base zoning districts and provide for certain modifications to such district regulations.

WHEREAS, the City Council has considered, among other things, the character of the property and its suitability for particular uses, with a view of encouraging the most appropriate use of land in the City, and is in the interest of public health, safety, and welfare, and does hereby find that the requested zoning accomplishes such objectives and is consistent with the provisions of the 2030 Comprehensive Plan of the City of Celina; and

WHEREAS, the Planning and Zoning Commission of the City of Celina and the City Council of the City of Celina, in compliance with the laws of the State of Texas and the ordinances of the City of Celina, have given the requisite notices by publication and otherwise, and have held public hearings and afforded a full and fair hearing to all property owners generally and to all persons interested in and situated in the affected area and in the vicinity thereof; and

WHEREAS, the City Council, in the exercise of its legislative discretion has concluded that the zoning classification on the tract of land described herein should be changed and the zoning map so amended.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS

SECTION 1 **INCORPORATION OF PREMISES**

The above and foregoing premises are true and correct and are incorporated herein and made a part hereof for all purposes.

SECTION 2 **FINDINGS**

After due deliberations the City Council has concluded that the adoption of this Ordinance is in the best interest of the City of Celina, Texas and of the public health, safety and welfare.

SECTION 3 **AMENDMENT OF ZONING CLASSIFICATION**

That the zoning classification is hereby established as “PD” Planned Development District No. 95 on a certain tract of land described in in Exhibit “A” and depicted in Exhibit “B.”

SECTION 4 **ZONING DESIGNATION AND DEVELOPMENT STANDARDS**

That Ordinance No. 2006-57 of the City of Celina, Texas, as heretofore amended, the same being the City’s Comprehensive Zoning Ordinance, is hereby amended by designating the zoning on the land, depicted in Exhibit “A” attached hereto and incorporated herein as PD-95, and incorporates the concept plan attached hereto as Exhibit “C” and the development standards attached hereto as Exhibit “D.”

SECTION 5 **REVISION OF ZONING MAP**

That the City Manager for the City of Celina is hereby directed to mark and indicate on the official Zoning District Map of the City the zoning change herein made.

SECTION 6 **COMPLIANCE REQUIRED**

That the property depicted on Exhibit “A” hereto shall be used only in the manner and for the purposes provided for in this ordinance and the Comprehensive Zoning Ordinance, of the City of Celina as

amended.

SECTION 7 **PENALTY**

7.01 Any person, firm or corporation violating any of the provisions or terms of this ordinance or of the Code of Ordinances as amended hereby, shall be subject to the same penalty as provided for in the Code of Ordinances of the City of Celina, and upon conviction shall be punished by a fine not to exceed Two Thousand Dollars (\$2,000.00) for each offense.

7.02 If the governing body of the City of Celina determines that a violation of this Ordinance has occurred, the City of Celina may bring suit in district court to enjoin the person, firm, partnership, corporation, or association from engaging in the prohibited activity.

SECTION 8 **CUMULATIVE REPEALER CLAUSE**

This Ordinance shall be cumulative of all other Ordinances and shall not repeal any of the provisions of such Ordinances except for those instances where there are direct conflicts with the provisions of this Ordinance. Ordinances, or parts thereof, in force at the time this Ordinance shall take effect and that are inconsistent with this Ordinance are hereby repealed to the extent that they are inconsistent with this Ordinance. Provided however, that any complaint, action, claim or lawsuit which has been initiated or has arisen under or pursuant to such other Ordinances on this date of adoption of this Ordinance shall continue to be governed by the provisions of such Ordinance and for that purpose the Ordinance shall remain in full force and effect.

SECTION 9 **SAVINGS CLAUSE**

All rights and remedies of the City of Celina, Texas are expressly saved as to any and all violations of the provisions of any other ordinance affecting zoning regulation which have secured at the time of the effective date of this ordinance; and, as to such accrued violations and all pending litigation, both civil and criminal, whether pending in court or not, under such ordinances same shall not be affected by this Ordinance but may be prosecuted until final disposition by the court.

SECTION 10 **SEVERABILITY**

The provisions of the Ordinance are severable. However, in the event this Ordinance or any procedure provided in this Ordinance becomes unlawful, or is declared or determined by a judicial, administrative or legislative authority exercising its jurisdiction to be excessive, unenforceable, void, illegal or otherwise inapplicable, in whole or in part, the remaining and lawful provisions shall be of full force and effect and the City shall promptly promulgate new revised provisions in compliance with the authority's decisions or enactment.

SECTION 11 **PUBLICATION CLAUSE**

The City Secretary of the City of Celina is hereby directed to publish in the Official Newspaper of the City of Celina the Caption, and Effective Date of this Ordinance as required by Section 52.013 of the Local Government Code.

SECTION 12 **ENGROSSMENT AND ENROLLMENT**

The City Secretary is hereby directed to engross and enroll this Ordinance by copying the descriptive Caption in the minutes of the City Council and by filing this Ordinance in the Ordinance records of the City.

SECTION 13
EFFECTIVE DATE

This Ordinance shall become effective from and after its date of passage and publication as required by law.

AND IT IS SO ORDAINED.

PASSED AND APPROVED by the City Council of the City of Celina, Texas this 12th day of February, 2019.

Sean Terry, Mayor
City of Celina, Texas

ATTEST:

Vicki Faulkner, City Secretary
City of Celina, Texas

[SEAL]

APPROVED AS TO FORM:

City Attorney
City of Celina, Texas

Attachment: Proposed Ordinance (All Storage Celina Zoning Request)

Exhibit A Legal Description

BEING a tract of land situated in the Collin County Land Survey No. 14, Abstract No. 167, Collin County, Texas and being all of a called 7.438 acre tract of land described in Special Warranty Deed to All Storage Celina, LLC recorded in Instrument No. 20170817001100390, Official Public Records of Collin County, Texas, and being more particularly described as follows:

BEGINNING at a 5/8-inch iron rod with plastic cap stamped "KHA" found in the north right-of-way line of Frontier Parkway (60-foot wide right-of-way at this point), for the southwest corner of The Cypress Neighborhood, an addition to the City of Celina, Texas according to the plat thereof recorded in Cabinet 2015, Page 149, Map Records of Collin County, Texas;

THENCE with said north right-of-way line of Frontier Parkway, South 89°29'27" West, a distance of 480.98 feet to a point for corner; from said point a 1/2-inch iron rod found bears North 2°45'06" West, a distance of 0.65 feet;

THENCE departing said north right-of-way line of Frontier Parkway and with the east line of a called 9.507 acre tract of land described in Special Warranty Deed to Mahard Egg Farm, Inc. recorded in Instrument No. 92-0033239 of said Official Public Records, North 8°02'19" East, at a distance of 50.73 passing a 1/2-inch iron rod found, continuing with said east line at a distance of 849.06 passing a 1/2-inch iron rod found, in all a total distance of 956.12 feet to a point for corner in the centerline of a branch;

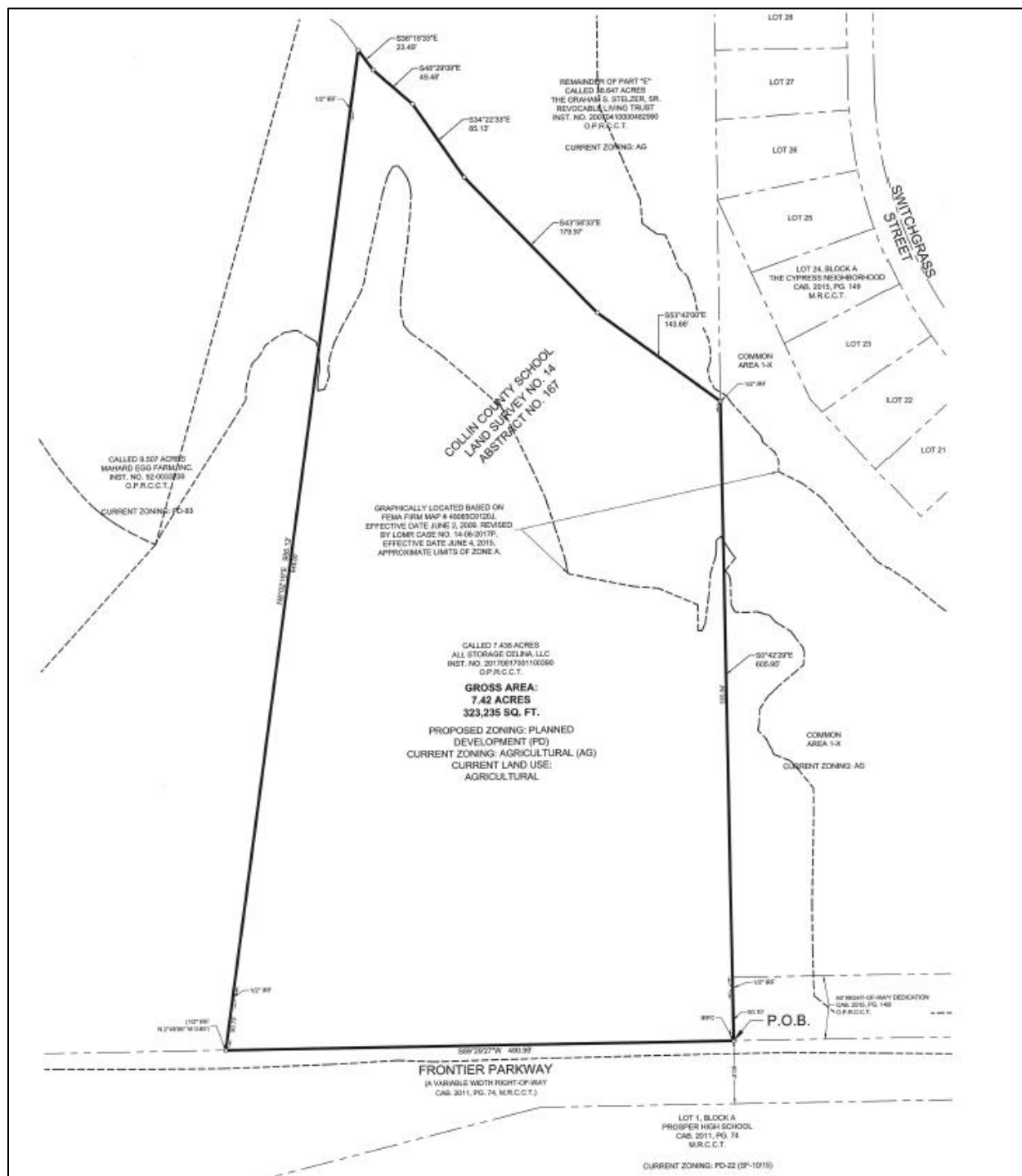
THENCE with the centerline of said branch, the following courses and distances to wit:

South 36°18'33" East, a distance of 23.49 feet to a point for corner;
 South 48°29'09" East, a distance of 49.48 feet to a point for corner;
 South 34°22'33" East, a distance of 85.13 feet to a point for corner;
 South 43°58'33" East, a distance of 179.97 feet to a point for corner;
 South 53°42'00" East, a distance of 143.66 feet to a 1/2-inch iron rod found for an angle point in the west line of said The Cypress Neighborhood Addition;

THENCE with the west line of said The Cypress Neighborhood Addition, South 0°42'29" East, at a distance of 555.84 a 1/2-inch iron rod found, in all a total distance of 605.95 feet to the **POINT OF BEGINNING** and containing 7.42 acres or 323, 235 square feet of land.

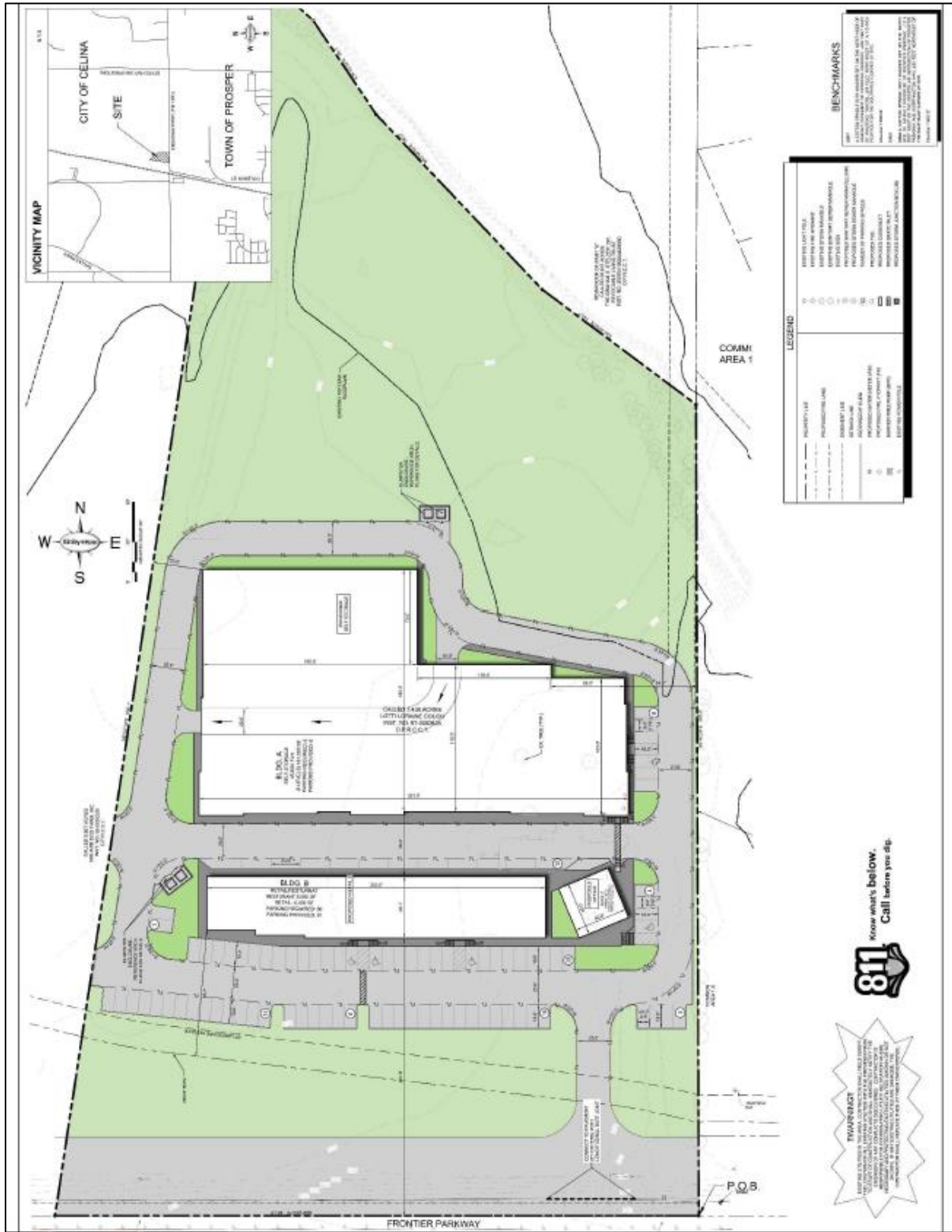
Exhibit B

Zoning Exhibit



Attachment: Proposed Ordinance (All Storage Celina Zoning Request)

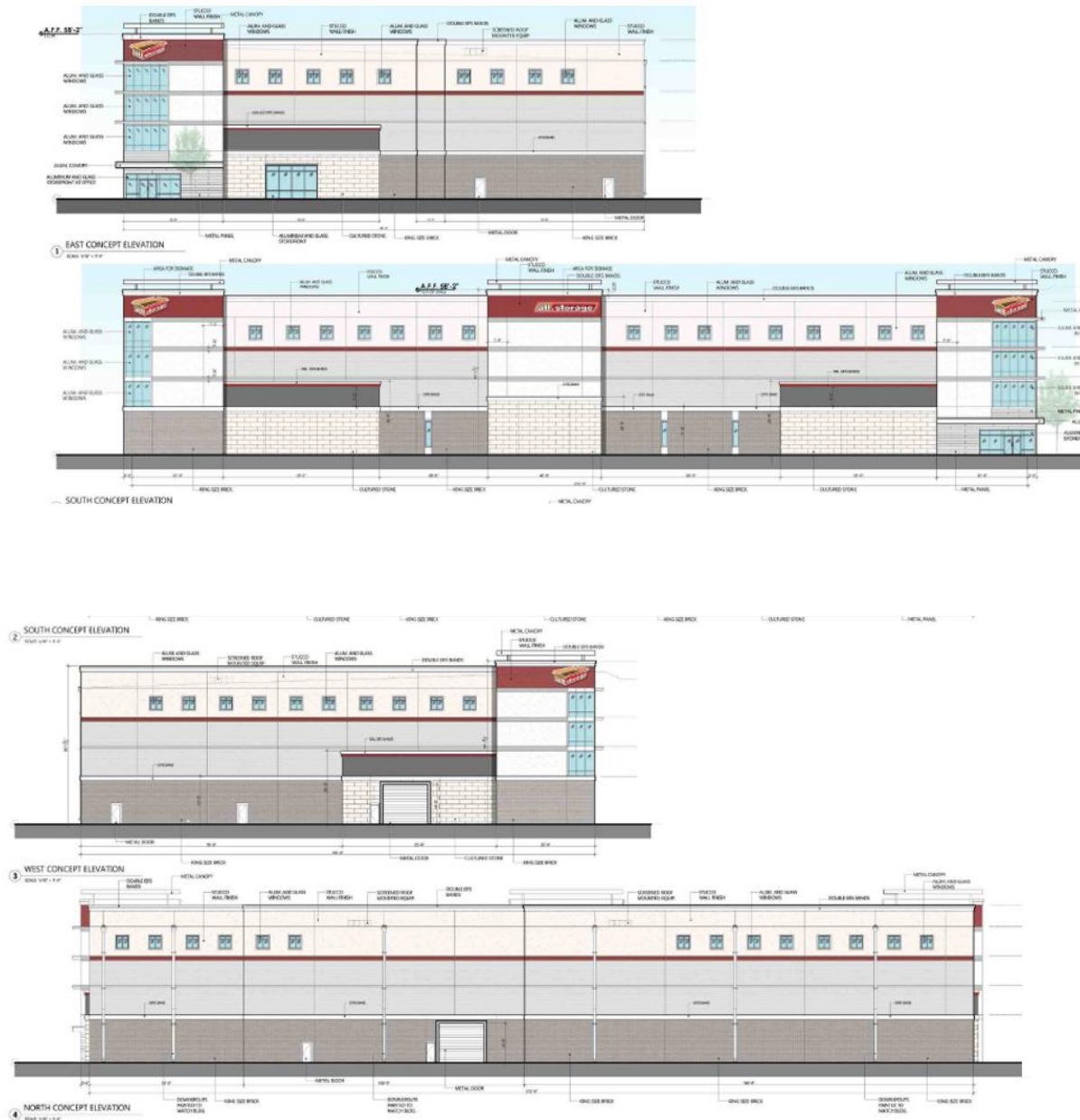
Exhibit C Concept Plan and Elevations



Attachment: Proposed Ordinance (All Storage Celina Zoning Request)

 STUCCO COLOR SWATCH 001 (RED)	 CULTURED STONE	 STUCCO COLOR SWATCH 002 (WHITE)
 STUCCO COLOR SWATCH 003 (WHITE)	 BRICK COLOR SWATCH 004 (BROWN)	 STUCCO COLOR SWATCH 005 (BLACK)
 EPS TRIM COLOR SWATCH 006 (WHITE)	 BRICK COLOR SWATCH 007 (BROWN)	 GLASS
	 METAL PANEL COLOR SWATCH 008 (RED)	 GLASS

Elevations





Elevations



Attachment: Proposed Ordinance (All Storage Celina Zoning Request)

Exhibit D Development Regulations

1.0 PROJECT OVERVIEW

The purpose of this Planned Development District is to develop a commercial building for retail and office uses along with a climate controlled self-storage facility.

2.0 PROJECT LOCATION

The project is located on the north side of Frontier Parkway approximately 900 feet east of Prairie Crossing.

3.0 DEFINITIONS

All definitions shall conform to those listed in the Zoning Ordinance, as it exists or may be amended.

4.0 PROPOSED THOROUGHFARES

Frontier Parkway is the only roadway adjacent to the tract of land. Frontier Parkway is designated on the Thoroughfare Plan as a future six-lane divided major arterial with a 120 foot ROW. Currently, Frontier Parkway is a two-lane undivided roadway. At the time of development, a 60 foot ROW dedication will be required in conformance to the City of Celina Thoroughfare Plan.

In addition, a grade-separated bridge is planned in the near future over the BNSF Railroad. This construction will affect the subject property. Right-of-way and construction easements will be acquired from those entities constructing the bridge on the subject property. During the course of construction, a thirty foot (30') temporary roadway will be placed on the subject property connecting the east and west portions of Frontier Parkway while the Frontier Parkway bridge is constructed. This temporary situation may affect the location and number of parking spaces available to the proposed commercial tract. Following completion of the bridge construction, a reconfiguration of the proposed temporary roadway will need to be constructed to allow access to not only the subject property but to the property located to the west. Exact location of both the temporary access road and the permanent fire lane access driveway will be determined by a mutual decision of the City of Celina, Collin County, and the property owner.

5.0 LAND USES

This Planned Development shall follow the RO, Retail Office zoning regulations as they exist or may be amended except for as follows:

Permitted (P) or Conditional (C) Uses:

Armed services recruiting center.....	P
Artist studio.....	P
Auto supply store for new & rebuilt parts.....	P
Bakery or confectionery (retail)	P
General retail store	P
Laundry/dry cleaning (drop off/pick up).....	P
Self-Storage (Mini-Warehouse)	P

6.0 CONCEPT PLAN

The Concept Plans call for two buildings: Building A is proposed as a four-story, approximately 181,200 square foot self-storage facility and is located on the northern portion of the tract. Building A has an interior

drive within the building that allows customer access to the units and elevators. Building B is proposed to be one-story with approximately 11,514 square feet of retail/restaurant or other non-residential uses and is located on the southern portion of the tract, facing Frontier Parkway. Staff has the final approval authority over modifications to the site layout.

7.0 DEVELOPMENT REGULATIONS

A. Height Regulations:

1. Maximum Allowed Height: sixty (60) feet.
2. Maximum Allowed Stories: four (4) stories.

B. Area Regulations:

1. Size of Yards (Bldg. Setbacks):
 - a. Minimum Front Yard: twenty (25) feet front yard setback adjacent to street or public roadway.
 - b. Side Yards: fifteen (15) feet setback adjacent to commercial and non-commercial zoned districts.
 - c. Rear Yard: fifteen (15) feet setback adjacent to commercial and non-commercial zoned districts.
3. Floor Area Ratio: Maximum 1:1 of gross acreage.
4. Maximum Impervious Surface: eighty-five percent (85%) of gross acreage.

C. Parking and Loading:

1. Parking for the self-storage shall be provided so that sufficient space exists for multiple moving trucks operating at the same time, in addition to a minimum 7 public parking spaces (outside any gates/fences) for customer and employee parking. Additional parking within the facility may also be provided.
2. Parking for the retail/restaurant building will follow the Zoning Ordinance, as it exists or may be amended.

8.0 DESIGN GUIDELINES

The attached color elevations are conceptual in nature, as the building exteriors shall conform to the architectural standards of the Zoning Ordinance, as it exists or may be amended.

9.0 PERIMETER SCREENING & LANDSCAPE BUFFERS

Perimeter screening, including any fencing/walls, is not required of this project, so long as it remains a self-contained, internally-accessed, climate-controlled structure, such as shown on the Concept Plan. If security fencing is desired in the future, it shall be a decorative, black metal fence with masonry columns spaced appropriately.

At the ultimate build-out, the landscape buffer along Frontier Parkway and all landscaping shall conform to those listed in the Zoning Ordinance, as it exists or may be amended. However, due to the steep slope of the bridge embankment and on-going right-of-way acquisition process, required plantings and buffer yards may be modified to meet the unique situation in terms of erosion, ongoing maintenance, and other spatial constraints, subject to review and approval by the Director.



Development Services
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Dusty McAfee AICP, Director of Development Services
 CC: Jason Laumer, City Manager
 Date: February 12, 2019
 Re: Fire Station No. 2 Annexation 1st Public Hearing

Action Requested:

The City Council will conduct the first of two public hearings on the City-Initiated annexation of an approximately 4.0 acre tract of land owned by the City of Celina, and generally located on the north side of Light Farms Way and approximately 350 feet east of the Dallas North Tollway. (Fire Station No. 2 Annexation) (McAfee)

Applicant:

City of Celina
 142 N. Ohio
 Celina, TX 75009

Background Information:

Below is the anticipated annexation schedule for the property:

- ~~January 8, 2019 - City Council acted on a resolution and set the public hearing dates.~~
- February 12, 2019 - First Public Hearing to be held.
- March 12, 2019 - Second Public Hearing to be held.
- March 12, 2019 - City Council acts on an ordinance annexing the property.

Board Review/Citizen Input:

Notice of the first public hearing was published in *The Celina Record* on January 25, 2019.

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

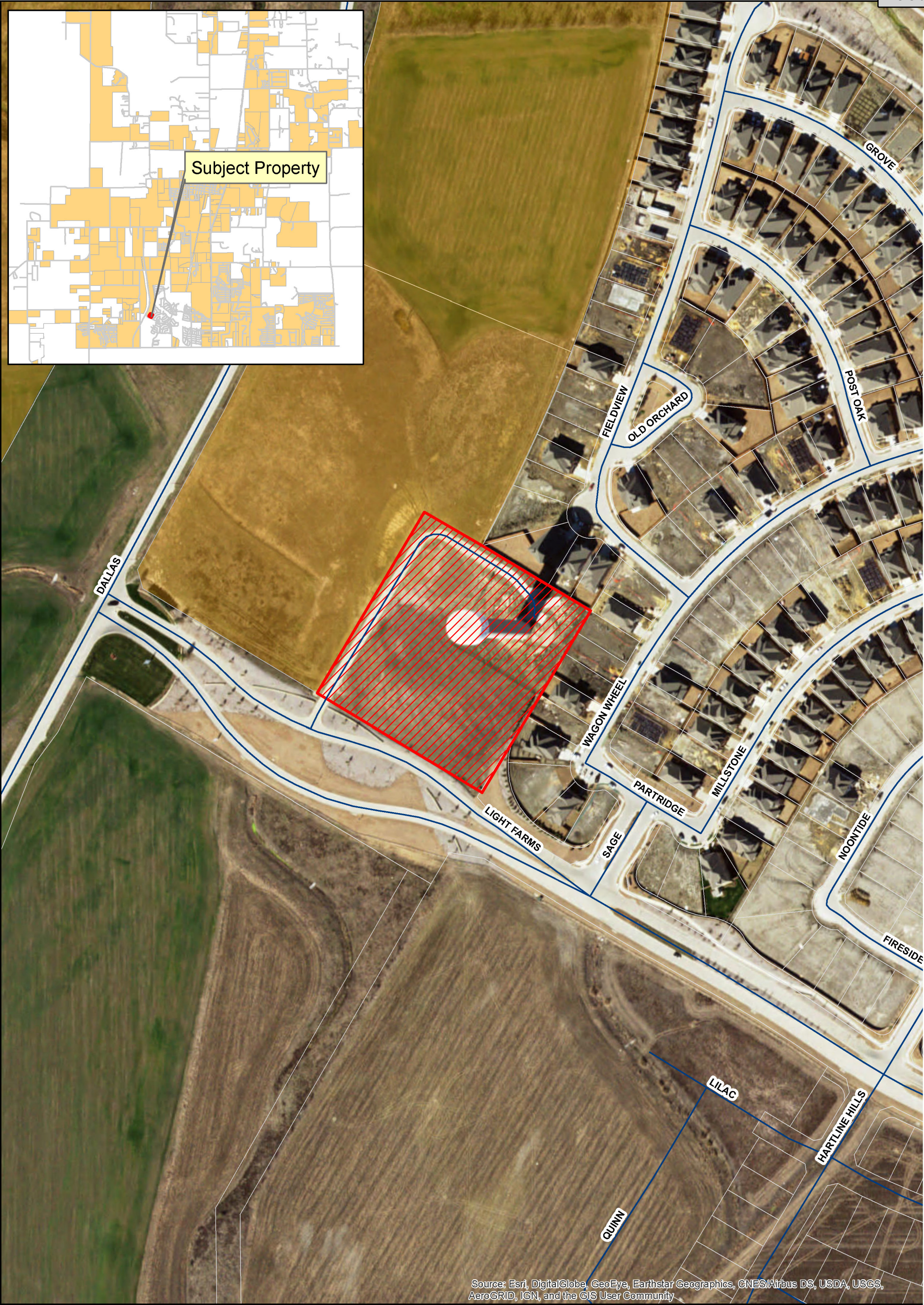
N/A

Supporting Documents:

Location Map
 Staff Presentation

Staff Recommendation:

No action to be taken tonight.



Attachment: Location Map (Fire Station No. 2 Annexation 1st Public Hearing)

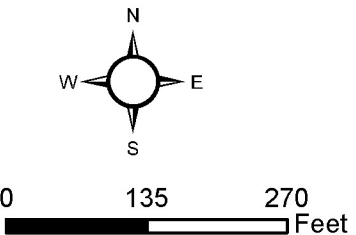


Fire Station No. 2 Annexation

Date: 1/9/2019

Legend

- Roads
- Fire Station
- City Limits
- Parcels



Fire Station #2

Annexation

City Council

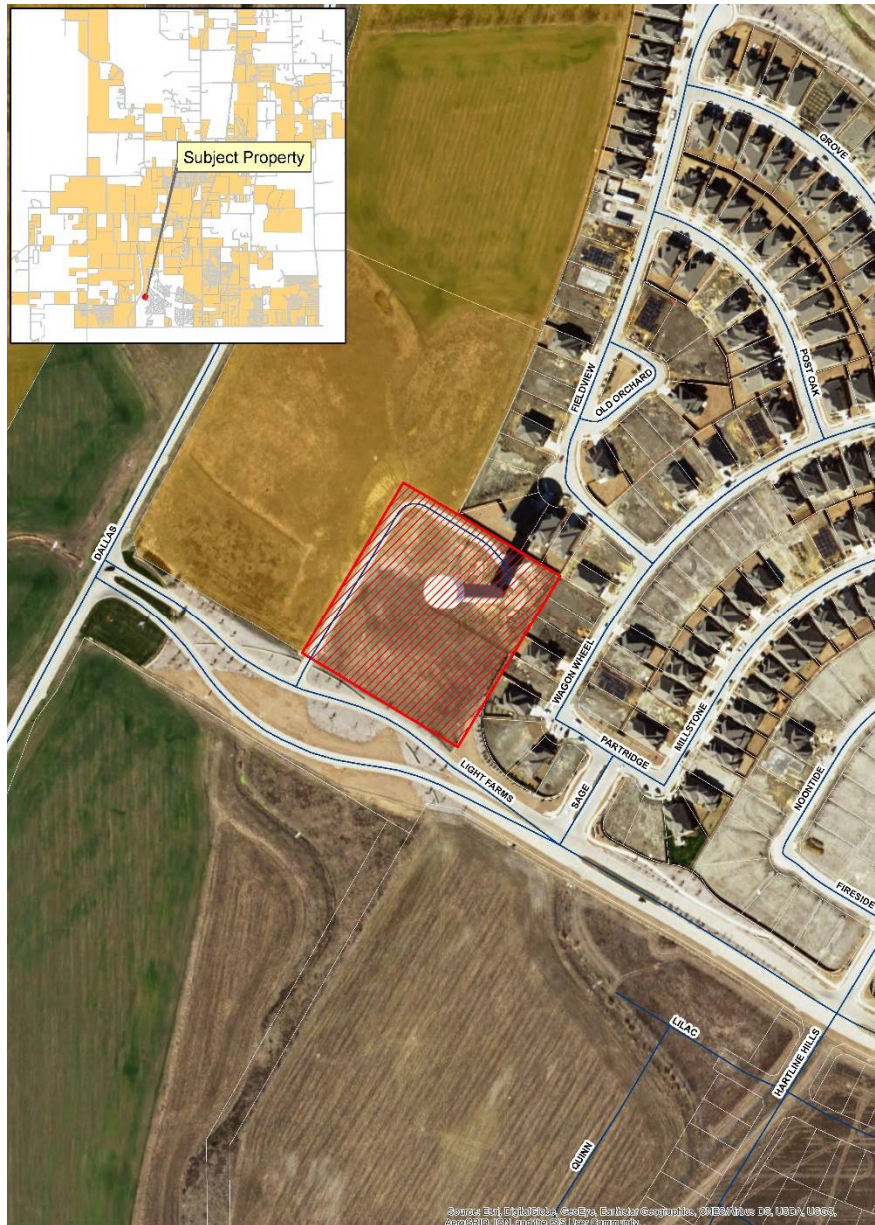
February 12, 2019



Background

- The approximately 4 acre tract of land is owned by City of Celina
- This property is not part of Light Farms District
- Fire Station #2 broke ground last year
- Expected opening by the end of the calendar year





Location Map

The tract is located on the north side of Light Farms Way approximately 350 feet east of the Dallas North Tollway

Annexation Schedule

- January 8, 2019 - City Council acted upon the resolution and set the public hearing dates
- February 12, 2019 – 1st Public Hearing
- March 19, 2019 – 2nd Public Hearing and adoption of the annexation ordinance

FYI - the associated zoning case shall be considered concurrently at the March regular meeting



Recommendation

- Notices were published in compliance with State and local law
- Staff recommends approval as presented





Finance Department
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Jay Toutouchian, Finance Director
CC: Jason Laumer, City Manager
Date: February 12, 2019
Re: Reimburse expenses with debt

Action Requested:

Consider and act upon a resolution declaring an expectation to reimburse expenditures with proceeds of future debt, and all matters incident and related thereto. (Toutouchian)

Background Information:

The City intends to make certain capital expenditures and expects to reimburse them later with proceeds of debt.

Board Review/Citizen Input:

The proposed expenses were reviewed by City Council and Staff.

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

Resolution reviewed by bond counsel.

Supporting Documents:

Reimbursement resolution

Staff Recommendation:

RESOLUTION NO. 2019-___

A RESOLUTION DECLARING EXPECTATION TO REIMBURSE
EXPENDITURES WITH PROCEEDS OF FUTURE DEBT.

WHEREAS, the City of Celina, Texas (the "City"), intends to issue debt for the following purposes, to wit: (i) improving and extending the City's combined Waterworks and Sewer System, including the acquisition of land and rights-of-way therefor, (ii) acquiring land for a future City Hall site, (iii) constructing, equipping and improving City Hall and additional existing municipal buildings, (iv) constructing and improving parking facilities for municipal facilities, including the acquisition of sites therefor, (v) constructing street improvements, including drainage, landscaping, curbs, gutters, sidewalks, lighting, entryways, pedestrian pathways, signage and traffic signalization and the acquisition of land and rights-of-way therefor, (vi) constructing, equipping and improving public safety facilities and (vii) acquiring, constructing, improving and equipping park and recreation facilities, including the acquisition of land therefor (collectively, the "Project"); and

WHEREAS, the City further intends to make certain capital expenditures with respect to the Project and currently desires and expects to reimburse the capital expenditures with proceeds of such debt; and

WHEREAS, under Treas. Reg. § 1.150-2 (the "Regulation"), to fund such reimbursement with proceeds of tax-exempt obligations, the City must declare its expectation to make such reimbursement; and

WHEREAS, the City desires to preserve its ability to reimburse the capital expenditures with proceeds of tax-exempt obligations; now, therefore,

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CELINA:

SECTION 1: The City reasonably expects to reimburse capital expenditures with respect to the Project with proceeds of tax-exempt obligations hereafter to be incurred by the City, and this resolution shall constitute a declaration of official intent under the Regulation. The maximum principal amount of obligations expected to be issued for the Project is \$40,000,000.00.

SECTION 2: This Resolution shall be in force and effect from and after its passage on the date shown below.

PASSED AND ADOPTED, this 12th day of February, 2019.

CITY OF CELINA, TEXAS

ATTEST:

Mayor

City Secretary

(City Seal)



Engineering
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Swapna Konda, Engineer
CC: Kim Brawner, Director of Engineering
Date: February 12, 2019
Re:

Action Requested:

Consider and act to authorize the City Manager to execute a contract between the City of Celina and Lee Engineering in the amount of \$88,091.00 for the design of Preston Road lights from Frontier Pkwy to CR 94. (Brawner)

Background Information:

Lee Engineering will prepare design plans, specifications and estimates for installation of LED street lights along Preston Rd in the City of Celina from Frontier Pkwy to CR 94. Preston Rd lighting plans will be prepared in phases:

Phase I - Preston Rd from Frontier Pkwy to Glendenning Pkwy

Phase II - Preston Rd from Glendenning Pkwy to CR 94

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

2017 Bond Issuance

Legal Review:

City Attorney would have to review.

Supporting Documents:

Proposal
Exhibit

Staff Recommendation:

Approve the attached design contract.



ARIZONA
TEXAS
NEW MEXICO
OKLAHOMA

January 15, 2019

Kimberly Brawner, PE, PTOE
Director of Engineering
142 N Ohio Street
Celina, TX 75009

Re: *Preston Road (from Frontier Parkway to Grayson County Line) Lighting Design PS&E, City of Celina, TX*

Dear Mrs. Brawner:

Lee Engineering is pleased to submit this agreement to perform traffic engineering services for the City of Celina. These services outlined below include preparation of Plans, Specifications, and Estimates (PS&E) for installation of LED street lights along Preston Road (*from Frontier Parkway to Grayson County Line*) within the City of Celina.

The plan set, specifications, and estimate will be prepared for letting by the City of Celina and will be designed to meet the City and TxDOT guidelines. This letter will be an agreement between the City of Celina and Lee Engineering, LLC (LEE) to provide the services outlined in the Scope of Services below.

SCOPE OF SERVICES

Lee Engineering will follow the work items below in preparing design plans, specifications and estimates for installation of LED street lights along Preston Road in the City of Celina.

1. Preparation of Plans, Specifications, and Estimates for Installation of LED Street Lighting along Preston Road in the City of Celina, TX

It is our understanding that Preston Road lighting plans will be prepared in four phases with each phase being let by the City separately. Therefore, we will prepare four separate PS&E packages. The four phases are identified below:

- Phase I – Preston Road from Frontier Parkway to Glendenning Parkway (approximately 3.0 miles)
- Phase II – Preston Road from Glendenning Parkway to CR 94 (approximately 1.70 miles)
- Phase III – Preston Road from CR 94 to Business 289 (approximately 2.9 miles)
- Phase IV – Business 289 to Grayson County Line (approximately 2.35 miles)

Lee Engineering will follow the work items below in preparing roadway lighting plans, specifications, and cost estimate data for each phase:

3030 Lyndon B Johnson Freeway, Suite 1660, Dallas, TX 75234
(972) 248-3006 office (888) 298-3006 toll (972) 248-3855 fax | www.leeengineering.com



- We will obtain the as-built plans for Preston Road from Frontier Parkway to Grayson County Line from the City/TxDOT. It should be noted that we don't anticipate conducting topographical or boundary survey for this project and it is not included in the scope of services. It is our understanding that CAD files for the as-built plans are not available. We will utilize the latest aerial photographs available from the City of NCTCOG as base maps.
- We will conduct a field visit to photograph key features and to identify any possible utility conflicts associated with illumination pole locations.
- We will meet with the City of Celina to discuss their requirements and guidelines regarding lighting design. We also anticipate a field meeting to review street light pole locations and electrical service locations with the City of Celina and the power company.
- Review clearance requirements to assess the need for guardrails as needed.
- Review applicable National Electric Code provisions and requirements.
- Coordinate with the appropriate utility companies to identify service locations, types, and standards.
- Perform light level calculations and prepare photometric plans to determine pole spacing for the City of Celina specified luminaires and mounting height. It should be noted that the main objective of this project is to provide roadway lighting and the photometric analysis will not include pedestrian lighting analysis.
- Perform voltage drop calculations to determine electrical conductor size and grounding conductors.
- Review conduit fill and design conduit size.
- Design electrical services including electrical service data, breaker size, and service entrance conductors.
- We will prepare preliminary roadway lighting (illumination) plans (60%) for review by the City and TxDOT. The roadway lighting plans will show pole foundation locations, conduits, ground boxes, electrical service data sheet, circuit design charts/diagrams, power source locations, and conductor charts.
- Upon approval of the preliminary layouts, we will incorporate any comments and prepare all necessary plan sheets for installation of roadway lighting. The plans will conform with and will utilize the City of Celina and/or TxDOT design standards as applicable. These plan sheets will include roadway lighting layout sheets, circuit design sheets, electrical service data sheet, electrical conductor summary sheet, and applicable City of Celina and/or TxDOT specifications and standard sheets. Our plan set will also include technical specifications and engineer's estimate of construction cost. A draft set of all plan sheets will be submitted to the City and TxDOT for review.
- Based upon comments, we will incorporate necessary changes and produce, sign, and seal final plans on 11"x17" sheets for submittal.

1.1. Preparation of Bid Documents

LEE will utilize the City of Celina's standard contract documents in assembling the required contract documents for the bidding and letting of the project. LEE shall prepare four bid packages for this project as identified in Task 2. The City of Celina will determine the order of bid package letting.

- The contract documents will include all applicable standard documents from the City, bid sheets, and technical specifications related the project. A draft of each bid set (plan sheets

and contract documents) will be submitted for review by the City. Upon approval, LEE will submit signed and sealed bound set of the bid documents.

2. Bid Advertisement, and Construction Engineering Assistance

- LEE will provide pdf of the of the final plan sets and contract documents to the City of Celina for bidding and distribution.
- If plan amendments are needed after bid advertisement, LEE will revise and submit pdf of the revised plan sheets to the City of Celina.
- LEE shall consult with the City concerning the acceptability of substitute materials and equipment proposed by Contractors when substitution prior to the award to contracts is allowed by the bidding documents.
- After the bid opening, LEE will review and tabulate all bids.
- LEE will attend the pre-bid and pre-construction meetings to answer questions and discuss the construction plan.
- LEE will be available to review any field changes that may occur during construction.
- After the construction is complete Lee Engineering will prepare record drawings based on redlines provided by the contractor and submit pdf of the final record drawings on 11" X 17" sheets.

Schedule and Fee

Our proposed schedule is provided below. Please note that schedule for Preston Road Lighting PS&E Phase II to Phase IV will be determined after a notice to proceed for each phase is provide and based on discussions with the City.

Task	Completion Date (TASK 1)
1. Preston Road Lighting PS&E (Phase I) Preston Rod from Frontier Parkway to Glendenning Parkway (approximately 3 miles)	Completion Date (Weeks from Notice to Proceed)
60% Plans Submitted to the City and TxDOT	12 Weeks
DRAFT FINAL Plan Submittal to the City and TxDOT (assume 4 weeks review time)	20 Weeks
FINAL Plans, Specifications	25 Weeks
1.1. Bid Documents	25 Weeks
2. Bid Advertisement, and Construction Engineering	TBD

Lee Engineering's fee breakdown is shown below:

BASIC SERVICES			
Task			Fee (unit)
Task 1	Preparation of Plans, Specifications, and Estimates for Installation of LED Street Lighting along Preston Road		\$163,202.00 (Lump Sum)
	Phase I	Frontier Parkway to Glendenning Parkway (approximately 3.0 miles)	\$49,207.00
	Phase II	Glendenning Parkway to CR 94 (approximately 1.70 miles)	\$27,884.00
	Phase III	CR 94 to Business 289 (approximately 2.9 miles)	\$47,566.00
	Phase IV	Business 289 to Grayson County Line (approximately 2.35 miles)	\$38,545.00
Task 2	Bid Advertisement and Construction Engineering Assistance		\$10,000.00 (Hourly, Not to Exceed)
Direct Expenses (not to exceed) (mileage, copies, binding)			\$1,000.00
Total Services Fee			\$174,202.00

The total fee for **Tasks 1** will be **\$163,202** and will be billed as a lump sum. Our fee for **Task 2** will be **\$10,000** and will be billed on an hourly basis according to the attached terms and conditions and will not exceed without authorization from the City. It is our understanding that the City may provide a Notice to Proceed for one or multiple phases at the same time.

If you have any questions, please contact me or John Denholm at (972) 248-3006. We appreciate the opportunity to submit this proposal and look forward to working with you on this project. If this agreement meets with your approval, please sign below and return a copy of this letter as notice to proceed.

Sincerely,

 Digitally signed by Dharmesh Shah,
PE, PTOE
DN: cn=Dharmesh Shah, PE, PTOE,
o=Lee Engineering, LLC, ou,
email=dshah@lee-eng.com, c=US
Date: 2019.01.15 08:16:08 -06'00'

Dharmesh Shah, P.E., PTOE
Vice President
Lee Engineering, LLC

Accepted:

City of Celina

Date

Lee Engineering**Terms and Conditions****April 2, 2018**

Additional services as authorized by you will be performed at the following rates:

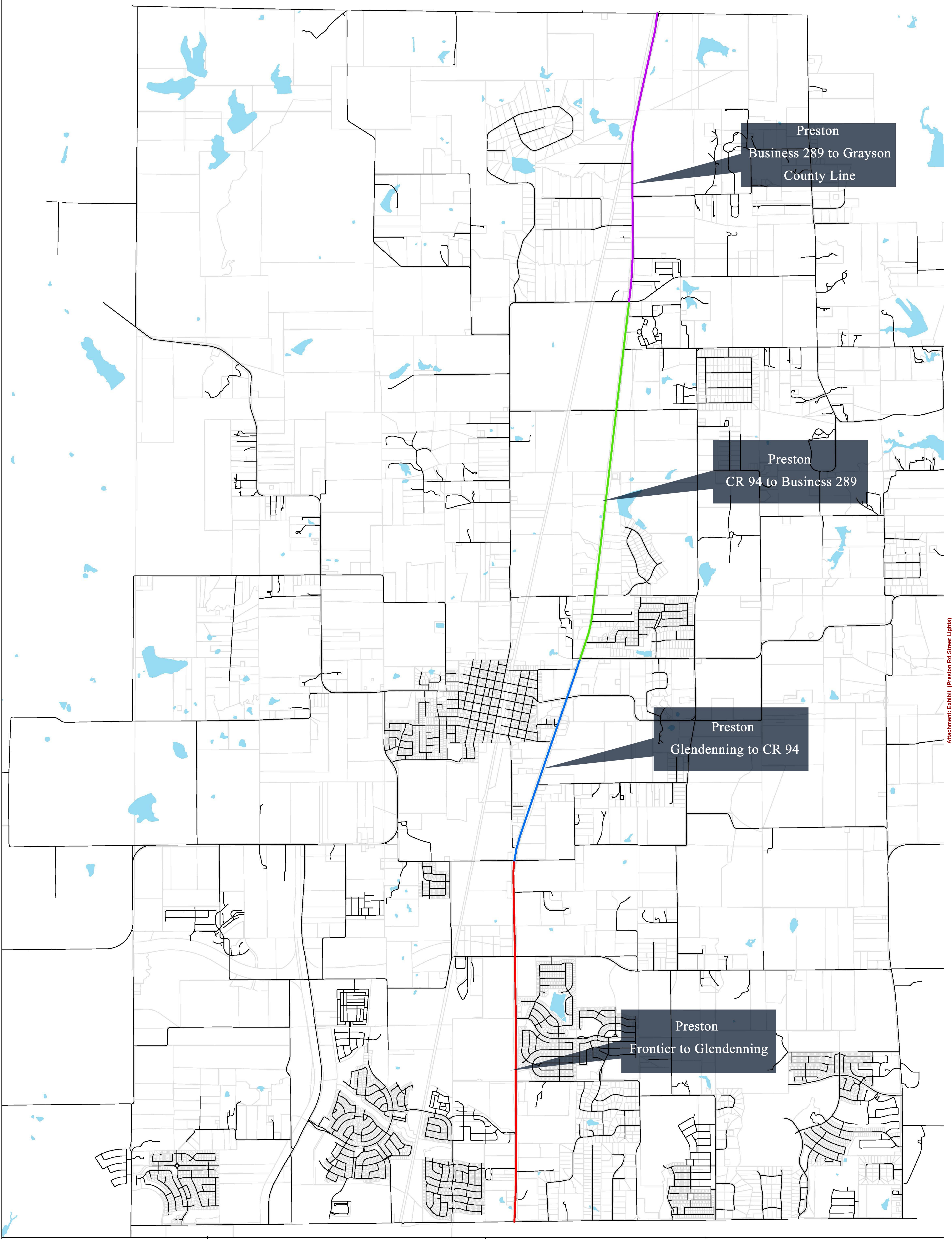
Principal	\$250.00/per hour
Senior Project Manager	\$210.00/per hour
Project Manager	\$170.00/per hour
Senior Program Manager	\$210.00/per hour
Program Manager	\$170.00/per hour
Senior Engineer	\$160.00/per hour
Project Engineer	\$135.00/per hour
Sr. Engineering Designer	\$115.00/per hour
Engineering Designer	\$100.00/per hour
Senior ITS System Designer	\$175.00/per hour
ITS System Designer	\$130.00/per hour
Senior Technician	\$100.00/per hour
Technician	\$ 75.00/per hour
Admin Assistant/Accountant	\$ 75.00/per hour
Secretarial	\$ 50.00/per hour
Intern	\$ 45.00/per hour
Highway travel	IRS Allowable Rate
Meals, lodging, air fares	out-of-pocket costs
Other Direct Expenses	at cost

TERMS AND CONDITIONS:

1. Invoices will be submitted monthly.
2. Invoices are due and payable when received.
3. Interest at the rate of 1.5% per month will be applied to invoices not paid within 30 days of initial billing date.
4. We reserve the right to cease work on delinquent accounts.
5. We reserve the right to bill for expenses related to project delays caused by contracting party.
6. Contracting party is responsible for paying all fees and expenses associated with all activities related to an engagement. Credit will be given for payments received directly from clients of the contracting party or from others.
7. The retainer fee will be credited against fee with the final invoice.
8. In addition to invoices rendered and interest thereon, contracting party agrees to pay any and all legal fees and costs incurred in collecting overdue accounts.
9. Rates are subject to change annually. Work performed in subsequent years will be charged at the adjusted rates.
10. Draft reports are for review purposes only and are not to be released to any entity that is not party to this agreement.
11. Extra copies of reports will be billed at \$10.00 per copy.
12. All contracts shall be subject to the laws of the State of Texas.

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LEE ENGINEERING

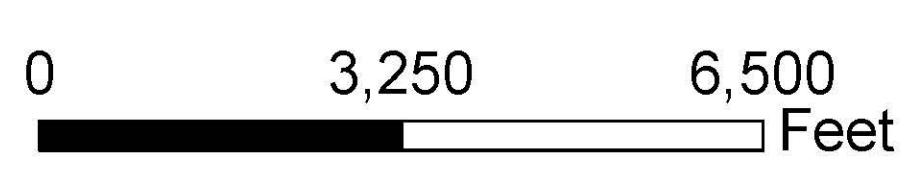
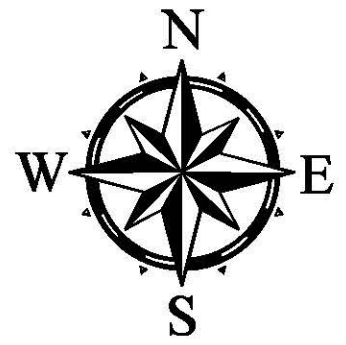


Attachment: Exhibit (Preston Rd Street Lights)



2019 City of Celina Street Lighting

Date: 2/7/2019



Legend

Lights

- Phase 1
- Phase 2
- Phase 3
- Phase 4
- Roads



Engineering
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Kim Brawner, Director of Engineering
Date: February 12, 2019
Re:

Action Requested:

Consider and act to authorize the City Manager to execute an amendment to the Construction Manager at Risk Agreement to Establish the Guaranteed Maximum Price for by and between the City of Celina and Hill & Wilkinson in the amount of \$6,669,613.00 (Brawner)

Background Information:

The City of Celina executed a Contract Manager at Risk Agreement (CMAR) with Hill & Wilkinson on August 13, 2018 to remodel City Hall, EDC building, and the Annex. Hill & Wilkinson will serve as an independent contractor who works directly for the City of Celina as a construction manager to maximize the city's effort and will serve as the day-to-day manager of the project.

The Guaranteed Maximum Price (GMP) amendment includes the cost for reconstruction of the Annex building to bring the building into compliance with current building codes and ADA accessibility requirements including the construction of an elevator tower to the north of the building. The existing stained glass windows on the second story will be saved. This building will serve as city council chambers and the primary location of Development Services and Engineering. By consolidating these two departments in one building, the city can provide a "one-stop shop" for developers and citizens.

The EDC building will be brought into compliance with current building codes. This building will house the EDC and Main street representative on the first floor. The second floor will be utilized as the new Parks administration offices. The city hall remodel includes the remodeling of the current permit area to serve as new office space for the finance department. The utility billing and courts area will also be remodeled to accommodate an additional court clerk and ADA modifications of the offices to current standards.

Board Review/Citizen Input:

N/A

Alternatives:

The City could chose to not proceed with the project.

Financial Considerations:

The cost of this construction will be funded from bond funds.

Legal Review:

Staff is utilizing standard AIA construction documents.

Supporting Documents:

A133-2009 Exhibit A

City Hall Renderings

City Hall floor plan

EDC floor plan

Annex floor plans

Staff Recommendation:

Staff recommends approval of the GMP.





Attachment: annex 02.07.19 (GMP City Hall, EDC, & Annex Remodel)

consultant

seal / disclaimer

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ARCHITECT
REGISTRATION NO. 2 _____
ON 7 _____
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REGULATORY APPROVAL,
PERMITTING, OR CONSTRUCTION

client / owner



CELINA
TEXAS
EST. 1876

Owner

142 N. OHIO ST.
CELINA, TX 75009

project

**CITY OF
CELINA
RENOVATION**

142 N. OHIO ST.
CELINA, TX
75009

revision no: issue date:

issue date: 10/01/2018

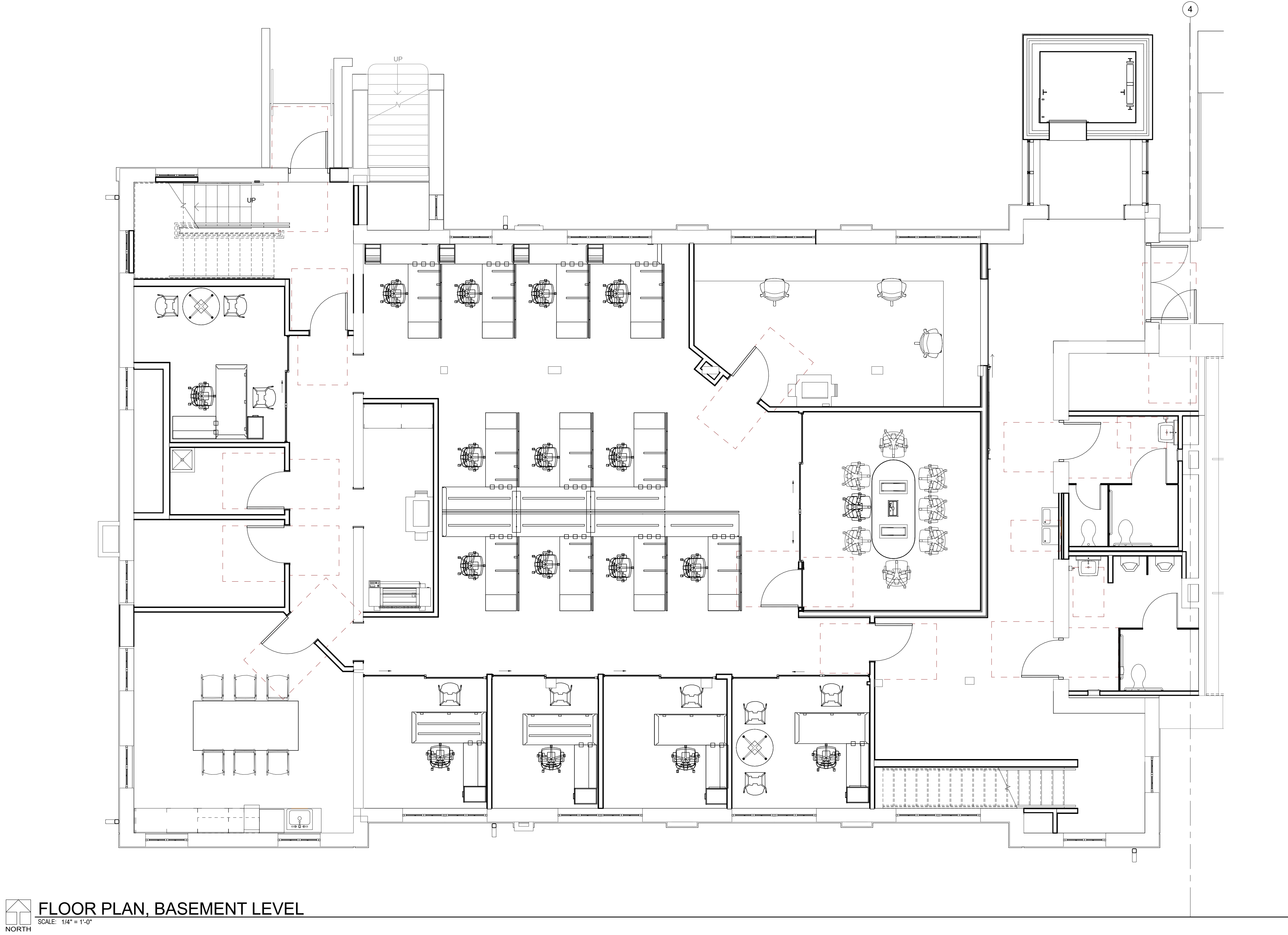
vai project no.: 17016.0000

drawn by: checked by:
AG Checker

issue title:
100% DESIGN
DEVELOPMENT

sheet title:
**COUNCIL
CHAMBERS
BASEMENT
FURNITURE PLAN**

sheet no:
ID-200-A



consultant

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client / owner



CELINA
TEXAS
EST. 1876

Owner

142 N. OHIO ST.
CELINA, TX 75009

project

**CITY OF
CELINA
RENOVATION**

142 N. OHIO ST.
CELINA, TX
75009

revision no: issue date:

issue date:
10/01/2018

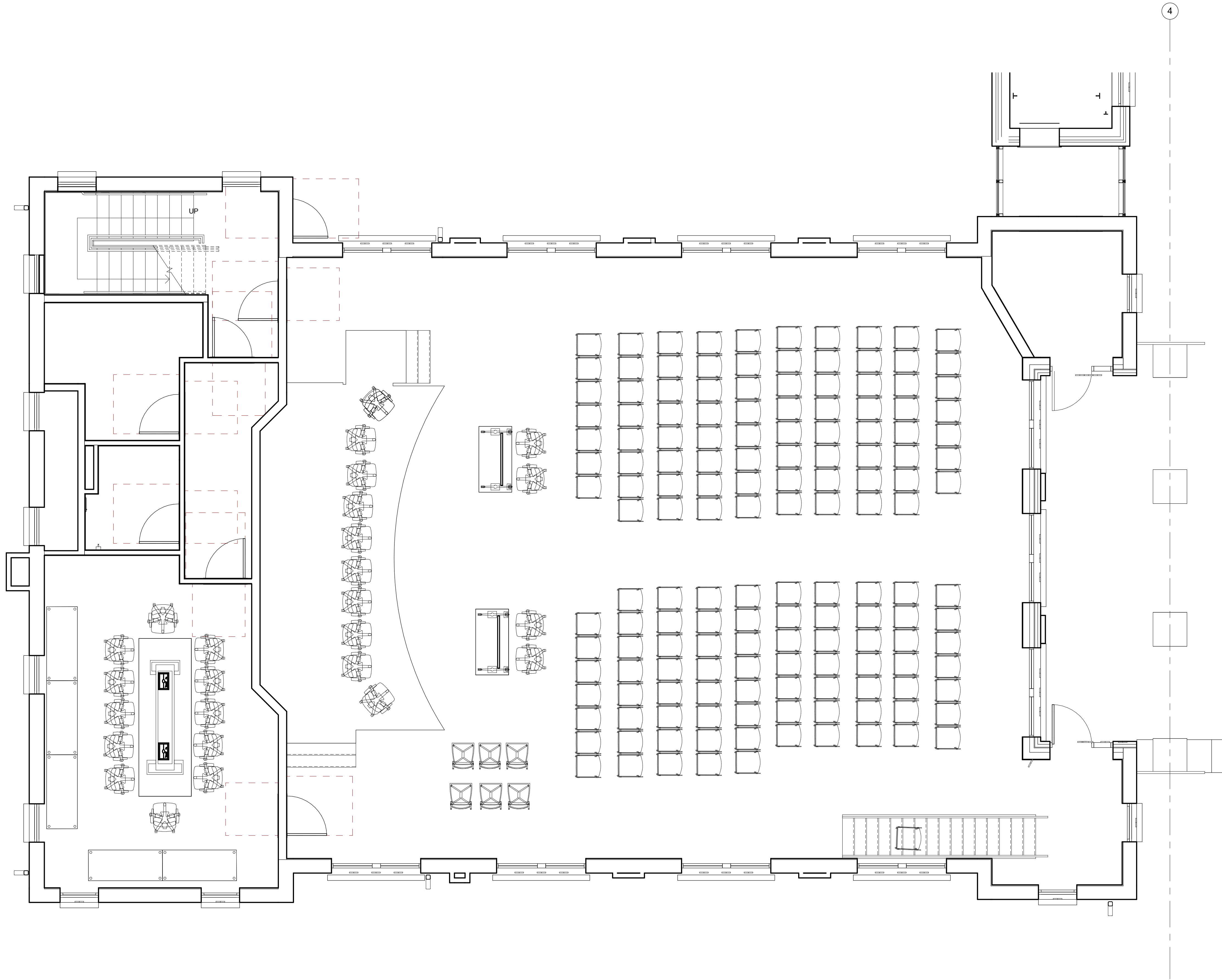
vai project no.:
17016.0000

drawn by: checked by:
AG

issue title:
100% DESIGN
DEVELOPMENT

sheet title:
**COUNCIL
CHAMBERS
1ST FLOOR
FURNITURE PLAN**

sheet no:
ID-201-A



 **COUNCIL CHAMBERS FLOOR PLAN LEVEL 1 FURNITURE**
SCALE: 1/4" = 1'-0"



seal / disclaimer

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client / owner



142 N. OHIO ST.
CELINA, TX 75009

project

142 N. OHIO ST.
CELINA, TX
75009

revision no:	issue date:
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issue date: 10/01/2018

vai project no.: 17016.0000

drawn by: checked by
Author Checke

issue title:
100% DESIGN
DEVELOPMENT

sheet title:

**COUNCIL
CHAMBERS
2ND FLOOR
FURNITURE PLAN**

sheet no

ID-202-A

© 2018 VAI Arch | Packet Pg. 1221



SCALE: 1/4" = 1'-0"

10/1/2018 3:21:48 PM



CITY HALL FIRST LEVEL - FLOOR FINISH PLAN



architect



consultant

seal / disclaimer

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client / owner



142 N. OHIO ST. CELINA, TX 75009

project

CITY OF CELINA RENOVATION

142 N. OHIO ST. CELINA, TX 75009

revision no: issue date:

issue date: 10/01/2018

vai project no.: 17016.0000

drawn by: checked by: Author Checker

issue title: 100% DESIGN DEVELOPMENT

sheet title:

CITY HALL 1ST FURNITURE PLAN

sheet no:

ID-201-B

consultant

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CELINA
TEXAS
EST. 1876

Owner

142 N. OHIO ST.
CELINA, TX 75009

project

**CITY OF
CELINA
RENOVATION**

142 N. OHIO ST.
CELINA, TX
75009

revision no: issue date:

issue date:
10/01/2018

vai project no.:
17016.0000

drawn by: checked by:
Author Checker

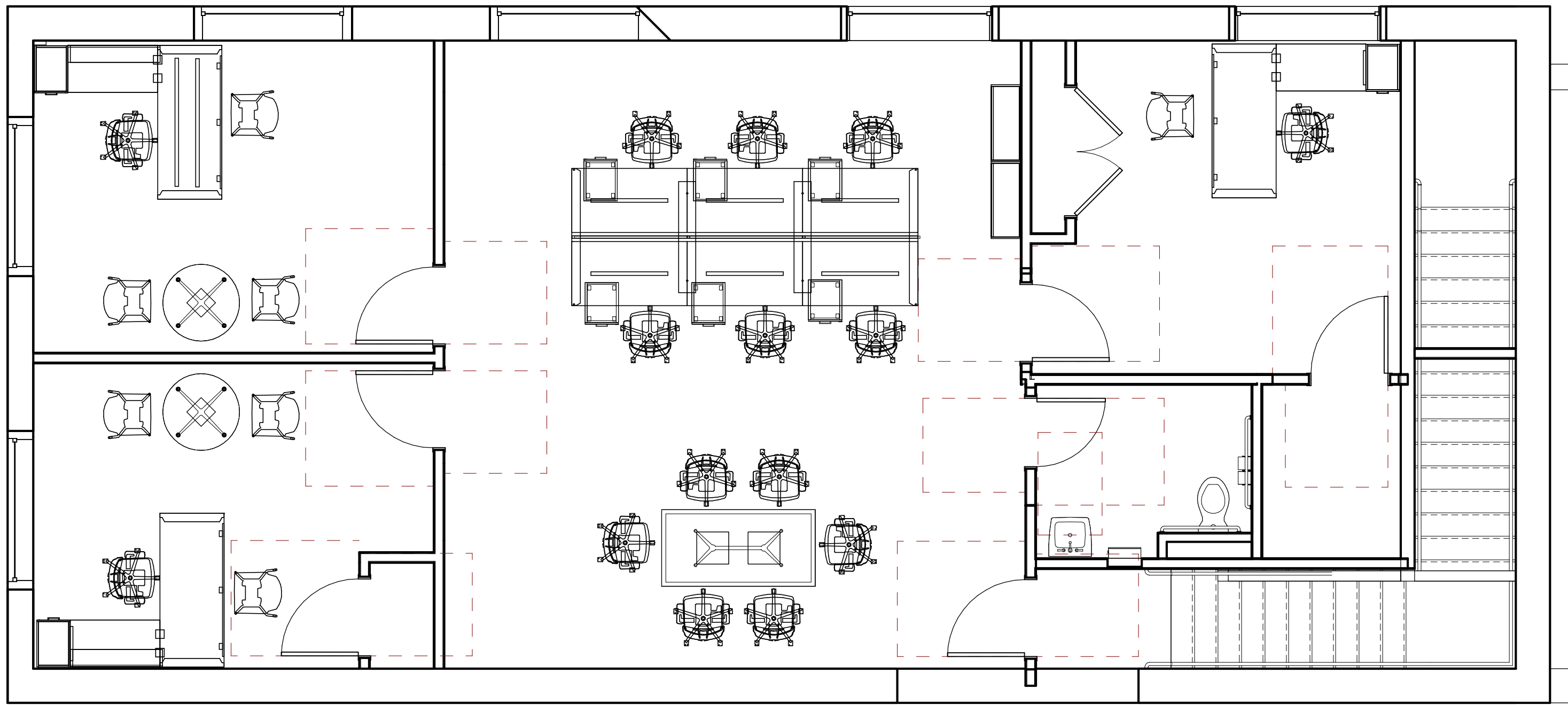
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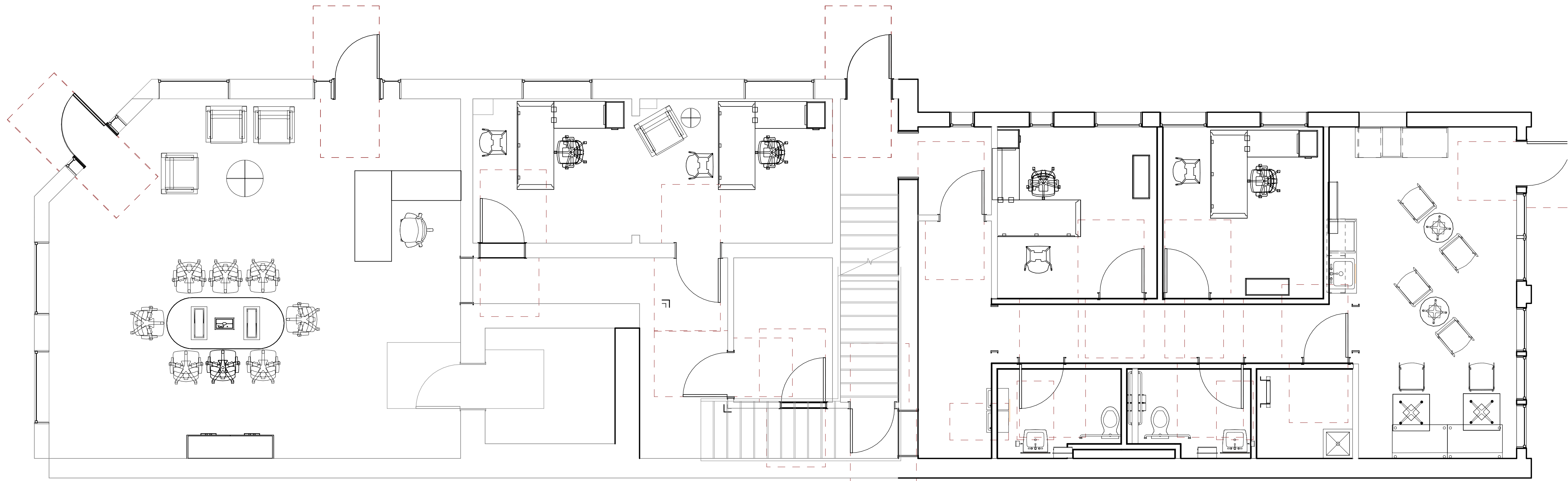
**EDC 1ST FLOOR
FURNITURE PLAN
AND EDC 2ND
FLOOR FURNITURE
PLAN**

sheet no:

ID-201-C



 **EDC FLOOR PLAN LEVEL 2 FURNITURE**
SCALE: 1/4" = 1'-0"



 **FLOOR PLAN, FIRST LEVEL - AREA A**
SCALE: 1/4" = 1'-0"



Administration
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Paul DeBuff, Assistant to the City Manager
CC: Jason Laumer, City Manager
Date: February 12, 2019
Re: JAG Grant for Police

Action Requested:

Consider and act upon an Office of the Governor Criminal Justice Program (JAG) grant resolution of support. (Griggs)

Background Information:

A Council resolution approving the submission of a grant application is required for the completion of this grant application.

This grant provides funding that may be used to provide additional personnel, equipment, supplies, contractual support, training, technical assistance, and information systems for criminal justice purposes, including for any one or more of the following: law enforcement, prosecution, crime prevention, corrections and community corrections, reentry, behavioral health, and assessment and evaluation. The intention for the use of the funds of this grant is for a Child Abuse and Family Violence investigator.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

This grant provides for a minimum for \$10,000 in funding.

Legal Review:

N/A

Supporting Documents:

- Proposed Resolution

Staff Recommendation:

Staff recommends approval.

CITY OF CELINA, TX
RESOLUTION NO. 2019-

A RESOLUTION BY THE CITY OF CELINA APPROVING THE SUBMISSION OF A GRANT APPLICATION TO THE OFFICE OF THE GOVERNOR, CRIMINAL JUSTICE DIVISION FOR THE CELINA CRIMINAL JUSTICE PROGRAM SPECIAL INVESTIGATIONS PROJECT.

WHEREAS, The City Council of the City of Celina finds it in the best interest of the citizens of the City of Celina, that the Celina Police Department Special Investigations Project be operated for the 2019-2020 FY; and

WHEREAS, The City Council of the City of Celina agrees that in the event of loss or misuse of the Office of the Governor funds, the City Council of the City of Celina assures that the funds will be returned to the Office of the Governor in full.

WHEREAS, The City Council of the City of Celina designates the City Manager as the grantee's authorized official. The authorized official is given the power to apply for, accept, reject, alter or terminate the grant on behalf of the applicant agency.

NOW THEREFORE, BE IT RESOLVED that The City Council of the City of Celina, TX approves submission of the grant application for the Celina Police Department Special Investigations Project to the Office of the Governor.

PASSED AND APPROVED this 12th of February 2019.

 Sean Terry, Mayor

ATTEST:

 Vicki Faulkner, TRMC
 City Secretary, City of Celina, Texas

Grant Number: 3564001

Attachment: 2019- JAG Project PoliceResolution (JAG Grant for Police)



Administration
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Paul DeBuff, Assistant to the City Manager
 CC: Jason Laumer, City Manager
 Date: February 12, 2019
 Re: Resolution of Support to Create MMD #3

Action Requested:

Consider and act upon a resolution of the City of Celina Texas supporting the creation of the Celina Municipal Management District Number 3. (Sorrells MMD) (Laumer)

Background Information:

This resolution represents the Council's support of the creation of Municipal Management District #3 by the Texas State Legislature.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

This item has been reviewed by the City Attorney.

Supporting Documents:

- Proposed Council resolution
- Proposed state resolution
- Development Agreement of the property
- Filed & Executed Development Agreement of the property

Staff Recommendation:

Staff recommends approval.

H.B. No. _____

AN ACT

relating to the creation of the Celina Municipal Management District No. 3; providing authority to issue bonds and impose assessments, fees, and taxes.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

SECTION 1. Subtitle C, Title 4, Special District Local Laws Code, is amended by adding Chapter _____ to read as follows:

CHAPTER _____ . CELINA MUNICIPAL MANAGEMENT DISTRICT NO.

3

SUBCHAPTER A. GENERAL PROVISIONS

Sec. _____ .001. DEFINITIONS. In this chapter:

(1) "Board" means the district's board of directors.

(2) "City" means the City of Celina, Texas.

(3) "Commission" means the Texas Commission on Environmental Quality.

(4) "Director" means a board member.

(5) "District" means the Celina Municipal Management District No. 3.

Sec. _____ .002. CREATION AND NATURE OF DISTRICT.

H.B. No. _____

The district is a special district created under Sections 52 and 52-a, Article III, and Section 59, Article XVI, Texas Constitution.

Sec. _____ .003. PURPOSE; LEGISLATIVE FINDINGS. (a)

The creation of the district is essential to accomplish the purposes of Sections 52 and 52-a, Article III, and Section 59, Article XVI, Texas Constitution, and other public purposes stated in this chapter. By creating the district and in authorizing the city and other political subdivisions to contract with the district, the legislature has established a program to accomplish the public purposes set out in Section 52-a, Article III, Texas Constitution.

(b) The creation of the district is necessary to promote, develop, encourage, and maintain employment, commerce, transportation, housing, tourism, recreation, the arts, entertainment, economic development, safety, and the public welfare in the district.

(c) This chapter and the creation of the district may not be interpreted to relieve the city from providing the level of services provided to the area in the district as of the effective date of the Act enacting this chapter. The district is created to supplement and not to supplant the city services provided in the district.

H.B. No. _____

Sec. _____ .004. FINDINGS OF BENEFIT AND PUBLIC PURPOSE. (a) The district is created to serve a public use and benefit.

(b) All land and other property included in the district will benefit from the improvements and services to be provided by the district under powers conferred by Sections 52 and 52-a, Article III, and Section 59, Article XVI, Texas Constitution, and other powers granted under this chapter.

(c) The district is created to accomplish the purposes of a municipal management district as provided by general law and Sections 52 and 52-a, Article III, and Section 59, Article XVI, Texas Constitution.

(d) The creation of the district is in the public interest and is essential to:

(1) further the public purposes of developing and diversifying the economy of the state;

(2) eliminate unemployment and underemployment;

(3) develop or expand transportation and commerce; and

(4) provide quality residential housing.

(e) The district will:

(1) promote the health, safety, and general welfare of residents, employers, potential employees, employees, visitors, and

H.B. No. _____

consumers in the district, and of the public;

(2) provide needed funding for the district to preserve, maintain, and enhance the economic health and vitality of the district territory as a community and business center; and

(3) promote the health, safety, welfare, and enjoyment of the public by providing pedestrian ways and by landscaping and developing certain areas in the district, which are necessary for the restoration, preservation, and enhancement of scenic beauty.

(f) Pedestrian ways along or across a street, whether at grade or above or below the surface, and street lighting, street landscaping, parking, and street art objects are parts of and necessary components of a street and are considered to be a street or road improvement.

(g) The district will not act as the agent or instrumentality of any private interest even though the district will benefit many private interests as well as the public.

Sec. .005. DISTRICT TERRITORY. (a) The district is composed of the territory described by Section 2 of the Act enacting this chapter, as that territory may have been modified under other law.

(b) The boundaries and field notes contained in Section 2 of the Act enacting this chapter form a closure. A mistake in the

H.B. No. _____

field notes or in copying the field notes in the legislative process does not affect the district's:

- (1) organization, existence, or validity;
- (2) right to contract;
- (3) authority to borrow money or issue bonds or other obligations described by Section .251 or to pay the principal and interest of the bonds or other obligations;
- (4) right to impose or collect an assessment, or collect other revenue; or
- (5) legality or operation.

Sec. .006. APPLICABILITY OF MUNICIPAL MANAGEMENT DISTRICTS LAW. Except as otherwise provided by this chapter, Chapter 375, Local Government Code, applies to the district.

Sec. .007. CONSTRUCTION OF CHAPTER. This chapter shall be liberally construed in conformity with the findings and purposes stated in this chapter.

Sec. .008. CONFLICTS OF LAW. This chapter prevails over any provision of Chapter 375, Local Government Code, that is in conflict or inconsistent with this chapter.

Sec. .009. CONSENT OF MUNICIPALITY REQUIRED. The board may not hold an election to authorize the issuance of

H.B. No. _____

bonds until the governing body of the city by ordinance or resolution consents to the creation of the district and to the inclusion of land in the district. The city's consent must be granted in the manner provided by Section 54.016, Water Code, for including land within the corporate limits or extraterritorial jurisdiction of a city.

Sec. _____ .010. EFFECT OF ANNEXATION.

Notwithstanding any other law, if all or any part of the territory of the district is annexed by the city into the city's corporate limits, the district retains all of the district's outstanding debt and obligations and continues to operate under this chapter until the district is dissolved under Subchapter G.

SUBCHAPTER B. BOARD OF DIRECTORS

Sec. _____ .051. GOVERNING BODY; TERMS. The district is governed by a board of five directors who serve staggered terms of four years, with two or three directors' terms expiring June 1 of each even-numbered year. One director is appointed by the city, and four directors are appointed by the commission as provided by Sections _____ .052 and _____ .053, respectively.

Sec. _____ .052. APPOINTMENT AND REMOVAL OF DIRECTOR APPOINTED BY CITY. (a) The governing body of the city shall appoint one director who must be:

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(1) at least 18 years of age; and(2) a resident of the city.(b) At any time the governing body of the city may remove the director appointed by the city and appoint a director to serve the remainder of the removed director's term.Sec. .053. APPOINTMENT BY COMMISSION. (a)Before the term of a director other than a director appointed under Section .052 expires, the board shall recommend to the commission the appropriate number of persons to serve as successor directors. The commission shall appoint as directors the persons recommended by the board.(b) A person recommended by the board under Subsection (a) must be:(1) at least 18 years of age;(2) an owner of property in the district;(3) an owner of stock, whether beneficial or otherwise, of a corporate owner of property in the district;(4) an owner of a beneficial interest in a trust that owns property in the district; or(5) an agent, employee, or tenant of a person described by Subdivision (2), (3), or (4).Sec. .054. VACANCY. If a vacancy occurs on the

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board, the remaining directors shall appoint a director for the remainder of the unexpired term.

Sec. .055. DIRECTOR'S OATH OR AFFIRMATION. (a)

A director shall file the director's oath or affirmation of office with the district, and the district shall retain the oath or affirmation in the district records.

(b) A director shall file a copy of the director's oath or affirmation with the secretary of the city.

Sec. .056. OFFICERS. The board shall elect from among the directors a chair, a vice chair, and a secretary. The offices of chair and secretary may not be held by the same person.

Sec. .057. COMPENSATION; EXPENSES. (a) The district may compensate each director in an amount not to exceed \$150 for each board meeting. The total amount of compensation a director may receive each year may not exceed \$7,200.

(b) A director is entitled to reimbursement for necessary and reasonable expenses incurred in carrying out the duties and responsibilities of the board.

Sec. .058. LIABILITY INSURANCE. The district may obtain and pay for comprehensive general liability insurance coverage from a commercial insurance company or other source that

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protects and insures a director against personal liability and from all claims relating to:

(1) actions taken by the director in the director's capacity as a member of the board;

(2) actions and activities taken by the district; or

(3) the actions of others acting on behalf of the district.

Sec. .059. NO EXECUTIVE COMMITTEE. The board may not create an executive committee to exercise the powers of the board.

Sec. .060. BOARD MEETINGS. The board shall hold meetings at a place that is accessible to the public and located in the district or in the city.

Sec. .061. INITIAL DIRECTORS. (a) On or after September 1, 2019, the owner or owners of a majority of the assessed value of the real property in the district according to the most recent certified tax appraisal rolls for the county may submit a petition to the commission requesting that the commission appoint as initial directors the four persons named in the petition. The commission shall appoint as initial directors the four persons named in the petition.

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(b) The governing body of the city shall appoint one initial director.

(c) The initial directors shall determine by lot which three positions expire June 1, 2021, and which two positions expire June 1, 2023.

(d) This section expires September 1, 20 .

SUBCHAPTER C. POWERS AND DUTIES

Sec. .101. GENERAL POWERS AND DUTIES. The district has the powers and duties necessary to accomplish the purposes for which the district is created.

Sec. .102. IMPROVEMENT PROJECTS AND SERVICES.

(a) Subject to Subsection (b), the district may provide, design, construct, acquire, improve, relocate, operate, maintain, or finance an improvement project or service using money available to the district, or contract with a governmental or private entity to provide, design, construct, acquire, improve, relocate, operate, maintain, or finance an improvement project or service authorized under this chapter or Chapter 375, Local Government Code.

(b) The district may not construct or finance an improvement project, other than a water, sewer, or drainage facility or road, unless the governing body of the city by ordinance or resolution consents to the construction or financing.

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(c) The district may issue bonds, notes, or other obligations to maintain or repair an existing improvement project only if the governing body of the city by ordinance or resolution consents to the issuance.

Sec. _____ .103. LOCATION OF IMPROVEMENT PROJECT. A district improvement project may be located inside or outside of the district.

Sec. _____ .104. OWNERSHIP OF IMPROVEMENT PROJECTS.
(a) Before a district improvement project may be put into operation, the district must transfer ownership of the project to the city.

(b) The transfer of ownership is complete on the city's acceptance of ownership.

Sec. _____ .105. RETAIL WATER AND SEWER SERVICES PROHIBITED. The district may not provide retail water or sewer services.

Sec. _____ .106. ADDING OR REMOVING TERRITORY. (a)
Subject to Subsections (b), (c), and (d), the board may add or remove territory as provided by Subchapter J, Chapter 49, Water Code.

(b) The district may add territory as described by Subsection (a) only if the governing body of the city by ordinance or

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resolution consents to the addition.

(c) The district and all districts created under Subchapter D collectively may add a total area of not more than ~~3200~~ acres.

(d) Territory added under Subsection (a) must be ~~located in the corporate limits of the city and be~~ contiguous to the district at the time of the addition.

Sec. _____ .107. NO EMINENT DOMAIN. The district may not exercise the power of eminent domain.

SUBCHAPTER D. DIVISION OF DISTRICT INTO MULTIPLE DISTRICTS

Sec. _____ .151. DIVISION OF DISTRICT; PREREQUISITES.
The district, including territory added to the district under Section _____ .106, may be divided into two or more new districts only if the district has no outstanding bonded debt. Territory previously added to the district under Section _____ .106 may be included in a new district.

Sec. _____ .152. LAW APPLICABLE TO NEW DISTRICT.
This chapter applies to any new district created by division of the district, and a new district has all the powers and duties of the district.

Sec. _____ .153. DIVISION PROCEDURES. (a) The board, on its own motion or on receipt of a petition signed by an owner of real property in the district, may adopt an order

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proposing to divide the district.

(b) If the board decides to divide the district, the board shall:

(1) set the terms of the division, including names for the new districts and a plan for the payment or performance of any outstanding district obligations;

(2) prepare a metes and bounds description for each proposed district; and

(3) appoint four initial directors for each new district.

(c) The governing body of the city shall appoint one director for each new district.

Sec. _____ .154. CONTRACT AUTHORITY OF NEW DISTRICTS.

The new districts may contract with each other for any matter the boards of the new districts consider appropriate, including the joint construction or financing of a utility improvement.

SUBCHAPTER E. GENERAL FINANCIAL PROVISIONS; ASSESSMENTS

Sec. _____ .201. DISBURSEMENTS AND TRANSFERS OF MONEY. The board by resolution shall establish the number of directors' signatures and the procedure required for a disbursement or transfer of the district's money.

Sec. _____ .202. MONEY USED FOR IMPROVEMENTS OR

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SERVICES. The district may acquire, construct, or finance an improvement project or service authorized by this chapter or Chapter 375, Local Government Code, using any money available to the district.

Sec. .203. METHOD OF NOTICE FOR HEARING. The district may mail the notice required by Section 375.115(c), Local Government Code, by certified or first class United States mail. The board shall determine the method of notice.

Sec. .204. ASSESSMENTS; LIENS FOR ASSESSMENTS.

(a) The board by resolution may impose and collect an assessment for any purpose authorized by this chapter in all or any part of the district.

(b) An assessment, a reassessment, or an assessment resulting from an addition to or correction of the assessment roll by the district, penalties and interest on an assessment or reassessment, an expense of collection, and reasonable attorney's fees incurred by the district are:

(1) a first and prior lien against the property assessed;

(2) superior to any other lien or claim other than a lien or claim for county, school district, or municipal ad valorem taxes; and

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(3) the personal liability of and a charge against the owners of the property even if the owners are not named in the assessment proceedings.

(c) The lien is effective from the date of the board's resolution imposing the assessment until the date the assessment is paid. The board may enforce the lien in the same manner that the board may enforce an ad valorem tax lien against real property.

(d) The board may make a correction to or deletion from the assessment roll that does not increase the amount of assessment of any parcel of land without providing notice and holding a hearing in the manner required for additional assessments.

(e) The district may not impose an assessment on a municipality, county, or other political subdivision.

Sec. .205. NOTICE OF ASSESSMENTS. Annually, the board shall file with the secretary of the city written notice that specifies the assessments the district will impose in the district's next fiscal year in sufficient clarity to describe the assessments for the operation and maintenance of the district and the assessments for the payment of debt service of obligations issued or incurred by the district.

SUBCHAPTER F. TAXES AND BONDS

Sec. .251. BONDS AND OTHER OBLIGATIONS. (a)

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The district may issue, by public or private sale, bonds, notes, or other obligations payable wholly or partly from ad valorem taxes or assessments in the manner provided by Subchapter A, Chapter 372, or Subchapter J, Chapter 375, Local Government Code. Sections 375.207(a) and (b), Local Government Code, do not apply to the district.

(b) In exercising the district's borrowing power, the district may issue a bond or other obligation in the form of a bond, note, certificate of participation or other instrument evidencing a proportionate interest in payments to be made by the district, or other type of obligation.

(c) In addition to the sources of money described by Subchapter A, Chapter 372, and Subchapter J, Chapter 375, Local Government Code, district bonds may be secured and made payable wholly or partly by a pledge of any part of the money the district receives from improvement revenue or from any other source.

(d) Not later than the 30th day before the date the district holds a bond sale, the district shall provide the governing body of the city written notice of the sale.

SUBCHAPTER G. DISSOLUTION

Sec. _____ .301. DISSOLUTION BY CITY ORDINANCE. (a)

The governing body of the city may dissolve the district by

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ordinance.(b) The governing body may not dissolve the district until:(1) water, sanitary, sewer, and drainage improvements and roads have been constructed to serve at least 90 percent of the developable territory of the district; and(2) the district has reimbursed each party that has an agreement with the district for all costs advanced to or on behalf of the district.(c) Until the district is dissolved, the district is responsible for all bonds and other obligations of the district.

Sec. _____ .302. COLLECTION OF ASSESSMENTS AND OTHER REVENUE. (a) If the dissolved district has bonds or other obligations outstanding secured by and payable from assessments or other revenue, other than revenue from ad valorem taxes, the city shall succeed to the rights and obligations of the district regarding enforcement and collection of the assessments or other revenue.

(b) The city shall have and exercise all district powers to enforce and collect the assessments or other revenue to pay:(1) the bonds or other obligations when due and payable according to their terms; or(2) special revenue or assessment bonds or other

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obligations issued by the city to refund the outstanding bonds or obligations.

Sec. _____ .303. ASSUMPTION OF ASSETS AND LIABILITIES. (a) After the city dissolves the district, the city assumes, subject to the appropriation and availability of funds, the obligations of the district, including any bonds or other debt payable from assessments or other district revenue.

(b) If the city dissolves the district, the board shall transfer ownership of all district property to the city.

SUBCHAPTER Z. SPECIAL BOND PROVISIONS

Sec. _____ .901. APPLICABILITY. This subchapter applies only to bonds payable wholly or partly from revenue derived from assessments on real property in the district.

Sec. _____ .902. CONFLICT OF LAWS. In the event of a conflict between this subchapter and any other law, this subchapter prevails.

Sec. _____ .903. WRITTEN AGREEMENT REGARDING SPECIAL APPRAISALS. Before the district may issue bonds, the district and any person to whom the board intends that proceeds of the bonds be distributed, including the developer, another owner of land in the district, and any entity acting as a lender to the developer or other landowner for the purpose of a project relating to the

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district, must enter into a written agreement that:

(1) waives for the term of the agreement the right to a special appraisal with respect to taxation by the district under Subchapters B, C, D, E, F, and H, Chapter 23, Tax Code; and

(2) remains in effect for 30 years and is binding on the parties, on entities related to or affiliated with the parties, and on their successors and assignees.

Sec. .904. REQUIREMENTS FOR ADVERTISING BOND ISSUE. A district may not advertise for an issuance of bonds until the completion of at least 25 percent of the projected value of the improvements, including houses and other buildings, that are liable for district assessments and necessary to support the district bonds.

Sec. .905. REQUIREMENTS FOR BOND ISSUE. The district may not issue bonds until:

(1) the district submits to the commission:

(A) an engineer's report describing the project for which the bonds will provide funding, including data, profiles, maps, plans, and specifications related to the project; and

(B) a cash flow analysis to determine the projected rate of assessment, which includes the following assumptions:

(i) each ending balance for debt service in

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the analysis is not less than 25 percent of the following year's debt service requirement;

(ii) interest income is only shown on the ending balance for debt service for the first two years; and

(iii) the projected rate of assessment is level or decreasing for the life of the bonds issued by the district;

(2) the completion of at least 75 percent of the projected value of the improvements, including houses and other buildings, that are liable for district assessments and necessary to support the district bonds; and

(3) the district has obtained an independent market study from a firm recognized in the area of real estate market analysis supporting the development projects for the real property that is liable for district assessments and necessary to support the district bonds.

Sec. .906. REQUIREMENTS FOR COLLECTION OF REVENUE TO PAY BONDS. The district may not collect an assessment to be used for the payment of bonds until:

(1) the completion of at least 95 percent of the underground water, wastewater, and drainage facilities financed from bond proceeds that are necessary to serve the projected build-

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out, as certified by the district's engineer;

(2) the district or other appropriate party has secured the groundwater, surface water, and water discharge permits that are necessary to secure capacity to support the projected build-out;

(3) the completion of at least 95 percent of lift station, water plant, and sewage treatment plant capacity sufficient to serve the connections constructed in the project for a period of not less than 18 months, as certified by the district's engineer; and

(4) the completion of at least 95 percent of the streets and roads that are necessary to provide access to the areas served by utilities and financed by the proceeds of bonds issued by the district, as certified by the district's engineer and constructed in accordance with municipal or county standards.

SECTION 2. The Celina Municipal Management District No. 3 initially includes all the territory contained in the following area:

All that certain tract or parcel of land lying and being situated in Denton County, Texas, a part of the Texas & Pacific Railway Survey, Abstract No. 1299, and being and including all that same tract said to contain 61.58 acres, more or less, as described in a deed to Godwin Family Investments, Ltd., recorded under Clerk's File No. 04-0035436, said tract or parcel of land is herein described as follows to wit:

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BEGINNING at an 1/2 inch iron rod set in Smiley Road (a County Road running in a Northerly and Southerly direction) for the Northeast corner of said Texas & Pacific Railway Survey and the Northeast corner of the premises here described, said corner being the Southeast corner of WILLOW WOOD, an addition to Denton County according to the plat thereof recorded in Cabinet M, page 260 of the Denton County Plat Records, an 1/2 inch iron rod found for witness bears North 89 degrees 44 minutes 31 seconds West 27.56 feet;

THENCE with Smiley Road and the East line of said Texas & Pacific Railway Survey, South 00 degrees 30 minutes 10 seconds West 1321.66 feet to an 1/2 inch iron rod found for corner, said corner being the Northeast corner of a record 62.35 acre tract described in a deed to Sekine Saraj, et al, recorded under Clerk's File No. 04-0005473;

THENCE North 89 degrees 25 minutes 27 seconds West at 28.05 feet passing an 1/2 inch iron rod set for witness on the West margin of Smiley Road and in all a total distance of 2040.69 feet to a 3/4 inch iron rod found for the Northwest corner of said 62.35 acre tract and the Southeast corner hereof;

THENCE North 01 degrees 05 minutes 30 seconds East 18.26 feet to an 1/2 inch iron rod found for corner, same being an angle point in the East line of a record 324.61 acre tract described in a Deed to Rita A. Sorrells, recorded in Volume 4381, Page 1 of the Real Property Records of Denton County;

THENCE North 00 degrees 44 minutes 22 seconds East 856.37 feet to an 1/2 inch iron rod found at an angle point of said 324.61 acre tract;

THENCE North 00 degrees 43 minutes 49 seconds East 435.74 feet to an 1/2 inch iron rod found for corner on the North line of said Texas & Pacific Railway Survey, said corner being a Northeasterly corner of said 324.61 acre tract, said corner also being the Southwest corner of said WILLOW Wood Addition;

THENCE along the South line of WILLOW WOOD addition, South 89 degrees 44 minutes 31 seconds East a distance of 2035.25 feet to the Place of BEGINNING and containing 61.57 acres of land.

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All that certain tract or parcel of land lying and being situated in Denton County, Texas, a part of the W.S. Ray Survey, Abstract No. 1105, the A.E. Norwood Survey, Abstract No. 969, the J. Ray Survey, Abstract No. 1104, the T. & P. Railroad Survey, Abstract No. 1299 and the Thomas B. Cox Survey, Abstract No. 309, and being and including all that same land conveyed to Rita L. Sorrells in a Correction Substitute Trustee's Deed recorded in Volume 4381, page 1 of the Real Property Records of Denton County, said tract or parcel of land is herein described as follows; to wit:

BEGINNING at an 1/2 inch iron rod found on the Southeast right-of-way line of F.M. Highway No. 428 at the Northerly termination corner of a boundary line described in a Boundary Line Agreement recorded under Denton County Clerk's File No. 98-R0022137, said corner being the Northwest corner of the premises herein described,

THENCE along the Southeast right-of-way line of said F.M. Highway as follows:

- 1) North 48 degrees 43 minutes 38 seconds East 1792.49 feet to an 1/2 inch iron rod found;
- 2) North 48 degrees 44 minutes 09 seconds East 248.64 feet to an 1/2 inch iron rod found;
- 3) North 45 degrees 58 minutes 51 seconds East 100.06 feet to an 1/2 inch iron rod found, and
- 4) North 48 degrees 43 minutes 17 seconds East 673.75 feet to an 1/2 inch iron rod found for the Northeast corner hereof, said corner being the Northwest corner of the Willow Wood, an addition to Denton County according to the plat thereof recorded in Cabinet M, page 260 of the Plat Records of Denton County;

THENCE South 22 degrees 31 minutes 00 seconds East 1066.49 feet to an 1/2 inch iron rod found at an angle corner hereof, said corner being a Southwesterly corner of said Willow Wood;

THENCE South 46 degrees 49 minutes 39 seconds East 640.13 feet to an 1/2 inch iron rod found for corner, said corner being the Southwest corner of Willow Wood;

THENCE South 00 degrees 45 minutes 11 seconds West 436.11 feet to an 1/2 inch iron rod found for corner;

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THENCE South 00 degrees 44 minutes 22 seconds West 856.37 feet to an 1/2 inch iron rod found for corner;

THENCE South 01 degrees 05 minutes 30 seconds West 18.26 feet to a 3/4 inch iron rod found at the Southwest corner of a record 61.58 acre tract described in a Deed recorded in Volume 1554, page 883 of the Real Property Records of Denton County;

THENCE South 00 degrees 33 minutes 36 seconds West 1324.91 feet to an 1/2 inch iron rod found for corner;

THENCE South 89 degrees 51 minutes 55 seconds West 704.96 feet to an 1/2 inch iron rod found for a re-entrant corner hereof;

THENCE South 00 degrees 26 minutes 35 seconds West 1810.06 feet to an 1/2 inch iron rod found for corner;

THENCE South 00 degrees 00 minutes 58 seconds West 865.64 feet to an 1/2 inch iron rod found in the center of an unimproved lane known as Crutchfield Road;

THENCE North 89 degrees 36 minutes 31 seconds West along a line following the approximate center of said unimproved lane a distance of 1947.13 feet to a point for the Southeast corner of a record 40.00 acre tract described in a Deed to Frisco West, LTD., recorded under Denton County Clerk's File No. 97-R0090325, said corner being the Southwest corner hereof;

THENCE North 00 degrees 13 minutes 01 seconds East 4017.88 feet to an 1/2 inch iron rod found at the Northeast corner of said record 40.00 acre tract for a re-entrant corner hereof;

THENCE North 88 degrees 52 minutes 02 seconds West 310.88 feet to an 1/2 inch iron rod found for a corner of said boundary line described in said Boundary Line Agreement;

THENCE North 00 degrees 17 minutes 43 seconds East a distance of 838.26 feet to the Place of BEGINNING and containing 324.64 acres of land.

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SECTION 3. (a) The legal notice of the intention to introduce this Act, setting forth the general substance of this Act, has been published as provided by law, and the notice and a copy of this Act have been furnished to all persons, agencies, officials, or entities to which they are required to be furnished under Section 59, Article XVI, Texas Constitution, and Chapter 313, Government Code.

(b) The governor, one of the required recipients, has submitted the notice and Act to the Texas Commission on Environmental Quality.

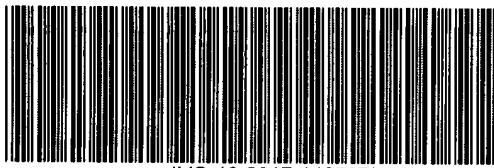
(c) The Texas Commission on Environmental Quality has filed its recommendations relating to this Act with the governor, lieutenant governor, and speaker of the house of representatives within the required time.

(d) All requirements of the constitution and laws of this state and the rules and procedures of the legislature with respect to the notice, introduction, and passage of this Act have been fulfilled and accomplished.

SECTION 4. This Act takes effect September 1, 2019.

H.B. No. _____

Attachment: Celina Sorrells MMD (MRF redline 2.5.19 of TG proposed) (Resolution of Support to Create MMD #3 (Sorrells))



VG-19-2017-146567

Denton County
Juli Luke
County Clerk

9.E.b

Instrument Number: 146567

Real Property Recordings

AGREEMENT

Recorded On: November 29, 2017 03:15 PM

Number of Pages: 7

" Examined and Charged as Follows: "

Total Recording: \$50.00

***** THIS PAGE IS PART OF THE INSTRUMENT *****

Any provision herein which restricts the Sale, Rental or use of the described REAL PROPERTY
because of color or race is invalid and unenforceable under federal law.

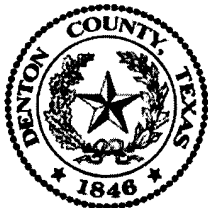
File Information:

Document Number: 146567
Receipt Number: 20171129000470
Recorded Date/Time: November 29, 2017 03:15 PM
User: TJ D
Station: D1ZP5182

Record and Return To:

CITY OF CELINA
142 N OHIO ST

CELINA TX 75009



STATE OF TEXAS
COUNTY OF DENTON

I hereby certify that this Instrument was FILED In the File Number sequence on the date/time
printed hereon, and was duly RECORDED in the Official Records of Denton County, Texas.

Juli Luke
County Clerk
Denton County, TX

Packet Pg. 1253

Attachment: Filed and Executed Punkadilly LTD 52560 Ch 43 Agreement (Resolution of Support to Create MMD #3 (Sorrells))

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OR ALL OF THE FOLLOWING INFORMATION FROM ANY INSTRUMENT THAT TRANSFERS AN INTEREST IN REAL PROPERTY BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

STATE OF TEXAS)
)
COUNTY OF DENTON)

CHAPTER 43 TEXAS LOCAL GOVERNMENT CODE DEVELOPMENT AGREEMENT

This Agreement is entered into pursuant to Sections 43.035 and 212.172 of the Texas Local Government Code by and between the City of Celina, Texas (the "City") and the undersigned property owner(s) (the "Owner"). The term "Owner" includes all owners of the Property.

WHEREAS, the Owner owns a parcel of real property (the "Property") in Denton County, Texas, legally described as Abstract 1299A in the Texas & Pacific Railway Survey, Tract 1, containing 61.58 acres, more or less, formerly known as old Denton County Appraisal District Tract #2, Denton County, Texas and more particularly described on Exhibit "A" attached hereto; and

WHEREAS, the City intends to begin the process to institute annexation proceedings on all or portions of Owner's Property in the near future; and

WHEREAS, the Owner desires to have the Property remain in the City's extraterritorial jurisdiction, in consideration for which the Owner agrees to enter into this Agreement; and

WHEREAS, this Agreement is entered into pursuant to Sections 43.035 and 212.172 of the Texas Local Government Code, in order to address the desires of the Owner and the procedures of the City; and

WHEREAS, the Owner and the City acknowledge that this Agreement is binding upon the City and the Owner and their respective successors and assigns for the term (defined below) of this Agreement; and

WHEREAS, this Development Agreement is to be recorded in the Real Property Records of Denton County.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties hereto agree as follows:

Section 1. The City guarantees the continuation of the extraterritorial status of the Owner's Property, its immunity from annexation by the City, and its immunity from City property taxes, for the term of this Agreement, subject to the provisions of this Agreement. Except as provided in this Agreement, the City agrees not to annex the Property, agrees not to involuntarily institute proceedings to annex the Property, and

further agrees not to include the Property in a statutory annexation plan for the Term of this Agreement. However, if the Property is annexed pursuant to the terms of this Agreement, then the City shall provide services to the Property pursuant to Chapter 43 of Texas Local Government Code.

Section 2. The Owner covenants and agrees not to use the Property for any use other than for agriculture, wildlife management, and/or timber land consistent with Chapter 23 of the Texas Tax Code without the prior written authority of the City Council.

The Owner covenants and agrees that the Owner will not file any type of subdivision plat or related development document for the Property, which includes but is not limited to seeking to create any special district (including but not limited to a Municipal Utility District, Fresh Water Supply District, Water Control and Improvement District, Municipal Management District, Public Improvement District, or any similar special district) within any part of the Property within the City's extraterritorial jurisdiction ("ETJ") including by seeking to file, or filing, any legislation or any application with the Texas Commission on Environmental Quality ("TCEQ") to create any such special district (a "Development Document"), until the Property has been annexed into, and zoned by, the City.

The Owner covenants and agrees not to construct, or allow to be constructed, any improvements or buildings on the Property that would require a permit or building permit if the Property were in the City limits, until the Property has been annexed into, and zoned by, the City; provided, however, the Owner may make improvements to the Property with the prior written consent of the City. The Owner also covenants and agrees that the City's AG—Agricultural District zoning requirements apply to the Property, and that the Property shall be used only for AG—Agricultural District zoning uses that exist on that Property at the time of the execution of this Agreement, unless otherwise provided in this Agreement.

The Owner acknowledges that each and every owner of the Property must sign this Agreement in order for the Agreement to take full effect, and **the Owner who signs this Agreement covenants and agrees, jointly and severably, to indemnify, hold harmless, and defend the City against any and all legal claims, by any person claiming an ownership interest in the Property who has not signed the Agreement, arising in any way from the City's reliance on this Agreement.**

Section 3. The Owner acknowledges and stipulates that if any plat or Development Document is filed in violation of this Agreement, or if the Owner commences construction on or development of the Property in violation of this Agreement, then in addition to the City's other remedies, such act will constitute an irrevocable petition that satisfies all requirements of Texas Local Government Code Chapter 43 for voluntary annexation by the Owner, and the Property will be subject to annexation at the discretion of the City Council. The Owner agrees and stipulates that such annexation shall be voluntary and the Owner hereby consents to such annexation as though a petition for such annexation had been tendered by the Owner to the City. If annexation proceedings begin pursuant to this Section, the Owner acknowledges that this Agreement serves as an exception to Local Government Code Section 43.052, requiring a municipality to use certain statutory procedures under an annexation plan. Furthermore, the Owner hereby waives any and all vested rights and claims that they may have under Section

43.002(a)(2) and Chapter 245 of the Texas Local Government Code that would otherwise exist by virtue of any actions Owner has taken in violation of Section 2 herein. Owner acknowledges and stipulates that this Development Agreement is not a permit, as defined in Texas Local Government Code, Section 245.001(1), required by the City.

Section 4. Pursuant to Sections 43.035(b)(1)(B) of the Texas Local Government Code, Owner agrees that the City is authorized to enforce all of the City's regulations, permit requirements and planning authority applicable in its City limits to future improvements on the Property that do not materially interfere with the use of the Property for agriculture, wildlife management, or timber, in the same manner the regulations are enforced within the City's boundaries. The City states and specifically reserves its authority pursuant to Chapter 251 of the Texas Local Government Code to exercise eminent domain over property that is subject to a Chapter 43 and/or Chapter 212 development agreement. City regulations that apply in its extraterritorial jurisdiction will continue to apply to the Property.

Section 5. The term of this Agreement (the "Term") is fifteen (15) years from the date that the City Manager's signature to this Agreement is acknowledged by a public notary. The Owner, and all of the Owner's heirs, successors and assigns shall be deemed to have filed a petition for voluntary annexation before the end of the Term, for annexation of the Property to be completed on or after the end of the Term. The City may, but is not required, commence the voluntary annexation of the Property prior to the end of the Term. In connection with annexation pursuant to this section, the Owners hereby waives any vested rights they may have under Section 43.002(a)(2) and Chapter 245 of the Texas Local Government Code that would otherwise exist by virtue of any plat or construction any of the Owners may initiate during the time between the expiration of this Agreement and the institution of annexation proceedings by the City.

Section 6. Property annexed pursuant to this Agreement will initially be zoned AG – Agricultural pursuant to the City's Code of Ordinances, pending determination of the property's permanent zoning in accordance with the provisions of applicable law and the City's Code of Ordinances.

Section 7. Any person who sells or conveys any portion of the Property shall, no later than 14 days prior to such sale or conveyance, give written notice of this Agreement to the prospective purchaser or grantee, and shall give written notice of the sale or conveyance to the City. Furthermore, the Owner and the Owner's heirs, successor, and assigns shall give the City written notice within 14 days of any change in the agricultural exemption status of the Property. A copy of either notice required by this section shall be forwarded to the City at the following address:

City of Celina
Attn: City Manager
142 N. Ohio
Celina, Texas 75009

Section 8. A certified copy of this Agreement shall be recorded in the real property records of Denton County, Texas, and this Agreement shall constitute a covenant that runs with the Property.

Section 9. If a court of competent jurisdiction determines that any covenant of this Agreement is void or unenforceable, including the covenants regarding involuntary annexation, then the remainder of this Agreement shall remain in full force and effect.

Section 10. This Agreement may be enforced by any Owner or the City by any proceeding at law or in equity. Failure to do so shall not be deemed a waiver to enforce the provisions of this Agreement thereafter. Notwithstanding the preceding terms of this section, the City does not waive immunity from suit or liability.

Section 11. Owner and City acknowledge and expressly agree that no subsequent change in the law regarding annexation shall affect the enforceability of this Agreement or the City's ability to annex the properties covered herein pursuant to the terms of this Agreement.

Section 12. The validity of this Agreement and any of its terms and provisions, as well as the rights and duties of the parties, shall be governed by the laws of the State of Texas; and venue for any action concerning this Agreement shall be only in Denton County, Texas.

Section 13. This Agreement may be separately executed in individual counterparts and, upon execution, shall constitute one and same instrument.

Section 14. This Agreement shall survive its termination to the extent necessary for the implementation of the provisions of Sections 2, 3, 4 and 11 herein.

Section 15. This Agreement embodies the complete agreement of the parties hereto, superseding all oral or written, previous and contemporary agreements between the parties and relating to the matters in this Agreement and except as otherwise provided herein, cannot be modified without written agreement of the parties to be attached to and made a part of this Agreement.

Section 16. The determinations recited and declared in the preambles to this Agreement are hereby incorporated herein as part of this Agreement.

Section 17. All exhibits to this Agreement are incorporated herein by reference for all purposes wherever reference is made to the same.

Entered into this 16th day of November, 2017.

SIGNATURES ON FOLLOWING PAGE(S)

CITY OF CELINA

By: [Signature]

Name: Jason Laumer

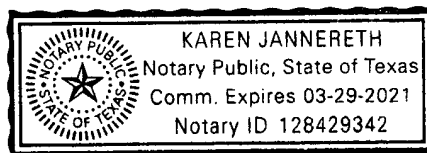
Title: City Manager

Date: 11-16-17

THE STATE OF TEXAS

§
§
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COUNTY OF COLLIN



This instrument was acknowledged before me on November 16, 2017, by Jason Laumer, City Manager of the City of Celina, Texas on behalf of said City.

[Signature: Karen Jannereth]
Notary Public in and for the State of TEXAS

OWNER: PUNKADILLY LTD

By: [Signature: Stephanie Sorrells]Name: Stephanie SorrellsTitle: PresidentDate: 10/11/17

THE STATE OF TEXAS

§
§
§COUNTY OF Collin

This instrument was acknowledged before me on October 11th, 2017, by Stephanie Sorrells, owner of said Property.

[Signature: Aaron T Boliver]
Notary Public in and for the State of TEXAS

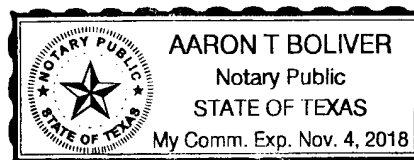
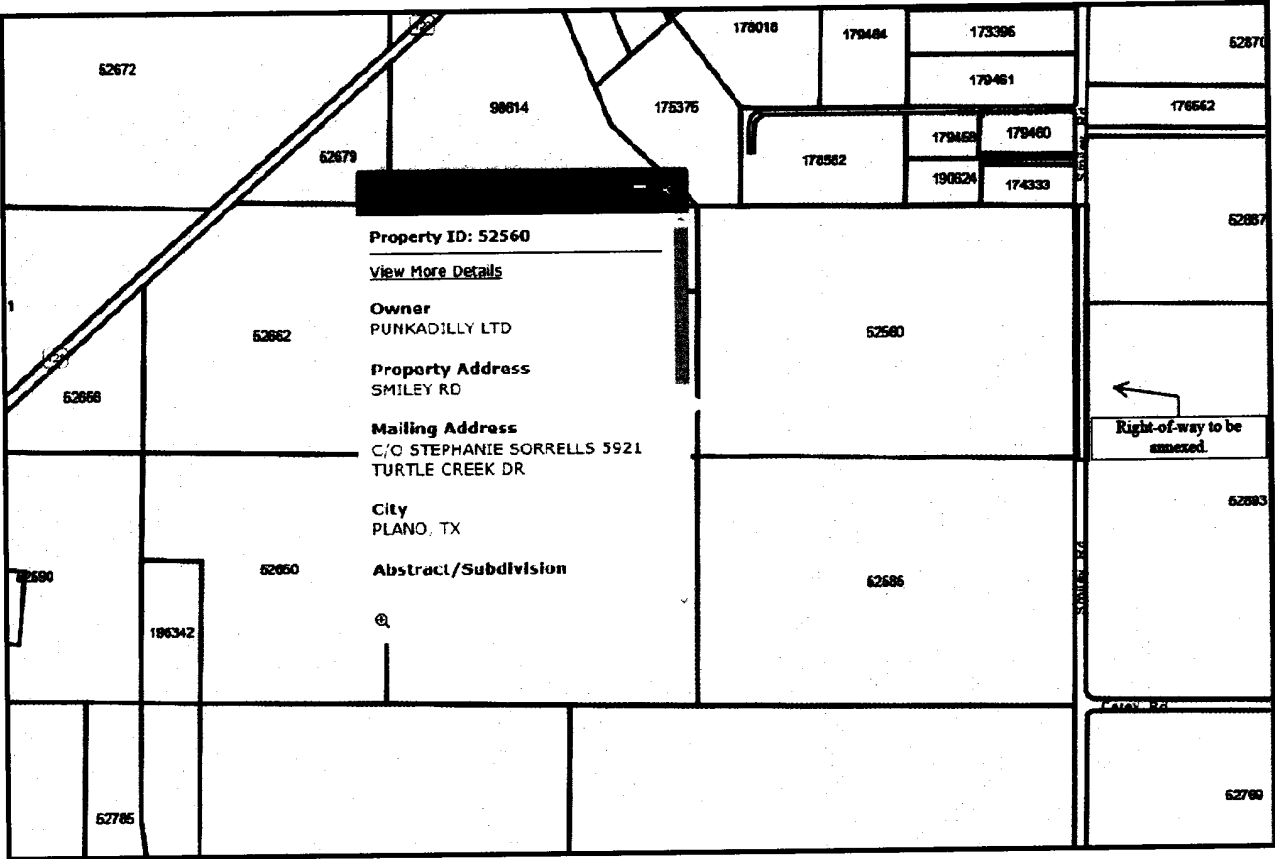


EXHIBIT "A"



Attachment: Filed and Executed Punkadilly LTD 52560 Ch 43 Agreement (Resolution of Support to Create MMD #3 (Sorrrells))

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OR ALL OF THE FOLLOWING INFORMATION FROM ANY INSTRUMENT THAT TRANSFERS AN INTEREST IN REAL PROPERTY BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

STATE OF TEXAS)
)
COUNTY OF DENTON)

**CHAPTER 43 TEXAS LOCAL GOVERNMENT CODE
DEVELOPMENT AGREEMENT**

This Agreement is entered into pursuant to Sections 43.035 and 212.172 of the Texas Local Government Code by and between the City of Celina, Texas (the "City") and the undersigned property owner(s) (the "Owner"). The term "Owner" includes all owners of the Property.

WHEREAS, the Owner owns a parcel of real property (the "Property") in Denton County, Texas, legally described as Abstract 1299A in the Texas & Pacific Railway Survey, Tract 1, containing 61.58 acres, more or less, formerly known as old Denton County Appraisal District Tract #2, Denton County, Texas and more particularly described on Exhibit "A" attached hereto; and

WHEREAS, the City intends to begin the process to institute annexation proceedings on all or portions of Owner's Property in the near future; and

WHEREAS, the Owner desires to have the Property remain in the City's extraterritorial jurisdiction, in consideration for which the Owner agrees to enter into this Agreement; and

WHEREAS, this Agreement is entered into pursuant to Sections 43.035 and 212.172 of the Texas Local Government Code, in order to address the desires of the Owner and the procedures of the City; and

WHEREAS, the Owner and the City acknowledge that this Agreement is binding upon the City and the Owner and their respective successors and assigns for the term (defined below) of this Agreement; and

WHEREAS, this Development Agreement is to be recorded in the Real Property Records of Denton County.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties hereto agree as follows:

Section 1. The City guarantees the continuation of the extraterritorial status of the Owner's Property, its immunity from annexation by the City, and its immunity from City property taxes, for the term of this Agreement, subject to the provisions of this Agreement. Except as provided in this Agreement, the City agrees not to annex the Property, agrees not to involuntarily institute proceedings to annex the Property, and

further agrees not to include the Property in a statutory annexation plan for the Term of this Agreement. However, if the Property is annexed pursuant to the terms of this Agreement, then the City shall provide services to the Property pursuant to Chapter 43 of Texas Local Government Code.

Section 2. The Owner covenants and agrees not to use the Property for any use other than for agriculture, wildlife management, and/or timber land consistent with Chapter 23 of the Texas Tax Code without the prior written authority of the City Council.

The Owner covenants and agrees that the Owner will not file any type of subdivision plat or related development document for the Property, which includes but is not limited to seeking to create any special district (including but not limited to a Municipal Utility District, Fresh Water Supply District, Water Control and Improvement District, Municipal Management District, Public Improvement District, or any similar special district) within any part of the Property within the City's extraterritorial jurisdiction ("ETJ") including by seeking to file, or filing, any legislation or any application with the Texas Commission on Environmental Quality ("TCEQ") to create any such special district (a "Development Document"), until the Property has been annexed into, and zoned by, the City.

The Owner covenants and agrees not to construct, or allow to be constructed, any improvements or buildings on the Property that would require a permit or building permit if the Property were in the City limits, until the Property has been annexed into, and zoned by, the City; provided, however, the Owner may make improvements to the Property with the prior written consent of the City. The Owner also covenants and agrees that the City's AG—Agricultural District zoning requirements apply to the Property, and that the Property shall be used only for AG—Agricultural District zoning uses that exist on that Property at the time of the execution of this Agreement, unless otherwise provided in this Agreement.

The Owner acknowledges that each and every owner of the Property must sign this Agreement in order for the Agreement to take full effect, and **the Owner who signs this Agreement covenants and agrees, jointly and severably, to indemnify, hold harmless, and defend the City against any and all legal claims, by any person claiming an ownership interest in the Property who has not signed the Agreement, arising in any way from the City's reliance on this Agreement.**

Section 3. The Owner acknowledges and stipulates that if any plat or Development Document is filed in violation of this Agreement, or if the Owner commences construction on or development of the Property in violation of this Agreement, then in addition to the City's other remedies, such act will constitute an irrevocable petition that satisfies all requirements of Texas Local Government Code Chapter 43 for voluntary annexation by the Owner, and the Property will be subject to annexation at the discretion of the City Council. The Owner agrees and stipulates that such annexation shall be voluntary and the Owner hereby consents to such annexation as though a petition for such annexation had been tendered by the Owner to the City. If annexation proceedings begin pursuant to this Section, the Owner acknowledges that this Agreement serves as an exception to Local Government Code Section 43.052, requiring a municipality to use certain statutory procedures under an annexation plan. Furthermore, the Owner hereby waives any and all vested rights and claims that they may have under Section

43.002(a)(2) and Chapter 245 of the Texas Local Government Code that would otherwise exist by virtue of any actions Owner has taken in violation of Section 2 herein. Owner acknowledges and stipulates that this Development Agreement is not a permit, as defined in Texas Local Government Code, Section 245.001(1), required by the City.

Section 4. Pursuant to Sections 43.035(b)(1)(B) of the Texas Local Government Code, Owner agrees that the City is authorized to enforce all of the City's regulations, permit requirements and planning authority applicable in its City limits to future improvements on the Property that do not materially interfere with the use of the Property for agriculture, wildlife management, or timber, in the same manner the regulations are enforced within the City's boundaries. The City states and specifically reserves its authority pursuant to Chapter 251 of the Texas Local Government Code to exercise eminent domain over property that is subject to a Chapter 43 and/or Chapter 212 development agreement. City regulations that apply in its extraterritorial jurisdiction will continue to apply to the Property.

Section 5. The term of this Agreement (the "Term") is fifteen (15) years from the date that the City Manager's signature to this Agreement is acknowledged by a public notary. The Owner, and all of the Owner's heirs, successors and assigns shall be deemed to have filed a petition for voluntary annexation before the end of the Term, for annexation of the Property to be completed on or after the end of the Term. The City may, but is not required, commence the voluntary annexation of the Property prior to the end of the Term. In connection with annexation pursuant to this section, the Owners hereby waives any vested rights they may have under Section 43.002(a)(2) and Chapter 245 of the Texas Local Government Code that would otherwise exist by virtue of any plat or construction any of the Owners may initiate during the time between the expiration of this Agreement and the institution of annexation proceedings by the City.

Section 6. Property annexed pursuant to this Agreement will initially be zoned AG – Agricultural pursuant to the City's Code of Ordinances, pending determination of the property's permanent zoning in accordance with the provisions of applicable law and the City's Code of Ordinances.

Section 7. Any person who sells or conveys any portion of the Property shall, no later than 14 days prior to such sale or conveyance, give written notice of this Agreement to the prospective purchaser or grantee, and shall give written notice of the sale or conveyance to the City. Furthermore, the Owner and the Owner's heirs, successor, and assigns shall give the City written notice within 14 days of any change in the agricultural exemption status of the Property. A copy of either notice required by this section shall be forwarded to the City at the following address:

City of Celina
Attn: City Manager
142 N. Ohio
Celina, Texas 75009

Section 8. A certified copy of this Agreement shall be recorded in the real property records of Denton County, Texas, and this Agreement shall constitute a covenant that runs with the Property.

Section 9. If a court of competent jurisdiction determines that any covenant of this Agreement is void or unenforceable, including the covenants regarding involuntary annexation, then the remainder of this Agreement shall remain in full force and effect.

Section 10. This Agreement may be enforced by any Owner or the City by any proceeding at law or in equity. Failure to do so shall not be deemed a waiver to enforce the provisions of this Agreement thereafter. Notwithstanding the preceding terms of this section, the City does not waive immunity from suit or liability.

Section 11. Owner and City acknowledge and expressly agree that no subsequent change in the law regarding annexation shall affect the enforceability of this Agreement or the City's ability to annex the properties covered herein pursuant to the terms of this Agreement.

Section 12. The validity of this Agreement and any of its terms and provisions, as well as the rights and duties of the parties, shall be governed by the laws of the State of Texas; and venue for any action concerning this Agreement shall be only in Denton County, Texas.

Section 13. This Agreement may be separately executed in individual counterparts and, upon execution, shall constitute one and same instrument.

Section 14. This Agreement shall survive its termination to the extent necessary for the implementation of the provisions of Sections 2, 3, 4 and 11 herein.

Section 15. This Agreement embodies the complete agreement of the parties hereto, superseding all oral or written, previous and contemporary agreements between the parties and relating to the matters in this Agreement and except as otherwise provided herein, cannot be modified without written agreement of the parties to be attached to and made a part of this Agreement.

Section 16. The determinations recited and declared in the preambles to this Agreement are hereby incorporated herein as part of this Agreement.

Section 17. All exhibits to this Agreement are incorporated herein by reference for all purposes wherever reference is made to the same.

Entered into this 16th day of November, 2017.

SIGNATURES ON FOLLOWING PAGE(S)

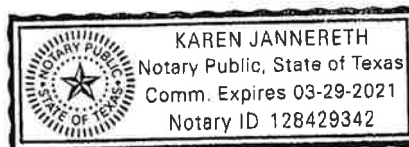
CITY OF CELINA

By: [Signature]
 Name: Jason Laumer
 Title: City Manager
 Date: 11-16-17

THE STATE OF TEXAS

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§
§

COUNTY OF COLLIN



This instrument was acknowledged before me on November 16, 2017, by Jason Laumer, City Manager of the City of Celina, Texas on behalf of said City.

[Signature: Karen Jannereth]
 Notary Public in and for the State of TEXAS

OWNER: PUNKADILLY LTD

By: [Signature: Stephanie Sorrells]
 Name: Stephanie Sorrells
 Title: President
 Date: 10/11/17

THE STATE OF TEXAS

§
§
§COUNTY OF Collin

This instrument was acknowledged before me on October 11th, 2017, by Stephanie Sorrells, owner of said Property.

[Signature: Aaron T Boliver]
 Notary Public in and for the State of TEXAS

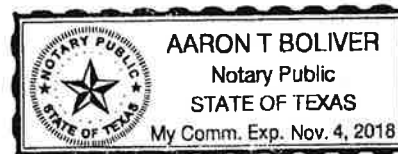
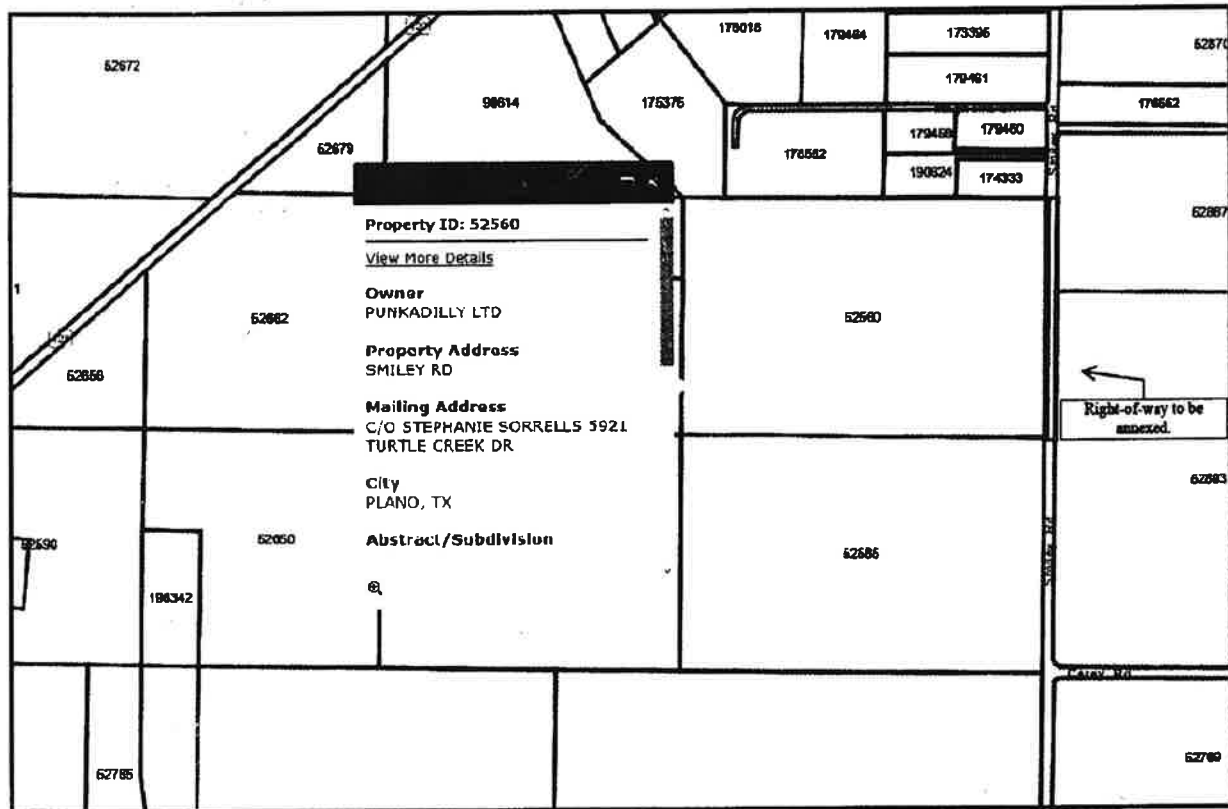
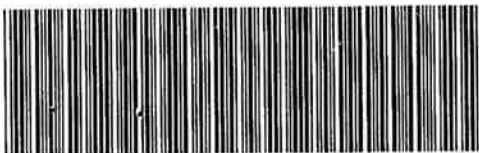


EXHIBIT "A"



Attachment: Punkadilly Development Agreement (Resolution of Support to Create MMD #3 (Sorrells))



VG-19-2017-146567

Denton County
Juli Luke
County Clerk

Instrument Number: 146567

Real Property Recordings
AGREEMENT

Recorded On: November 29, 2017 03:15 PM

Number of Pages: 7

" Examined and Charged as Follows: "

Total Recording: \$50.00

***** THIS PAGE IS PART OF THE INSTRUMENT *****

Any provision herein which restricts the Sale, Rental or use of the described REAL PROPERTY
because of color or race is invalid and unenforceable under federal law.

File Information:

Document Number: 146567
Receipt Number: 20171129000470
Recorded Date/Time: November 29, 2017 03:15 PM
User: TJ D
Station: D1ZP5182

Record and Return To:

CITY OF CELINA
142 N OHIO ST

CELINA TX 75009

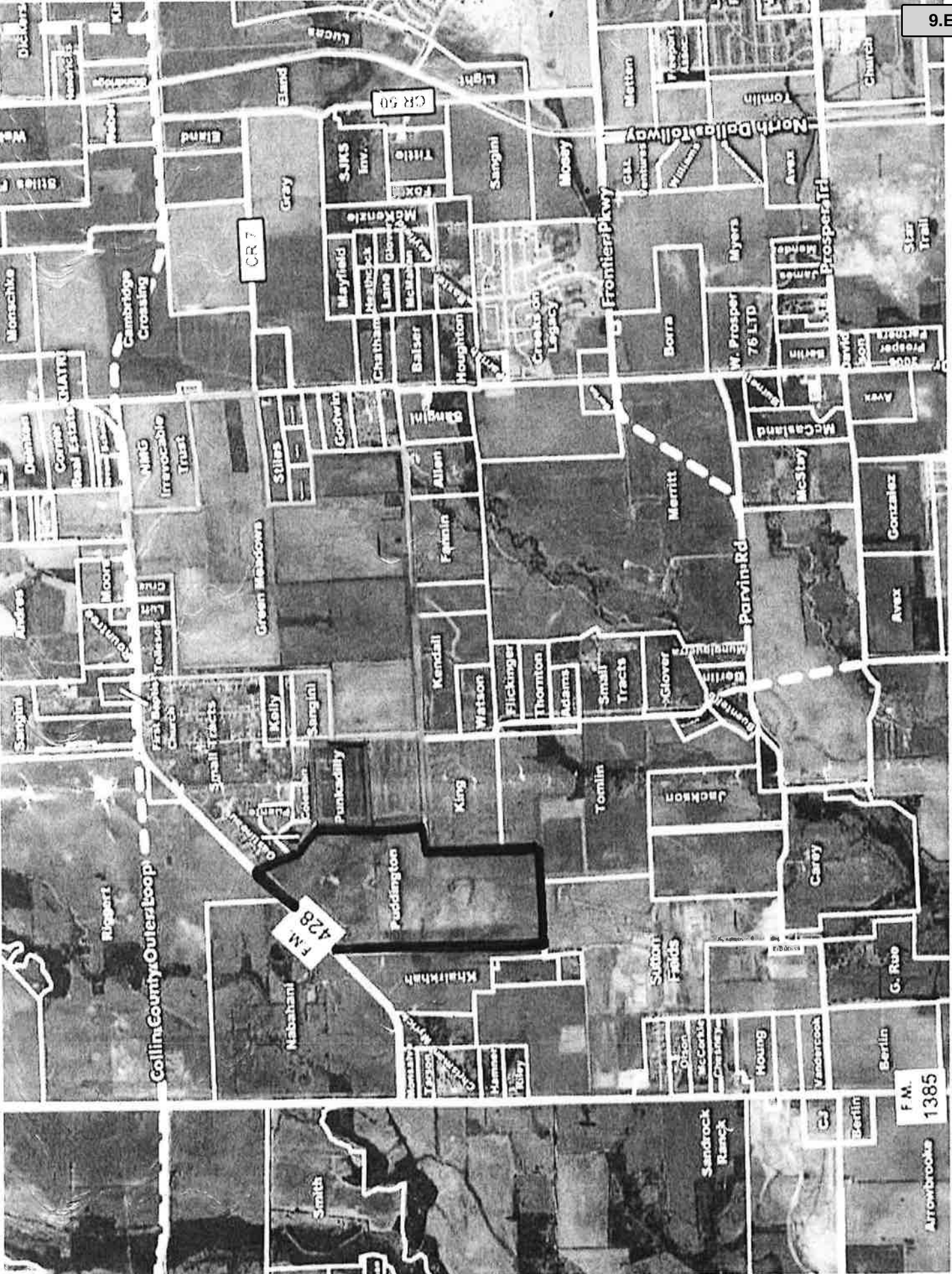


STATE OF TEXAS
COUNTY OF DENTON

I hereby certify that this Instrument was FILED in the File Number sequence on the date/time
printed hereon, and was duly RECORDED in the Official Records of Denton County, Texas.

Juli Luke
County Clerk
Denton County, TX

Attachment: Punkadilly Development Agreement (Resolution of Support to Create MMD #3 (Sorrrells))





July 1, 2010

(Via U.S. First Class Mail and Registered Mail)

Ms. Rita Sorrells
5336 Blake Drive
Plano, Texas 75093-3424

Re: Chapter 43 Pre-Annexation Agreement

Dear Rita,

The City of Celina has identified your property (see Exhibit A) as subject to annexation in the near future. Under State law, the City may annex your property after following certain notice and hearing procedures contained in Chapter 43 of the Texas Local Government Code. Section 43.035 of the Texas Local Government Code requires the City to offer you an option to annexation. That section provides that, before the city annexes property that is subject to an agricultural, wildlife management, or timber ad valorem tax exemption, the City shall offer to make a "Development Agreement" with the property owner in lieu of annexation.

The Development Agreement must provide that the property will retain its extraterritorial status for up to 15 years or until any type of subdivision plat or related development document is filed with the City for the property, whichever occurs first. The agreement must provide that the city may enforce all regulations and planning authority that do not interfere with the use of the land for agriculture, wildlife management, or timber. The Development Agreement must provide terms for future annexation of the property;

During the time the property remains outside the City limits, it is not subject to City property taxes, but also may not receive tax-supported services from the City such as police, fire, and others.

We have enclosed a draft Development Agreement that we are offering for your consideration. You have three options regarding the Development Agreement: (1) you may accept it as printed, and sign it with the notary

142 N. Ohio Drive • Celina, Texas 75009 • Phone 972.382.2682 • Fax 972.382.3736

Attachment: Punkadilly Development Agreement (Resolution of Support to Create MMD #3 (Sorrells))



acknowledgments provided; (2) you may negotiate new language by indicated the words that you wish to change, add, or delete in the Agreement; or (3) you may decline the offer of a Development Agreement. In the event you choose to decline the offer or if the City receives no response from you within the time period(s) for response set forth below, this letter shall constitute notice of the City's intent to annex your property as required under Section 43.062 of the Texas Local Government Code. Prior to annexation, the City staff will prepare a proposed service plan describing the service the City will provide in your area upon annexation. The City Council will then hold public hearings to discuss the service plan and the annexation. After the public hearings, the City Council will take action on the annexation.

The Development Agreement must be returned, indicating your choice of one of the three options, on or before **July 19, 2010**. If you have questions or are unable to return the agreement by that date, please contact Keith Billick at (972) 382-3617 or kbillick@celina-tx.gov. If we do not receive a response of any kind by **August 20, 2010**, we will assume that you do not wish to enter into a development agreement and your property will be included in the proposed annexation.

We advise that you also consult with your legal counsel prior to the dates identified above.

Sincerely,

Keith J. Billick, ASLA
Director of Planning and Development
kbillick@celina-tx.gov

attachments

cc: Jason Gray, City Manager
file

COPY

STATE OF TEXAS)
)
COUNTY OF DENTON)

CHAPTER 43 TEXAS LOCAL GOVERNMENT CODE DEVELOPMENT AGREEMENT

This Agreement is entered into pursuant to Sections 43.035 and 212.172 of the Texas Local Government Code by and between the City of Celina, Texas (the "City") and the undersigned property owner(s) (the "Owner"). The term "Owner" includes all owners of the Property.

WHEREAS, the Owner owns a parcel of real property (the "Property") in Denton County, Texas, commonly known as ABSTRACT A1299, T & PRR, TRACT ACRES 4, 50.0 OLD DCAD TRACT #3, ABSTRACT A0969, NORWOOD TRACT 3, ACRES 30.0, OLD DCAD TRACT #3, ABSTRACT 1104A, J. RAY, TRACT 5, 34.49 ACRES OLD DCAD TRACT #5, ABSTRACT A1299, T & PRR, TRACT 2, ACRES 10.0 OLD DCAD TRACT #3A, ABSTRACT A1105, W.S. RAY, TRACT 2, ACRES 5.1, ABSTRACT A1104, J. RAY, TRACT 1, ACRES 37.34, OLD DCAD TRACT #2A, and more particularly and separately described in the attached Exhibit "A"; and

WHEREAS, the Owner desires to have the Property remain in the City's extraterritorial jurisdiction, in consideration for which the Owner agrees to enter into this Agreement; and

WHEREAS, this Agreement is entered into pursuant to Sections 43.035 and 212.172 of the Texas Local Government Code, in order to address the desires of the Owner and the procedures of the City; and

WHEREAS, the Owner and the City acknowledge that this Agreement is binding upon the City and the Owner and their respective successors and assigns for the term (defined below) of this Agreement; and

WHEREAS, this Development Agreement is to be recorded in the Real Property Records of Denton County.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties hereto agree as follows:

Section 1. The City guarantees the continuation of the extraterritorial status of the Owner's Property, its immunity from annexation by the City, and its immunity from City property taxes, for the term of this Agreement, subject to the provisions of this Agreement. Except as provided in this Agreement, the City agrees not to annex the Property, agrees not to involuntarily institute proceedings to annex the Property, and further agrees not to include the Property in a statutory annexation plan for the Term of this Agreement. However, if the Property is annexed pursuant to the terms of this Agreement, then the City shall provide services to the Property pursuant to Chapter 43 of Texas Local Government Code.

Attachment: Punkadilly Development Agreement (Resolution of Support to Create MMD #3 (Sorrells))

Section 2. The Owner covenants and agrees not to use the Property for any use other than for agriculture, wildlife management, and/or timber land consistent with Chapter 23 of the Texas Tax Code, except for existing single-family residential use of the property, without the prior written consent of the City.

The Owner covenants and agrees that the Owner will not file any type of subdivision plat or related development document for the Property with Denton County or the City until the Property has been annexed into, and zoned by, the City.

The Owner covenants and agrees not to construct, or allow to be constructed, any buildings on the Property that would require a building permit if the Property were in the city limits, until the Property has been annexed into, and zoned by, the City. The Owner also covenants and agrees that the City's AG—Agricultural District zoning requirements apply to the Property, and that the Property shall be used only for AG—Agricultural District zoning uses that exist on that Property at the time of the execution of this Agreement, unless otherwise provided in this Agreement. However, the Owner may construct an accessory structure to an existing single family dwelling in compliance with all applicable City ordinances and codes.

The Owner acknowledges that each and every owner of the Property must sign this Agreement in order for the Agreement to take full effect, and the Owner who signs this Agreement covenants and agrees, jointly and severably, to indemnify, hold harmless, and defend the City against any and all legal claims, by any person claiming an ownership interest in the Property who has not signed the Agreement, arising in any way from the City's reliance on this Agreement.

Section 3. The Owner acknowledges that if any plat or related development document is filed in violation of this Agreement, or if the Owner commences development of the Property in violation of this Agreement, then in addition to the City's other remedies, such act will constitute a petition for voluntary annexation by the Owner, and the Property will be subject to annexation at the discretion of the City Council. The Owner agrees that such annexation shall be voluntary and the Owner hereby consents to such annexation as though a petition for such annexation had been tendered by the Owner. If annexation proceedings begin pursuant to this Section, the Owner acknowledges that this Agreement serves as an exception to Local Government Code Section 43.052, requiring a municipality to use certain statutory procedures under an annexation plan. Furthermore, the Owner hereby waives any and all vested rights and claims that they may have under Section 43.002(a)(2) and Chapter 245 of the Texas Local Government Code that would otherwise exist by virtue of any actions Owner has taken in violation of Section 2 herein.

Section 4. Pursuant to Sections 43.035(b)(1)(B) of the Texas Local Government Code, the City is authorized to enforce all of the City's regulations and planning authority that do not materially interfere with the use of the Property for agriculture, wildlife management, or timber, in the same manner the regulations are enforced within the City's boundaries. The City states and specifically reserves its authority pursuant to Chapter 251

of the Texas Local Government Code to exercise eminent domain over property that is subject to a Chapter 43 and/or Chapter 212 development agreement.

Section 5. The term of this Agreement (the "Term") is fifteen (15) years from the date that the City Manager's signature to this Agreement is acknowledged by a public notary. The Owner, and all of the Owner's heirs, successors and assigns shall be deemed to have filed a petition for voluntary annexation before the end of the Term, for annexation of the Property to be completed on or after the end of the Term. Prior to the end of the Term, the City may commence the voluntary annexation of the Property. In connection with annexation pursuant to this section, the Owners hereby waive any vested rights they may have under Section 43.002(a)(2) and Chapter 245 of the Texas Local Government Code that would otherwise exist by virtue of any plat or construction any of the owners may initiate during the time between the expiration of this Agreement and the institution of annexation proceedings by the City.

Section 6. Property annexed pursuant to this Agreement will initially be zoned AG – Agricultural pursuant to the City's Code of Ordinances, pending determination of the property's permanent zoning in accordance with the provisions of applicable law and the City's Code of Ordinances.

Section 7. Any person who sells or conveys any portion of the Property shall, prior to such sale or conveyance, give written notice of this Agreement to the prospective purchaser or grantee, and shall give written notice of the sale or conveyance to the City. Furthermore, the Owner and the Owner's heirs, successor, and assigns shall give the City written notice within 14 days of any change in the agricultural exemption status of the Property. A copy of either notice required by this section shall be forwarded to the City at the following address:

City of Celina
Attn: City Manager
142 N. Ohio
Celina, Texas 75009

Section 8. This Agreement shall run with the Property and be recorded in the real property records of Denton County, Texas.

Section 9. If a court of competent jurisdiction determines that any covenant of this Agreement is void or unenforceable, including the covenants regarding involuntary annexation, then the remainder of this Agreement shall remain in full force and effect.

Section 10. This Agreement may be enforced by any Owner or the City by any proceeding at law or in equity. Failure to do so shall not be deemed a waiver to enforce the provisions of this Agreement thereafter.

Section 11. No subsequent change in the law regarding annexation shall affect the enforceability of this Agreement or the City's ability to annex the properties covered herein pursuant to the terms of this Agreement.

Section 12. Venue for this Agreement shall be in Denton County, Texas.

Section 13. This Agreement may be separately executed in individual counterparts and, upon execution, shall constitute one and same instrument.

Section 14. This Agreement shall survive its termination to the extent necessary for the implementation of the provisions of Sections 3, 4, and 5 herein.

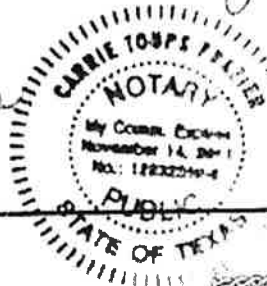
Entered into this 20 day of July, 2010.

Jason Gray
Jason Gray
City Manager, City of Celina, Texas

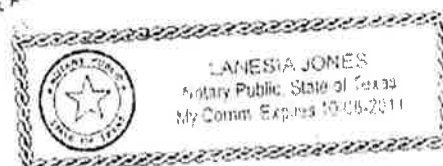
THE STATE OF TEXAS)
COUNTY OF Celina)

This instrument was acknowledged before me on the 20 day of July, 2010, by Jason Gray, City Manager, City of Celina, Texas.

Carrie Loups Franjier
Notary Public, State of Texas



Rita Sorrells
Owner I
Printed Name: Rita Sorrells



THE STATE OF TEXAS)
COUNTY OF Celina)

This instrument was acknowledged before me on the 20 day of July, 2010, by Rita Sorrells, Owner I.

Lanesia Jones
Notary Public, State of Texas

Attachment: Punkadilly Development Agreement (Resolution of Support to Create MMD #3 (Sorrells))

Owner 2
 Printed Name: _____

THE STATE OF TEXAS }
COUNTY OF _____ }

This instrument was acknowledged before me on the ____ day of _____, 2010, by
 _____, Owner 2.

 Notary Public, State of Texas

Owner 3
 Printed Name: _____

THE STATE OF TEXAS }
COUNTY OF _____ }

This instrument was acknowledged before me on the ____ day of _____, 2010, by
 _____, Owner 3.

 Notary Public, State of Texas

Owner 4
 Printed Name: _____

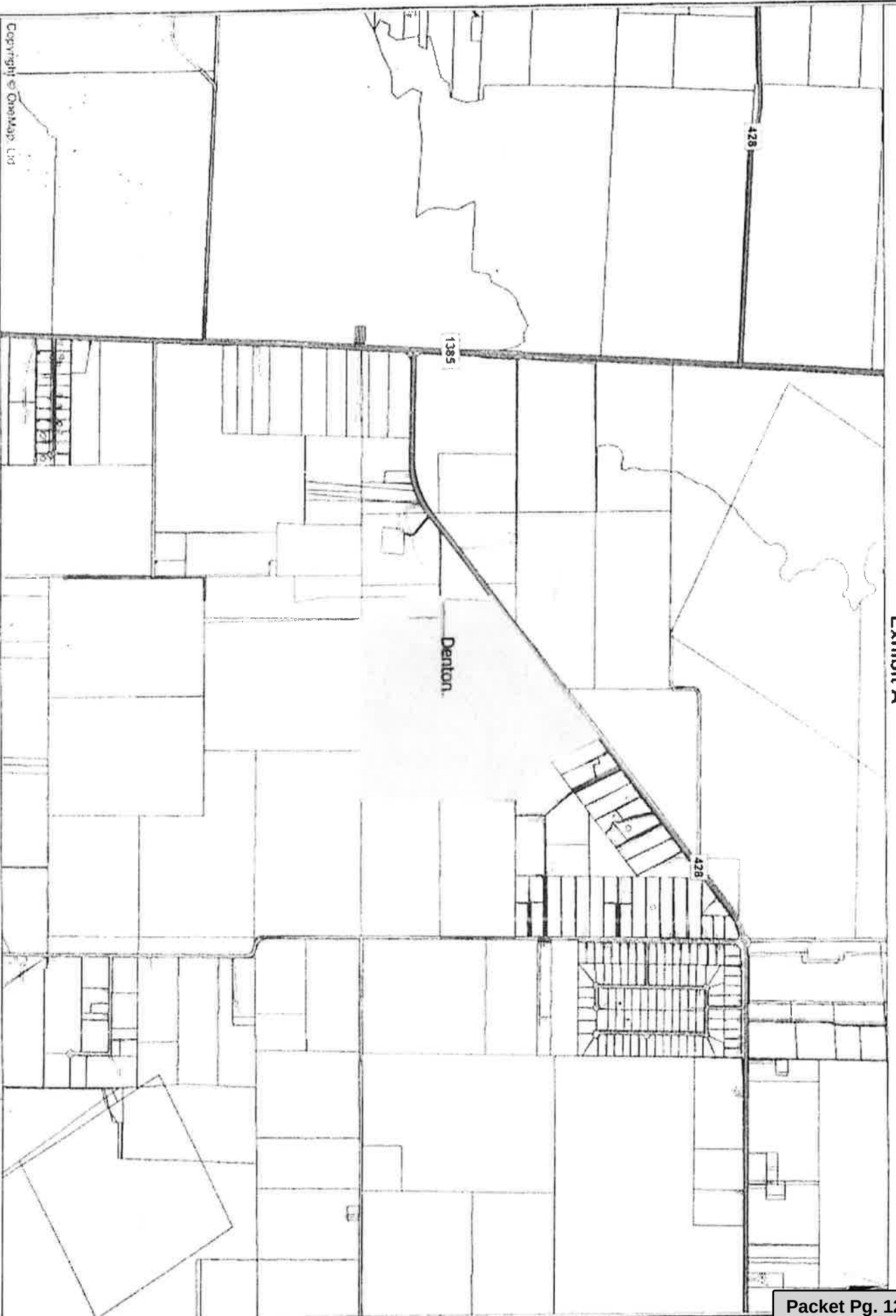
THE STATE OF TEXAS }
COUNTY OF _____ }

This instrument was acknowledged before me on the ____ day of _____, 2010, by
 _____, Owner 4.

 Notary Public, State of Texas

Attachment: Punkadilly Development Agreement (Resolution of Support to Create MMD #3 (Sorrells))

EXHIBIT A



DISCLAIMER: This map is the property of OneMap, Ltd. It was produced with the intent that it be used for the review of the referenced data at the original posted scale. There are no warranties made as to the fitness of this map for any unintended purpose or representation at any other scale.



RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS, CONSENTING TO THE CREATION OF A MUNICIPAL MANAGEMENT DISTRICT BY THE LEGISLATURE TO BE KNOWN AS CELINA MUNICIPAL MANAGEMENT DISTRICT NO. 3.

WHEREAS, the City of Celina has received a letter requesting consent to the creation of a municipal management district dated December 10, 2018, a copy of which is attached hereto as Exhibit “A”; and

WHEREAS, the City wishes to evidence its consent to creation of a district by the legislature and support for the bill attached hereto as Exhibit “B” creating Celina Municipal Management District No. 3 (“District”) within its corporate limits by special act of the 86th Texas Legislature, subject to the conditions contained in this resolution.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS:

SECTION 1. That the City Council of the City of Celina (“City”) hereby grants its consent to and permission for the creation of the District by special act of the 86th Texas Legislature enacting the bill attached hereto as Exhibit “B” for the land which is described more fully in the field notes attached to Exhibit “A” provided that:

1. The District will only be able to do the type of projects identified in Exhibit “B” and all infrastructure is required to be transferred to the City upon completion of construction;
2. The boundaries of the District cannot be expanded more than 200 acres, which must all be located in the city limits, and express consent of the City Council is required for the addition of land;
3. The District does not have more powers than those granted in Exhibit “B”;
4. All non-substantive changes required by legislative counsel are agreed to by the Mayor and the City Manager;
5. An amendment to the two Chapter 43, Local Government Code, development agreements filed of record is executed by the City and developer on or before April 15, 2019; and
6. The District changes its name so that the name does not include the word “Celina” within sixty (60) days of organizing.

The Mayor and City Secretary are hereby authorized to execute any documents necessary to effectuate this Resolution.

SECTION 2. That the City Council of the City of Celina gives it written consent to (a) the creation of the District and to the inclusion of the land described on Exhibit “A”

attached hereto in the District and (b) the issuance of bonds by the District to finance the public infrastructure serving the land located in the District provided that the District is created legislatively consistent with Section 1 above.

SECTION 3. That the City Council of the City of Celina further states that it has not relinquished any rights, duties or powers relating to the inclusion of the District within its corporate limits and that while the City consents to the creation of the District, it does not release the area within the District from its corporate limits.

SECTION 4. That this resolution take effect immediately from and after its passage.

DULY RESOLVED by the City Council of the City of Celina, Texas, on the 12th day of February, 2019.

Sean Terry, Mayor

ATTEST:

Vicki Faulker, City Secretary

EXHIBIT "A"

December 10, 2018
Page 2

Please feel free to contact me if you should have any questions regarding this matter.

Very truly yours,



Timothy Green

TG:lrs

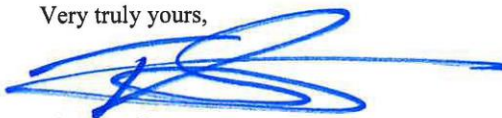
4850-6885-6962.v1

Attachment: Resolution consenting to creation and legislation (Resolution of Support to Create MMD #3 (Sorrells))

December 10, 2018
Page 2

Please feel free to contact me if you should have any questions regarding this matter.

Very truly yours,

A handwritten signature in blue ink, consisting of several loops and a long horizontal stroke extending to the right.

Timothy Green

TG:lrs

4850-6885-6962.v1

Attachment: Resolution consenting to creation and legislation (Resolution of Support to Create MMD #3 (Sorrells))

EXHIBIT "B"

AN ACT

relating to the creation of the Celina Municipal Management District No. 3; providing authority to issue bonds and impose assessments, fees, and taxes.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

SECTION 1. Subtitle C, Title 4, Special District Local Laws Code, is amended by adding Chapter _____ to read as follows:

CHAPTER _____ . CELINA MUNICIPAL MANAGEMENT DISTRICT NO.

3

SUBCHAPTER A. GENERAL PROVISIONS

Sec. _____ .001. DEFINITIONS. In this chapter:

(1) "Board" means the district's board of directors.

(2) "City" means the City of Celina, Texas.

(3) "Commission" means the Texas Commission on Environmental Quality.

(4) "Director" means a board member.

(5) "District" means the Celina Municipal Management District No. 3.

Sec. _____ .002. CREATION AND NATURE OF DISTRICT.

The district is a special district created under Sections 52 and

52-a, Article III, and Section 59, Article XVI, Texas Constitution.

Sec. .003. PURPOSE; LEGISLATIVE FINDINGS.

(a) The creation of the district is essential to accomplish the purposes of Sections 52 and 52-a, Article III, and Section 59, Article XVI, Texas Constitution, and other public purposes stated in this chapter. By creating the district and in authorizing the city and other political subdivisions to contract with the district, the legislature has established a program to accomplish the public purposes set out in Section 52-a, Article III, Texas Constitution.

(b) The creation of the district is necessary to promote, develop, encourage, and maintain employment, commerce, transportation, housing, tourism, recreation, the arts, entertainment, economic development, safety, and the public welfare in the district.

(c) This chapter and the creation of the district may not be interpreted to relieve the city from providing the level of services provided to the area in the district as of the effective date of the Act enacting this chapter. The district is created to supplement and not to supplant the city services provided in the district.

Sec. .004. FINDINGS OF BENEFIT AND PUBLIC PURPOSE. (a) The district is created to serve a public use and benefit.

(b) All land and other property included in the district will benefit from the improvements and services to be provided by the district under powers conferred by Sections 52 and 52-a, Article III, and Section 59, Article XVI, Texas Constitution, and other powers granted under this chapter.

(c) The district is created to accomplish the purposes of a municipal management district as provided by general law and Sections 52 and 52-a, Article III, and Section 59, Article XVI, Texas Constitution.

(d) The creation of the district is in the public interest and is essential to:

(1) further the public purposes of developing and diversifying the economy of the state;

(2) eliminate unemployment and underemployment;

(3) develop or expand transportation and commerce;

and

(4) provide quality residential housing.

(e) The district will:

(1) promote the health, safety, and general welfare of residents, employers, potential employees, employees, visitors, and consumers in the district, and of the public;

(2) provide needed funding for the district to preserve, maintain, and enhance the economic health and vitality of the district territory as a community and business center; and

(3) promote the health, safety, welfare, and enjoyment of the public by providing pedestrian ways and by landscaping and developing certain areas in the district, which are necessary for the restoration, preservation, and enhancement of scenic beauty.

(f) Pedestrian ways along or across a street, whether at grade or above or below the surface, and street lighting, street landscaping, parking, and street art objects are parts of and necessary components of a street and are considered to be a street or road improvement.

(g) The district will not act as the agent or instrumentality of any private interest even though the district will benefit many private interests as well as the public.

Sec. .005. DISTRICT TERRITORY. (a) The district is composed of the territory described by Section 2 of the Act enacting this chapter, as that territory may have been modified under other law.

(b) The boundaries and field notes contained in Section 2 of the Act enacting this chapter form a closure. A mistake in

the field notes or in copying the field notes in the legislative process does not affect the district's:

- (1) organization, existence, or validity;
- (2) right to contract;
- (3) authority to borrow money or issue bonds or other obligations described by Section .251 or to pay the principal and interest of the bonds or other obligations;
- (4) right to impose or collect an assessment, or collect other revenue; or
- (5) legality or operation.

Sec. .006. APPLICABILITY OF MUNICIPAL MANAGEMENT DISTRICTS LAW. Except as otherwise provided by this chapter, Chapter 375, Local Government Code, applies to the district.

Sec. .007. CONSTRUCTION OF CHAPTER. This chapter shall be liberally construed in conformity with the findings and purposes stated in this chapter.

Sec. .008. CONFLICTS OF LAW. This chapter prevails over any provision of Chapter 375, Local Government Code, that is in conflict or inconsistent with this chapter.

Sec. .009. CONSENT OF MUNICIPALITY REQUIRED. The board may not hold an election to authorize the issuance of bonds until the governing body of the city by ordinance or resolution consents to the creation of the district and to the

inclusion of land in the district. The city's consent must be granted in the manner provided by Section 54.016, Water Code, for including land within the corporate limits or extraterritorial jurisdiction of a city.

Sec. .010. EFFECT OF ANNEXATION.

Notwithstanding any other law, if all or any part of the territory of the district is annexed by the city into the city's corporate limits, the district retains all of the district's outstanding debt and obligations and continues to operate under this chapter until the district is dissolved under Subchapter G.

SUBCHAPTER B. BOARD OF DIRECTORS

Sec. .051. GOVERNING BODY; TERMS. The

district is governed by a board of five directors who serve staggered terms of four years, with two or three directors' terms expiring June 1 of each even-numbered year. One director is appointed by the city, and four directors are appointed by the commission as provided by Sections .052 and .053, respectively.

Sec. .052. APPOINTMENT AND REMOVAL OF

DIRECTOR APPOINTED BY CITY. (a) The governing body of the city shall appoint one director who must be:

- (1) at least 18 years of age; and
- (2) a resident of the city.

(b) At any time the governing body of the city may remove the director appointed by the city and appoint a director to serve the remainder of the removed director's term.

Sec. .053. APPOINTMENT BY COMMISSION. (a) Before the term of a director other than a director appointed under Section .052 expires, the board shall recommend to the commission the appropriate number of persons to serve as successor directors. The commission shall appoint as directors the persons recommended by the board.

(b) A person recommended by the board under Subsection (a) must be:

- (1) at least 18 years of age;
- (2) an owner of property in the district;
- (3) an owner of stock, whether beneficial or otherwise, of a corporate owner of property in the district;
- (4) an owner of a beneficial interest in a trust that owns property in the district; or
- (5) an agent, employee, or tenant of a person described by Subdivision (2), (3), or (4).

Sec. .054. VACANCY. If a vacancy occurs on the board, the remaining directors shall appoint a director for the remainder of the unexpired term.

Sec. .055. DIRECTOR'S OATH OR AFFIRMATION. (a) A director shall file the director's oath or affirmation of

office with the district, and the district shall retain the oath or affirmation in the district records.

(b) A director shall file a copy of the director's oath or affirmation with the secretary of the city.

Sec. .056. OFFICERS. The board shall elect from among the directors a chair, a vice chair, and a secretary. The offices of chair and secretary may not be held by the same person.

Sec. .057. COMPENSATION; EXPENSES. (a) The district may compensate each director in an amount not to exceed \$150 for each board meeting. The total amount of compensation a director may receive each year may not exceed \$7,200.

(b) A director is entitled to reimbursement for necessary and reasonable expenses incurred in carrying out the duties and responsibilities of the board.

Sec. .058. LIABILITY INSURANCE. The district may obtain and pay for comprehensive general liability insurance coverage from a commercial insurance company or other source that protects and insures a director against personal liability and from all claims relating to:

(1) actions taken by the director in the director's capacity as a member of the board;

(2) actions and activities taken by the district; or

(3) the actions of others acting on behalf of the district.

Sec. .059. NO EXECUTIVE COMMITTEE. The board may not create an executive committee to exercise the powers of the board.

Sec. .060. BOARD MEETINGS. The board shall hold meetings at a place that is accessible to the public and located in the district or in the city.

Sec. .061. INITIAL DIRECTORS. (a) On or after September 1, 2019, the owner or owners of a majority of the assessed value of the real property in the district according to the most recent certified tax appraisal rolls for the county may submit a petition to the commission requesting that the commission appoint as initial directors the four persons named in the petition. The commission shall appoint as initial directors the four persons named in the petition.

(b) The governing body of the city shall appoint one initial director.

(c) The initial directors shall determine by lot which three positions expire June 1, 2021, and which two positions expire June 1, 2023.

(d) This section expires September 1, 20 .

SUBCHAPTER C. POWERS AND DUTIES

Sec. .101. GENERAL POWERS AND DUTIES. The district has the powers and duties necessary to accomplish the purposes for which the district is created.

Sec. .102. IMPROVEMENT PROJECTS AND SERVICES. (a) Subject to Subsection (b), the district may provide, design, construct, acquire, improve, relocate, operate, maintain, or finance an improvement project or service using money available to the district, or contract with a governmental or private entity to provide, design, construct, acquire, improve, relocate, operate, maintain, or finance an improvement project or service authorized under this chapter or Chapter 375, Local Government Code.

(b) The district may not construct or finance an improvement project, other than a water, sewer, or drainage facility or road, unless the governing body of the city by ordinance or resolution consents to the construction or financing.

(c) The district may issue bonds, notes, or other obligations to maintain or repair an existing improvement project only if the governing body of the city by ordinance or resolution consents to the issuance.

Sec. .103. LOCATION OF IMPROVEMENT PROJECT. A district improvement project may be located inside or outside of the district.

Sec. .104. OWNERSHIP OF IMPROVEMENT PROJECTS. (a) Before a district improvement project may be put into operation, the district must transfer ownership of the project to the city.

(b) The transfer of ownership is complete on the city's acceptance of ownership.

Sec. .105. RETAIL WATER AND SEWER SERVICES PROHIBITED. The district may not provide retail water or sewer services.

Sec. .106. ADDING OR REMOVING TERRITORY. (a) Subject to Subsections (b), (c), and (d), the board may add or remove territory as provided by Subchapter J, Chapter 49, Water Code.

(b) The district may add territory as described by Subsection (a) only if the governing body of the city by ordinance or resolution consents to the addition.

(c) The district and all districts created under Subchapter D collectively may add a total area of not more than 200 acres.

(d) Territory added under Subsection (a) must be located in the corporate limits of the city.

Sec. .107. NO EMINENT DOMAIN. The district may not exercise the power of eminent domain.

SUBCHAPTER D. DIVISION OF DISTRICT INTO MULTIPLE DISTRICTS

Sec. .151. DIVISION OF DISTRICT;
PREREQUISITES. The district, including territory added to the
district under Section .106, may be divided into
two or more new districts only if the district has no
outstanding bonded debt. Territory previously added to the
district under Section .106 may be included in a
new district.

Sec. .152. LAW APPLICABLE TO NEW DISTRICT.
This chapter applies to any new district created by division of
the district, and a new district has all the powers and duties
of the district.

Sec. .153. DIVISION PROCEDURES. (a) The
board, on its own motion or on receipt of a petition signed by
an owner of real property in the district, may adopt an order
proposing to divide the district.

(b) If the board decides to divide the district, the board
shall:

(1) set the terms of the division, including names
for the new districts and a plan for the payment or performance
of any outstanding district obligations;

(2) prepare a metes and bounds description for each
proposed district; and

(3) appoint four initial directors for each new
district.

(c) The governing body of the city shall appoint one director for each new district.

Sec. .154. CONTRACT AUTHORITY OF NEW DISTRICTS. The new districts may contract with each other for any matter the boards of the new districts consider appropriate, including the joint construction or financing of a utility improvement.

SUBCHAPTER E. GENERAL FINANCIAL PROVISIONS; ASSESSMENTS

Sec. .201. DISBURSEMENTS AND TRANSFERS OF MONEY. The board by resolution shall establish the number of directors' signatures and the procedure required for a disbursement or transfer of the district's money.

Sec. .202. MONEY USED FOR IMPROVEMENTS OR SERVICES. The district may acquire, construct, or finance an improvement project or service authorized by this chapter or Chapter 375, Local Government Code, using any money available to the district.

Sec. .203. METHOD OF NOTICE FOR HEARING. The district may mail the notice required by Section 375.115(c), Local Government Code, by certified or first class United States mail. The board shall determine the method of notice.

Sec. .204. ASSESSMENTS; LIENS FOR ASSESSMENTS. (a) The board by resolution may impose and

collect an assessment for any purpose authorized by this chapter in all or any part of the district.

(b) An assessment, a reassessment, or an assessment resulting from an addition to or correction of the assessment roll by the district, penalties and interest on an assessment or reassessment, an expense of collection, and reasonable attorney's fees incurred by the district are:

(1) a first and prior lien against the property assessed;

(2) superior to any other lien or claim other than a lien or claim for county, school district, or municipal ad valorem taxes; and

(3) the personal liability of and a charge against the owners of the property even if the owners are not named in the assessment proceedings.

(c) The lien is effective from the date of the board's resolution imposing the assessment until the date the assessment is paid. The board may enforce the lien in the same manner that the board may enforce an ad valorem tax lien against real property.

(d) The board may make a correction to or deletion from the assessment roll that does not increase the amount of assessment of any parcel of land without providing notice and

holding a hearing in the manner required for additional assessments.

(e) The district may not impose an assessment on a municipality, county, or other political subdivision.

Sec. .205. NOTICE OF ASSESSMENTS. Annually, the board shall file with the secretary of the city written notice that specifies the assessments the district will impose in the district's next fiscal year in sufficient clarity to describe the assessments for the operation and maintenance of the district and the assessments for the payment of debt service of obligations issued or incurred by the district.

SUBCHAPTER F. TAXES AND BONDS

Sec. .251. BONDS AND OTHER OBLIGATIONS. (a) The district may issue, by public or private sale, bonds, notes, or other obligations payable wholly or partly from ad valorem taxes or assessments in the manner provided by Subchapter A, Chapter 372, or Subchapter J, Chapter 375, Local Government Code. Sections 375.207(a) and (b), Local Government Code, do not apply to the district.

(b) In exercising the district's borrowing power, the district may issue a bond or other obligation in the form of a bond, note, certificate of participation or other instrument evidencing a proportionate interest in payments to be made by the district, or other type of obligation.

(c) In addition to the sources of money described by Subchapter A, Chapter 372, and Subchapter J, Chapter 375, Local Government Code, district bonds may be secured and made payable wholly or partly by a pledge of any part of the money the district receives from improvement revenue or from any other source.

(d) Not later than the 30th day before the date the district holds a bond sale, the district shall provide the governing body of the city written notice of the sale.

SUBCHAPTER G. DISSOLUTION

Sec. .301. DISSOLUTION BY CITY ORDINANCE.

(a) The governing body of the city may dissolve the district by ordinance.

(b) The governing body may not dissolve the district until:

(1) water, sanitary, sewer, and drainage improvements and roads have been constructed to serve at least 90 percent of the developable territory of the district; and

(2) the district has reimbursed each party that has an agreement with the district for all costs advanced to or on behalf of the district.

(c) Until the district is dissolved, the district is responsible for all bonds and other obligations of the district.

Sec. .302. COLLECTION OF ASSESSMENTS AND OTHER REVENUE. (a) If the dissolved district has bonds or other obligations outstanding secured by and payable from assessments or other revenue, other than revenue from ad valorem taxes, the city shall succeed to the rights and obligations of the district regarding enforcement and collection of the assessments or other revenue.

(b) The city shall have and exercise all district powers to enforce and collect the assessments or other revenue to pay:

(1) the bonds or other obligations when due and payable according to their terms; or

(2) special revenue or assessment bonds or other obligations issued by the city to refund the outstanding bonds or obligations.

Sec. .303. ASSUMPTION OF ASSETS AND LIABILITIES. (a) After the city dissolves the district, the city assumes, subject to the appropriation and availability of funds, the obligations of the district, including any bonds or other debt payable from assessments or other district revenue.

(b) If the city dissolves the district, the board shall transfer ownership of all district property to the city.

SUBCHAPTER Z. SPECIAL BOND PROVISIONS

Sec. .901. APPLICABILITY. This subchapter applies only to bonds payable wholly or partly from revenue derived from assessments on real property in the district.

Sec. .902. CONFLICT OF LAWS. In the event of a conflict between this subchapter and any other law, this subchapter prevails.

Sec. .903. WRITTEN AGREEMENT REGARDING SPECIAL APPRAISALS. Before the district may issue bonds, the district and any person to whom the board intends that proceeds of the bonds be distributed, including the developer, another owner of land in the district, and any entity acting as a lender to the developer or other landowner for the purpose of a project relating to the district, must enter into a written agreement that:

(1) waives for the term of the agreement the right to a special appraisal with respect to taxation by the district under Subchapters B, C, D, E, F, and H, Chapter 23, Tax Code; and

(2) remains in effect for 30 years and is binding on the parties, on entities related to or affiliated with the parties, and on their successors and assignees.

Sec. .904. REQUIREMENTS FOR ADVERTISING BOND ISSUE. A district may not advertise for an issuance of bonds until the completion of at least 25 percent of the projected

value of the improvements, including houses and other buildings, that are liable for district assessments and necessary to support the district bonds.

Sec. .905. REQUIREMENTS FOR BOND ISSUE. The district may not issue bonds until:

(1) the district submits to the commission:

(A) an engineer's report describing the project for which the bonds will provide funding, including data, profiles, maps, plans, and specifications related to the project; and

(B) a cash flow analysis to determine the projected rate of assessment, which includes the following assumptions:

(i) each ending balance for debt service in the analysis is not less than 25 percent of the following year's debt service requirement;

(ii) interest income is only shown on the ending balance for debt service for the first two years; and

(iii) the projected rate of assessment is level or decreasing for the life of the bonds issued by the district;

(2) the completion of at least 75 percent of the projected value of the improvements, including houses and other

buildings, that are liable for district assessments and necessary to support the district bonds; and

(3) the district has obtained an independent market study from a firm recognized in the area of real estate market analysis supporting the development projects for the real property that is liable for district assessments and necessary to support the district bonds.

Sec. .906. REQUIREMENTS FOR COLLECTION OF REVENUE TO PAY BONDS. The district may not collect an assessment to be used for the payment of bonds until:

(1) the completion of at least 95 percent of the underground water, wastewater, and drainage facilities financed from bond proceeds that are necessary to serve the projected build-out, as certified by the district's engineer;

(2) the district or other appropriate party has secured the groundwater, surface water, and water discharge permits that are necessary to secure capacity to support the projected build-out;

(3) the completion of at least 95 percent of lift station, water plant, and sewage treatment plant capacity sufficient to serve the connections constructed in the project for a period of not less than 18 months, as certified by the district's engineer; and

(4) the completion of at least 95 percent of the streets and roads that are necessary to provide access to the areas served by utilities and financed by the proceeds of bonds issued by the district, as certified by the district's engineer and constructed in accordance with municipal or county standards.

SECTION 2. The Celina Municipal Management District No. 3 initially includes all the territory contained in the following area:

All that certain tract or parcel of land lying and being situated in Denton County, Texas, a part of the Texas & Pacific Railway Survey, Abstract No. 1299, and being and including all that same tract said to contain 61.58 acres, more or less, as described in a deed to Godwin Family Investments, Ltd., recorded under Clerk's File No. 04-0035436, said tract or parcel of land is herein described as follows to wit:

BEGINNING at an 1/2 inch iron rod set in Smiley Road (a County Road running in a Northerly and Southerly direction) for the Northeast corner of said Texas & Pacific Railway Survey and the Northeast corner of the premises here described, said corner being the Southeast corner of WILLOW WOOD, an addition to Denton County according to the plat thereof recorded in Cabinet M, page 260 of the Denton County Plat Records, an 1/2 inch iron rod found for witness bears North 89 degrees 44 minutes 31 seconds West 27.56 feet;

THENCE with Smiley Road and the East line of said Texas & Pacific Railway Survey, South 00 degrees 30 minutes 10 seconds West 1321.66 feet to an 1/2 inch iron rod found for corner, said corner being the Northeast corner of a record 62.35 acre tract described in a deed to Sekine Saraj, et al, recorded under Clerk's File No. 04-0005473;

THENCE North 89 degrees 25 minutes 27 seconds West at 28.05 feet passing an 1/2 inch iron rod set for witness on the West margin of Smiley Road and in all a total distance of 2040.69 feet to a

3/4 inch iron rod found for the Northwest corner of said 62.35 acre tract and the Southeast corner hereof;

THENCE North 01 degrees 05 minutes 30 seconds East 18.26 feet to an 1/2 inch iron rod found for corner, same being an angle point in the East line of a record 324.61 acre tract described in a Deed to Rita A. Sorrells, recorded in Volume 4381, Page 1 of the Real Property Records of Denton County;

THENCE North 00 degrees 44 minutes 22 seconds East 856.37 feet to an 1/2 inch iron rod found at an angle point of said 324.61 acre tract;

THENCE North 00 degrees 43 minutes 49 seconds East 435.74 feet to an 1/2 inch iron rod found for corner on the North line of said Texas & Pacific Railway Survey, said corner being a Northeasterly corner of said 324.61 acre tract, said corner also being the Southwest corner of said WILLOW Wood Addition;

THENCE along the South line of WILLOW WOOD addition, South 89 degrees 44 minutes 31 seconds East a distance of 2035.25 feet to the Place of BEGINNING and containing 61.57 acres of land.

All that certain tract or parcel of land lying and being situated in Denton County, Texas, a part of the W.S. Ray Survey, Abstract No. 1105, the A.E. Norwood Survey, Abstract No. 969, the J. Ray Survey, Abstract No. 1104, the T. & P. Railroad Survey, Abstract No. 1299 and the Thomas B. Cox Survey, Abstract No. 309, and being and including all that same land conveyed to Rita L. Sorrells in a Correction Substitute Trustee's Deed recorded in Volume 4381, page 1 of the Real Property Records of Denton County, said tract or parcel of land is herein described as follows; to wit:

BEGINNING at an 1/2 inch iron rod found on the Southeast right-of-way line of F.M. Highway No. 428 at the Northerly termination corner of a boundary line described in a Boundary Line Agreement recorded under Denton County Clerk's File No. 98-R0022137, said corner being the Northwest corner of the premises herein described,

THENCE along the Southeast right-of-way line of said F.M. Highway as follows:

1) North 48 degrees 43 minutes 38 seconds East 1792.49 feet to an 1/2 inch iron rod found;

2) North 48 degrees 44 minutes 09 seconds East 248.64 feet to an 1/2 inch iron rod found;

3) North 45 degrees 58 minutes 51 seconds East 100.06 feet to an 1/2 inch iron rod found, and

4) North 48 degrees 43 minutes 17 seconds East 673.75 feet to an 1/2 inch iron rod found for the Northeast corner hereof, said corner being the Northwest corner of the Willow Wood, an addition to Denton County according to the plat thereof recorded in Cabinet M, page 260 of the Plat Records of Denton County;

THENCE South 22 degrees 31 minutes 00 seconds East 1066.49 feet to an 1/2 inch iron rod found at an angle corner hereof, said corner being a Southwesterly corner of said Willow Wood;

THENCE South 46 degrees 49 minutes 39 seconds East 640.13 feet to an 1/2 inch iron rod found for corner, said corner being the Southwest corner of Willow Wood;

THENCE South 00 degrees 45 minutes 11 seconds West 436.11 feet to an 1/2 inch iron rod found for corner;

THENCE South 00 degrees 44 minutes 22 seconds West 856.37 feet to an 1/2 inch iron rod found for corner;

THENCE South 01 degrees 05 minutes 30 seconds West 18.26 feet to a 3/4 inch iron rod found at the Southwest corner of a record 61.58 acre tract described in a Deed recorded in Volume 1554, page 883 of the Real Property Records of Denton County;

THENCE South 00 degrees 33 minutes 36 seconds West 1324.91 feet to an 1/2 inch iron rod found for corner;

THENCE South 89 degrees 51 minutes 55 seconds West 704.96 feet to an 1/2 inch iron rod found for a re-entrant corner hereof;

THENCE South 00 degrees 26 minutes 35 seconds West 1810.06 feet to an 1/2 inch iron rod found for corner;

THENCE South 00 degrees 00 minutes 58 seconds West 865.64 feet to an 1/2 inch iron rod found in the center of an unimproved lane known as Crutchfield Road;

THENCE North 89 degrees 36 minutes 31 seconds West along a line following the approximate center of said unimproved lane a

distance of 1947.13 feet to a point for the Southeast corner of a record 40.00 acre tract described in a Deed to Frisco West, LTD., recorded under Denton County Clerk's File No. 97-R0090325, said corner being the Southwest corner hereof;

THENCE North 00 degrees 13 minutes 01 seconds East 4017.88 feet to an 1/2 inch iron rod found at the Northeast corner of said record 40.00 acre tract for a re-entrant corner hereof;

THENCE North 88 degrees 52 minutes 02 seconds West 310.88 feet to an 1/2 inch iron rod found for a corner of said boundary line described in said Boundary Line Agreement;

THENCE North 00 degrees 17 minutes 43 seconds East a distance of 838.26 feet to the Place of BEGINNING and containing 324.64 acres of land.

SECTION 3. (a) The legal notice of the intention to introduce this Act, setting forth the general substance of this Act, has been published as provided by law, and the notice and a copy of this Act have been furnished to all persons, agencies, officials, or entities to which they are required to be furnished under Section 59, Article XVI, Texas Constitution, and Chapter 313, Government Code.

(b) The governor, one of the required recipients, has submitted the notice and Act to the Texas Commission on Environmental Quality.

(c) The Texas Commission on Environmental Quality has filed its recommendations relating to this Act with the governor, lieutenant governor, and speaker of the house of representatives within the required time.

(d) All requirements of the constitution and laws of this state and the rules and procedures of the legislature with respect to the notice, introduction, and passage of this Act have been fulfilled and accomplished.

SECTION 4. This Act takes effect September 1, 2019.