



**NOTICE OF
CITY COUNCIL REGULAR MEETING
CELINA COUNCIL CHAMBERS 112 N. COLORADO ST., CELINA, TX 75009
TUESDAY, DECEMBER 12, 2017 AT 5:00 PM**

AGENDA

I. CALL TO ORDER AND ANNOUNCE A QUORUM PRESENT:

II. WORKSESSION/COMMITTEE REPORTS/STAFF REPORTS:

- A. Recognize Volunteer Fireman Jimmy Hollandsworth. (Metdker)
- B. Discussion regarding hands-free devices. (Griggs/DeBuff)
- C. Discussion regarding any and/or all agenda items.

III. 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 to discuss the following:

- A. Residential replats in Summerview Country Estates

Reconvene Into Open Session:

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

IV. PLEDGE OF ALLEGIANCE/INVOCATION:

V. PROCLAMATIONS/PRESENTATIONS/OATHS OF OFFICE:

VI. 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.

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 - Nov 14, 2017 5:00 PM
 - 2. City Council - Worksession - Nov 30, 2017 3:00 PM
 - 3. City Council - Special Meetings - Nov 21, 2017 5:00 PM, Nov 30, 2017 2:59 PM
- B. Consider an act upon an agreement by and between the City of Celina and Collin County for Dispatch Services. (Metdker)
- C. Consider and act upon a Final Plat for The Homestead at Ownsby Farms Phase 1, contingent on staff's comments, being a ± 72.55 acre tract of land situated in the Collin County School Land Survey No. 14, Abstract No. 167, containing 205 residential lots and 11 open space lots, located west of Preston Road, south of Ownsby Parkway, east of the BNSF Railroad, and north of Frontier Parkway. (Ownsby Farms Phase 1 Final Plat) (Rodriguez)
- D. Consider and act upon an ordinance of the city of Celina, Texas, adopting the annexation of certain territories contiguous to and adjoining the city of Celina, Texas, to wit being a 63.154 acre tract of land situated in the I.C. Williams survey, Abstract no. 943, Collin County, Texas. The property is generally located north of CR 51, east of Dallas Parkway, west of Preston Road, and south of FM 428. (Glendenning Parkway) (Dickerson Annexation) (Rodriguez)
- E. Consider and act upon a resolution of the City Council of the City of Celina, Texas, setting a date, time and place (Tuesday, January 9, 2018 at 5:00 PM & February 13, 2018 at 5:00 PM) for public hearings on the proposed voluntary annexation of a ± 10.936 acre tract of land located in the Hugh C. Roth Survey, Abstract Number 765 and the J.K. Rice Survey, Abstract Number 767. The property is generally located south of CR 94, east of Preston Road, west of CR 97, and north of FM 455. (Rodriguez)
- F. Consider and act upon an ordinance of the City of Celina, Texas, repealing Ordinance No. 2017-86 annexing certain territories contiguous to and adjoining the City of Celina, Texas, to wit being a ± 10.684 tract of land generally located east of Smiley road, west of County Road 6, south of FM 428, north of Carey Road; and being more particularly described by metes and bounds in exhibit "A" and graphically depicted in exhibit "B" attached hereto and incorporated herein. (Rodriguez)
- G. Consider and act upon an agreement by and between the City of Celina and MuniCap, Inc. for administrative services related to Public Improvement Districts. (Toutouchian)
- H. 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)
- I. Consider and act upon a resolution of the City Council of the City of Celina, Texas, authorizing the Mayor, Council Members, City Manager, City Secretary, Accounting Manager and City Treasurer to sign checks and drafts on city accounts. (Toutouchian)
- J. Consider and act to authorize the City Manager to execute a contract between the City of Celina and Pipeline Analysis, LLC in the amount of \$184,186.28 for professional services relating to a sanitary sewer evaluation study. (Fourmentin)

- K. Consider and act to authorize the City Manager to negotiate and execute a lease agreement by and between the City of Celina and New Cingular Wireless PCS, LLC located at the Light Farms Elevated Storage Tower. (Laumer)
- L. Consider and act to authorize the City Manager to execute a contract by and between the City of Celina and Felix Construction Company in the amount of \$5,193,349 for the construction of improvements to the Celina Road and Downtown Pump Stations. (Fourmentin)
- M. Consider and act to authorize the city manager to execute an agreement by and between the City of Celina and Centurion to pay the City \$162,075.31 for regional sewer. (Johnson)
- N. Consider and act to authorize the city manager to execute an agreement by and between the City of Celina and Light Farms for the City to pay \$112,809.65 for regional sewer construction. (Johnson)
- O. Consider and act upon a resolution dedicating funds received from Ground and Tower Lease Agreements to a Community Integrity and Landscape Fund. (Laumer)
- P. Consider and act to authorize the City Manager to negotiate and execute a Professional Services Agreement by and between the City of Celina and LW's Towing for Wrecker Services. (Wrecker Service Agreement) (DeBuff)
- Q. Consider and act to authorize the City Manager to negotiate and execute a Professional Services Agreement by and between the City of Celina and VAI Architects, Inc. for Architectural Services in an amount not to exceed \$33,000. (VAI Architectural) (DeBuff)

VIII. PUBLIC HEARING/ACTION:

- A. 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 land that is ± 63.15 acre tract of land located in the I.C. Williams survey, Abstract 943, City of Celina, Collin County, Texas; as PD #87 with a base zoning designation of SF-R. both properties are generally located north of CR 51, east of Dallas Parkway, west of Preston Road, and south of FM 428. (Greenway 63 PD) (Jackson)
- 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, and amending the official zoning map of the city by designating the zoning of land that is $\pm .32$ acre tract of land situated in the Celina Original Donation, lot 17 and 18, block 7, and more specifically defined as 203 W. Pecan and 206 N. Louisiana as PD #88 with a base designation of HD, Historic District. The property is generally located at the northwest corner of North Louisiana Drive and West Pecan St. (Firehouse PD) (Rodriguez)
- C. 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, and amending the official zoning map of the city by designating the zoning of land that is $\pm .178$ acre tract of land located in the Celina Original Donation, lot 1, block 51, City of Celina, Collin County, Texas. The property is generally located at the southwest corner of East Pecan Street and New Mexico Dr. (Pecan Street PD) (Rodriguez)

- D. The Celina City Council will conduct a public hearing to consider testimony and act upon a residential replat in Summerview Country Estates, being a 2.578 acre tract of land situated in the Levin Routh Survey, Abstract No. 779, Collin County, Texas. The property is generally located east of CR 1224, west of Summerview Lane, and north of Choate Parkway. (Summerview West Replat) (Rodriguez)
- E. The Celina City Council will conduct a public hearing to consider testimony and act upon a residential replat in Summerview Country Estates, being a 3.247 acre tract of land situated in the Levin Routh Survey, Abstract No. 779, Collin County, Texas. The property is generally located east of Summerview Lane and north of Choate Parkway. (Summerview East Replat) (Rodriguez)
- F. The Celina City Council will conduct a public hearing to consider testimony and act upon an ordinance amending the City's Code of Ordinances Chapter 14: Zoning, Article 14.03: Zoning Districts, Section 14.03.007: RO, Retail and Office District. (RO, Retail Office District Amendments) (Rodriguez)
- G. The Celina City Council will conduct a public hearing to consider testimony on the creation of a Tax Increment Reinvestment Zone consisting of ±687 acres generally located west of Preston Road and north of W. Glendenning Pkwy, and act upon an ordinance of the City Council of the City of Celina, Texas, designating a contiguous geographic area within the city as a Tax Increment Reinvestment Zone pursuant to Chapter 311 of the Texas Tax Code, to be known as Tax Increment Reinvestment Zone Number Eleven, City of Celina, describing the boundaries of the zone; creating a Board of Directors for the Zone; establishing a Tax Increment Fund of the Zone. (Downtown TIRZ #11) (DeBuff)
- H. The Celina City Council will conduct a public hearing to consider testimony and act upon a resolution dissolving the Chalk Hill Public Improvement District No. 1 in accordance with Chapter 372 of the Texas Local Government Code; a ±97 acre tract of land generally located east of Preston Road, north of County Road 105, and south of County Road 102. (Chalk Hill PID #1) (DeBuff)
- I. The Celina City Council will conduct a public hearing to consider testimony and act upon a resolution authorizing and creating the Chalk Hill Public Improvement District No. 2 in accordance with Chapter 372 of the Texas Local Government Code; a ±95 acre tract of land generally located east of Preston Road, north of County Road 105, and south of County Road 102. (Chalk Hill PID #2) (DeBuff)

IX. ACTION ITEM:

- A. Consider and act upon a resolution of the City of Celina, Texas determining the costs of certain authorized improvements to be financed by The Columns Public Improvement District; approving a preliminary service plan and assessment plan, including proposed assessment rolls; calling a regular meeting and noticing a public hearing for February 13, 2018 to consider an ordinance levying assessment rolls with the City Secretary to make available for public inspection; directing city staff to publish and mail notice of said public hearing; and resolving other matters incident and related thereto. (The Columns PID Project Costs) (DeBuff)

- B. Consider and act upon a resolution of the City of Celina, Texas determining the costs of certain authorized improvements to be financed by the Chalk Hill Public Improvement District No. 2; approving a preliminary service plan and assessment plan, including proposed assessment rolls; calling a regular meeting and noticing a public hearing for February 13, 2018 to consider an ordinance levying assessment rolls with the City Secretary to make available for public inspection; directing city staff to publish and mail notice of said public hearing; and resolving other matters incident and related thereto. (Chalk Hills PID Project Costs) (DeBuff)
- C. Consider and act upon an ordinance amending the City's Code of Ordinances, Appendix A, Fee Schedule, to adopt revised fees for building permits and inspections, plan review fees, water and sewer rates, garbage collection and development review fees. (Hernandez)

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



**NOTICE OF
CITY COUNCIL REGULAR MEETING
CELINA COUNCIL CHAMBERS 112 N. COLORADO ST., CELINA, TX 75009
TUESDAY, NOVEMBER 14, 2017 AT 5:00 PM**

MINUTES

I. CALL TO ORDER AND ANNOUNCE A QUORUM PRESENT:

Attendee Name	Organization	Title	Status	Arrived	Departed
Mindy Koehne	City of Celina	Place 5	Present		
Andy Hopkins	City of Celina	Place 3	Present		
Bill Webber	City of Celina	Place 1	Present		
Carmen Roberts	City of Celina	Place 4	Present		
Chad Anderson	City of Celina	Place 6	Present		
Wayne Nabors	City of Celina	Place 2	Present		
Sean Terry	City of Celina	Mayor	Present		6:51 PM

Mayor Terry called the meeting to order at 5:00 PM.

II. WORKSESSION/COMMITTEE REPORTS/STAFF REPORTS:

A. Presentation of rings and medals for Kindergarten Flag Football Champions. (Terry)

Mayor Terry presented the first and runner up teams with their medals and rings.

B. Certificate of Achievement for Excellence in Financial Reporting. (Terry)

Mayor Terry recognized the Finance Department for the award given.

C. Planning Excellence Award. (Terry)

Mayor Terry recognized the Planning Department for the award given.

D. Creation of Downtown TIRZ #11. (Laumer)

City Manager Jason Laumer explained the need to dissolve the prior TIRZ created for the downtown area and presented new boundaries and plans for Downtown TIRZ #11.

E. Potential interlocal agreement regarding fees and payments between City of Celina and Celina ISD. (Laumer)

City Manager Jason Laumer updated the City Council on intentions to work with the School District regarding the waiving or negotiation of fees between the two entities.

F. Memorandum of Understanding with Hillwood (Lilyana and Bluewood developments). (Laumer)

Minutes Acceptance: Minutes of Nov 14, 2017 5:00 PM (Minutes Approval)

City Manager Jason Laumer presented proposed renegotiated development fees for Hillwood's developments.

G. Celina 52 East, LP (Dickerson) Pre-Annexation Development Agreement. (Laumer)

City Manager Jason Laumer presented the essential points of this agreement.

H. Main Street Program Report and 2018 Event Dates. (Barton)

Downtown Development Manager Rebecca Barton noted training and goals for the Main Street Board along with 2018 event dates.

I. Discussion regarding any and/or all agenda items.

No other items were discussed.

III. EXECUTIVE SESSION:

The Celina City Council adjourned into Executive Session at 5:58 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 551.071, 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. Potential annexation agreements (Laumer)

B. General Development Plan, A0211A COWAN, TR 30, 3.489 ACRES, OLD DCAD SHT 1, TR #14 (Laumer)

Reconvene Into Open Session

The Celina City Council reconvened into open session at 6:34 p.m.

C. Consider and act upon any items discussed in executive session.

No action was taken.

IV. PLEDGE OF ALLEGIANCE/INVOCATION:

Mayor Terry led the pledges. Deputy Mayor Pro Tem Nabors gave the invocation.

V. PROCLAMATIONS/PRESENTATIONS/OATHS OF OFFICE:

VI. OPEN FORUM:

Dale Bainum of 3541 Heritage Trail noted his concerns regarding the Lilyana and Bluewood development agreement changes with regard to Prosper ISD paying their way and the downsizing of 74 foot lots as previously agreed to; fees not being the same for all developers; using taxes as concessions to developers; the (involuntary) annexation of properties that are far off versus the annexation of "52 East" which is just next to Parkside, and increasing public involvement.

VII. CONSENT AGENDA:

Mayor Terry noted that Item F would be deleted from the consent agenda and no action would be taken, and that item T would be taken from the consent agenda and acted upon separately. Item I would have a "not to exceed" number of \$55,330.00 instead of the amount included in the packet.

RESULT:	ADOPTED [UNANIMOUS]
MOVER:	Andy Hopkins, Place 3
SECONDER:	Wayne Nabors, Place 2
AYES:	Koehne, Hopkins, Webber, Roberts, Anderson, Nabors

A. Minutes Approval:

1. City Council - Special Meeting - Oct 10, 2017 5:05 PM
2. City Council - Regular Meeting - Oct 10, 2017 5:10 PM
3. Consider and act upon approval of minutes for October 25, 2017, public hearing and October 26, 2017, special meeting and public hearing. (Faulkner)

B. Consider and act upon appointment of Michelle Baggett to the Main Street Advisory Board. (Barton)

C. Consider and act to authorize the city manager to execute an agreement between the City, 12 Oaks HOA and Kodiak. (Johnson)

D. Consider and act upon an update to a resolution to support participation in a Regional Water Distribution Study. (Johnson)

E. Consider and act upon a Master Services Agreement (MSA) contract by and between the City of Celina and TRC for Engineering and Surveying Services. (Johnson)

(2017-198R)

F. Item F was moved to Items Moved from Consent Agenda

Now item AA

G. Consider and act upon a municipal road maintenance agreement by and between the State of Texas and the City of Celina. (Johnson)

(2017-72)

H. Consider and act to authorize the city manager to execute a demolition contract not to exceed \$35,000 to demolish and remove all existing structures from the lumber yard site. (Johnson)

I. Consider and act upon a contract by and between the City of Celina and TRC Engineers for Professional Services related to the downtown parking lot design and additional parking around police station. (Johnson)

J. Consider and act upon authorizing the City Manager to execute an Interlocal Purchasing Agreement by and between the City of Celina and the City of McKinney for the purchasing of goods and services. (Fourmentin)

K. Consider and act upon facilities agreement by and between the City of Celina and LFC Devco Sweetwater LLC to upsize sanitary sewer line from 10" to 15" for the total cost of \$86,492.85. (Johnson)

Minutes Acceptance: Minutes of Nov 14, 2017 5:00 PM (Minutes Approval)

- L. Consider and act to authorize the City Manager to execute Work Order #5 Amendment #1 between the City of Celina and Garver, LLC in the amount of \$698,928 for professional services relating to the Wastewater Treatment Plant improvements. (Fourmentin)
- M. Consider and act upon a resolution of the City Council of the City of Celina, Texas, accepting the 2017 Certified Tax Roll for the City of Celina. (Toutounchian)
(2017-199R)
- N. Consider an act upon an agreement by and between the City of Celina and Denton County for Fire and Emergency Medical Services. (Metdker)
- O. Consider and act upon agreement to contribute right of way funds to make certain highway improvements on highway no: SH 289 from N. Bus 289C, North of Celina to N. CR 60/CR 107 (Grayson CL). (Johnson)
(2017-207R)
- P. Consider and act upon an ordinance terminating Tax Increment Reinvestment Zone Number One, City of Celina, Texas; Authorizing the distribution of tax increment funds of the zone to taxing units participating in the zone in accordance with the Texas tax code. (Downtown) (DeBuff)
(2017-64)
- Q. Consider and act upon a resolution setting a public hearing on December 12, 2017 at 5:00 p.m. under section 311.003 of the Texas Tax Code for the creation of a Tax Increment Reinvestment Zone within the City of Celina, Texas for The Downtown, being a ±687 acre tract of land generally located west of Preston Road and north of W. Glendenning Pkwy. (Downtown) (DeBuff)
(2017-200R)
- R. Consider and act to authorize the city manager to execute a memorandum of understanding (MOU) with the Hillwood Development. (Hillwood) (Laumer)
(presented fee agreements in place of MOU)
- S. Consider and act upon an ordinance amending the City's Code of Ordinances Chapter 8: Offenses and Nuisances; Article 8.07: Sex Offender Residency and Public Safety Zone. (DeBuff/Griggs)
(2017-65)
- T. Item T was moved to Items Moved from Consent Agenda
Now item Z
- U. Consider and act upon a Final Plat for Light Farms Grange 4, being a ±15.73 acre tract of land situated in the John Ragsdale Survey, Abstract No. 734, Collin County, Texas, generally located north of Frontier Parkway, south of CR 51, west of the BNSF Railroad, and east of Dallas Parkway, containing 39 residential lots, and 3 open space lots. (Light Farms Grange 4 Final Plat) (Rodriguez)
- V. Consider and act upon an ordinance of the City Council of the City of Celina, Texas, amending the Celina Code of Ordinances Chapter 8: Offenses and Nuisances; Article 8.04: Noise, to add a new section entitled territorial application. (Griggs)

(2017-66)

W. Consider and act upon a Chapter 380 grant agreement by and among the City of Celina, Texas and Perry Homes, LLC acting by and through their respective authorized officers and representatives. (Toutounchian)

X. Consider and act upon an ordinance of the City of Celina, Texas amending ordinance 2016-65, which adopted and approved the budget for fiscal year beginning October 1, 2016 and ending September 30, 2017, and make appropriations for each department, project and account, by adopting an amended fiscal year 2016-2017 budget for the City of Celina, Texas, reallocating funds between accounts pursuant to exhibit "A", attached hereto and incorporated into this ordinance. (Toutounchian)

(2017-67)

Y. Consider and act upon an ordinance of the City Council of the City Of Celina, Texas, amending the City's Code Of Ordinances, Appendix A: Fee Schedule, Garbage Collection. (Toutounchian)

(2017-68)

ITEMS MOVED FROM CONSENT AGENDA:

Z. Consider and act upon a resolution of the City Council of the City of Celina, Texas, confirming support for the proposed Palladium Celina Senior Living Development located on the south side of E. Sunset Blvd and west of County Road 89. (Palladium Celina Senior Living) (DeBuff)

(2017-201R) Councilwoman Koehne recused herself at 6:43 p.m. and left the dais. She returned at 6:43 p.m. after the vote.

RESULT:	APPROVED [5 TO 0]
MOVER:	Wayne Nabors, Place 2
SECONDER:	Carmen Roberts, Place 4
AYES:	Hopkins, Webber, Roberts, Anderson, Nabors
RECUSED:	Koehne

AA. Consider and act upon a task order authorization by and between the City of Celina and TRC for Professional Services. (Johnson)

RESULT:	NO ACTION
----------------	------------------

VIII. PUBLIC HEARING/ACTION:

A. The Celina City Council will conduct two public hearings at 5:00 p.m. and 5:05 p.m. to consider testimony on the proposed annexation of an approximate approximately 53.154 acre tract of land situated in the I.C. Williams Survey, Abstract No. 943, Collin County, Texas, and an approximately 10 acre tract of land situated in the I.C. Williams Survey, Abstract No. 943, both properties are generally located north of CR 51, east of Dallas Parkway, west of Preston Road, and south of FM 428 (Glendenning Parkway). (Dickerson Annexation) (Rodriguez)

Mayor Terry opened the first hearing at 6:44 p.m. No public comment was received. The hearing was closed at 6:45 p.m. The second hearing was opened at 6:45 p.m. No public comment was received. The hearing was closed at 6:45 p.m.

Minutes Acceptance: Minutes of Nov 14, 2017 5:00 PM (Minutes Approval)

- B. The Celina City Council will conduct a public hearing to consider testimony and act upon a rezoning 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 request for an ±18.604 acre tract of land situated in the Collin County School Land Survey, Sheet 1, Tract 30, Abstract No. 167, from a zoning designation of C-1, retail district, to PD, Planned Development with a base zoning designation of C-1, the property is generally located at the southwest corner of Preston Road and Ash Street. (Celina Crossing Zoning) (Rodriguez)

(2017-69) Mayor Terry opened the hearing at 6:45 p.m. No public comment was received. The hearing was closed at 6:48 p.m.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Bill Webber, Place 1
SECONDER:	Andy Hopkins, Place 3
AYES:	Koehne, Hopkins, Webber, Roberts, Anderson, Nabors

- C. The Celina City Council will conduct a public hearing to consider testimony and act upon a resolution of the City Council of the City of Celina, Texas, hereby authorizing the Mayor to execute a development agreement by and between the City of Celina and Celina 52 East, L.P. The property is ±63.156 acres, and is generally located north of CR 51, east of Dallas Parkway, west of Preston Road, and south of FM 428 (Glendenning Parkway). (Greenway 63 Development Agreement) (Laumer)

(2017-202R) Mayor Terry opened the hearing at 6:48 p.m. No public comment was received. The hearing was closed at 6:49 p.m.

RESULT:	APPROVED [UNANIMOUS]
MOVER:	Bill Webber, Place 1
SECONDER:	Chad Anderson, Place 6
AYES:	Koehne, Hopkins, Webber, Roberts, Anderson, Nabors

- D. The Celina City Council will conduct a public hearing to consider testimony and take action upon a resolution authorizing and creating The Columns Public Improvement District (PID) in accordance with Chapter 372 of the Texas Local Government Code; a ±48.784 acre tract of land generally located east of Dallas Parkway and south of County Road 51. (The Columns) (DeBuff)

(2017-203R) Mayor Terry left the meeting at this time (6:51 p.m.) Mayor Pro Tem Anderson opened the hearing at 6:51 p.m. No public comment was received. The hearing was closed at 6:53 p.m. (Councilman Webber left the dais for one minute at 6:52 p.m.)

RESULT: APPROVED [UNANIMOUS]
MOVER: Andy Hopkins, Place 3
SECONDER: Wayne Nabors, Place 2
AYES: Koehne, Hopkins, Webber, Roberts, Anderson, Nabors

- E. The Celina City Council will conduct a public hearing to consider testimony on the creation of a Tax Increment Reinvestment Zone consisting of approximately ±48.784 acres generally located east of Dallas Parkway and south of County Road 51, and act upon an ordinance of the City Council of the City of Celina, Texas, designating a contiguous geographic area within the city as a Tax Increment Reinvestment Zone pursuant to Chapter 311 of the Texas Tax Code, to be known as Tax Increment Reinvestment Zone Number Nine, City of Celina, describing the boundaries of the zone; creating a Board of Directors for the Zone; establishing a Tax Increment Fund of the Zone; containing Findings related to the creation of the Zone; providing a date for the termination of the Zone; providing that the Zone take effect immediately upon passage of the Ordinance. (The Columns) (DeBuff)

(2017-70) Mayor Pro Tem Anderson opened the hearing at 6:53 p.m. No public comment was received. The hearing was closed at 6:54 p.m.

RESULT: APPROVED [UNANIMOUS]
MOVER: Wayne Nabors, Place 2
SECONDER: Andy Hopkins, Place 3
AYES: Koehne, Hopkins, Webber, Roberts, Anderson, Nabors

- F. The Celina City Council will conduct a public hearing to consider testimony on the creation of a Tax Increment Reinvestment Zone consisting of approximately ±97 acres generally located north of County Road 105, east of Preston Road, and south of Country Road 102, and act upon an ordinance of the City Council of the City of Celina, Texas, designating a contiguous geographic area within the city as a Tax Increment Reinvestment Zone pursuant to Chapter 311 of the Texas Tax Code, to be known as Tax Increment Reinvestment Zone Number Ten, City of Celina, describing the boundaries of the zone; creating a Board of Directors for the Zone; establishing a Tax Increment Fund of the Zone; containing Findings related to the creation of the Zone; providing a date for the termination of the Zone; providing that the Zone take effect immediately upon passage of the Ordinance. (Chalk Hill) (DeBuff)

(2017-71) Mayor Pro Tem Anderson opened the hearing at 6:54 p.m. No public comment was received. The hearing was closed at 6:56 p.m.

RESULT: APPROVED [UNANIMOUS]
MOVER: Andy Hopkins, Place 3
SECONDER: Carmen Roberts, Place 4
AYES: Koehne, Hopkins, Webber, Roberts, Anderson, Nabors

IX. ACTION ITEM:

- A. Consider and act upon a resolution accepting a petition to dissolve Chalk Hills Public Improvement District, calling for a public hearing and authorizing notices. (Chalk Hill) (DeBuff)

(2017-204R)

RESULT: APPROVED [UNANIMOUS]
MOVER: Wayne Nabors, Place 2
SECONDER: Andy Hopkins, Place 3
AYES: Koehne, Hopkins, Webber, Roberts, Anderson, Nabors

- B. Consider and act upon a resolution of the City Council of Celina, Texas, setting a public hearing under sec. 372.009 of the Texas Local Government Code for the creation of the Chalk Hill Public Improvement District within the City of Celina, Texas; and authorizing the issuance of notice by the City Secretary of Celina, Texas regarding the public hearing. (Chalk Hill) (DeBuff)

(2017-205R)

RESULT: APPROVED [UNANIMOUS]
MOVER: Bill Webber, Place 1
SECONDER: Wayne Nabors, Place 2
AYES: Koehne, Hopkins, Webber, Roberts, Anderson, Nabors

- C. Consider and act on authorizing the city manager to negotiate and execute annexation agreements with landowners within Celina's extraterritorial jurisdiction. (Laumer)

Action Item C was taken after Public Hearing Item C.

RESULT: APPROVED [UNANIMOUS]
MOVER: Bill Webber, Place 1
SECONDER: Chad Anderson, Place 6
AYES: Koehne, Hopkins, Webber, Roberts, Anderson, Nabors

X. ADJOURNMENT:

There being no further comment Mayor Pro Tem Anderson adjourned the meeting at 6:59 p.m.

 Sean Terry, Mayor

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

 Date Minutes Approved

Minutes Acceptance: Minutes of Nov 14, 2017 5:00 PM (Minutes Approval)



**NOTICE OF
CITY COUNCIL WORKSESSION
CITY HALL CONFERENCE ROOM 142 N. OHIO DRIVE, CELINA, TX 75009
THURSDAY, NOVEMBER 30, 2017 AT 3:00 PM**

MINUTES

I. CALL TO ORDER:

Mayor Terry called the meeting to order at 3:05 p.m.

Attendee Name	Organization	Title	Status	Arrived	Departed
Mindy Koehne	City of Celina	Place 5	Present		
Andy Hopkins	City of Celina	Place 3	Present		
Bill Webber	City of Celina	Place 1	Present		
Carmen Roberts	City of Celina	Place 4	Absent		
Chad Anderson	City of Celina	Place 6	Present	3:06 PM	4:14 PM
Wayne Nabors	City of Celina	Place 2	Present		
Sean Terry	City of Celina	Mayor	Present		

II. WORKSESSION:

- A. Discussion regarding Memorandum of Understanding with Hillwood (Lilyana and Bluewood developments).

Fred Balda and Patrick Cowden with the Hillwood Communities presented their requests for reduced requirements.

- B. Discussion regarding water, sewer and trash rates.

Director of Finance Jay Toutounchian and City Manager Jason Laumer discussed needs.

- C. Discussion regarding utility, planning and impact fees.

Director of Finance Jay Toutounchian and City Manager Jason Laumer discussed needs.

- D. Discussion regarding Capital Improvement Plans/Projects 2018 and 2019.

Director of Finance Jay Toutounchian and City Manager Jason Laumer discussed needs.

- E. Discussion regarding mid-year budget modifications.

Director of Finance Jay Toutounchian and City Manager Jason Laumer discussed the modifications needed.

III. ADJOURNMENT:

There being no further comment Mayor Terry adjourned the meeting at 5:08 p.m.

Minutes Acceptance: Minutes of Nov 30, 2017 3:00 PM (Minutes Approval)

Sean Terry, Mayor

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

Date Minutes Approved

Minutes Acceptance: Minutes of Nov 30, 2017 3:00 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: December 12, 2017
Re: Minute Approval

Action Requested:

City Council - Special Meetings - Nov 21, 2017 5:00 PM, Nov 30, 2017 2:59 PM

Background Information:

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

N/A

Supporting Documents:

Minutes

Staff Recommendation:



**CITY COUNCIL PUBLIC HEARING/SPECIAL MEETING
CELINA CITY COUNCIL CHAMBERS
112 N. COLORADO DR.
CELINA, TEXAS 75009
TUESDAY, NOVEMBER 21, 2017 AT 5:00 P.M.**

M I N U T E S

I. CALL TO ORDER AND ANNOUNCE A QUORUM PRESENT:

Mayor Sean Terry called the meeting to order at 5:04 p.m. Councilmembers present were Carmen Roberts, Andy Hopkins, Mindy Koehne, and Chad Anderson. Councilman Bill Webber arrived at 5:06 p.m. Councilman Wayne Nabors arrived at 5:09 p.m.

II. ACTION ITEMS:

1. Consider and act upon ratifying Resolution No. 2017-197R which resolved that the Celina City Hall, located at 112 N. Colorado Dr., Celina, Texas, is a suitable and appropriate location for the October 25, 2017 and October 26, 2017 public hearings on proposed annexations and that there is no reasonably available site that is suitable for public hearings located within any area for which a protest under Texas Local Government Code Section 43.063(b) was received.

Councilman Hopkins moved to approve. Councilwoman Koehne seconded. Motion carried. 4-yes;0-no.

2. Consider and act upon ratifying the following Chapter 43 Agricultural Agreements and/or Chapter 212 ETJ Development Agreements, all related to annexation, which have been executed by the City Manager pursuant to City Council's approval at the November 14, 2017 City Council Meeting that authorized the City Manager to negotiate and enter such agreements for properties known as:

- | | |
|-----|--|
| A.1 | Denton CAD Property ID 52691, being an approximate 3.251 acre tract of land in Denton County, Texas, legally described as Abstract No. 1106A in the Aaron Ray Survey, Tract 6; |
| B.1 | Denton CAD Property ID 52834, being an approximate 7.749 acre tract of land in Denton County, Texas, legally described as Abstract 0903A in the T. McIntire Survey, Tract 3; |
| C.1 | Denton CAD Property ID 82874, being an approximate 10.0 acre tract of land in Denton County, Texas, legally described as Abstract 0903A in the T. McIntire Survey, Tract 4; |
| D.1 | Denton CAD Property ID 82872, being an approximate 12.2517 acre tract of land in Denton County, Texas, legally described as Abstract 0903A in the T. McIntire Survey, Tract 5; |
| E.1 | Denton CAD Property ID 148553, being an approximate 8.0 acre tract of land in Denton County, Texas, legally described as Abstract 0903A in the T. McIntire Survey, Tract 6A; |

- F.1 Denton CAD Property ID 282772, being an approximate 8.0 acre tract of land in Denton County, Texas, legally described as Abstract 0903A in the T. McIntire Survey, Tract 6A(1);
- G.2 Denton CAD Property ID 52694, being an approximate 9.999 acre tract of land in Denton County, Texas, legally described as Abstract 1411A in the F. Wilkerson Survey, Tract 7;
- H.2 Denton CAD Property ID 82865, being an approximate 10.0 acre tract of land in Denton County, Texas, legally described as Abstract 1411A in the F. Wilkerson Survey, Tract 6;
- I.3 Denton CAD Property ID 52699, being an approximate 20.514 acre tract of land in Denton County, Texas, legally described as Abstract 1411A in the F. Wilkerson Survey, Tract 8;
- J.4 Denton CAD Property ID 97919, being an approximate 10.013 acre tract of land in Denton County, Texas, legally described as Abstract 1411A in the F. Wilkerson Survey, Tract 9;
- K.5 Denton CAD Property ID 173648, being an approximate 9.623 acre tract of land in Denton County, Texas, legally described as Abstract 1411A in the F. Wilkerson Survey, Tracts 10A and 11C;
- L.5 Denton CAD Property ID 661546, being an approximate 2.0 acre tract of land in Denton County, Texas, legally described as Abstract 1411A in the F. Wilkerson Survey, Tracts 10A(1) and 11C(1);
- M.5 Denton CAD Property ID 184938, being an approximate 0.294 acre tract of land in Denton County, Texas, legally described as Abstract 1411A in the F. Wilkerson Survey, Tract 11B(1);
- N.5 Denton CAD Property ID 52732, being an approximate 1.0 acre tract of land in Denton County, Texas, legally described as Abstract 1411A in the F. Wilkerson Survey, Tract 11;
- O.5 Denton CAD Property ID 173036, being an approximate 44.642 acre tract of land in Denton County, Texas, legally described as Abstract 1411A in the F. Wilkerson Survey, Tract 10 and 11B;
- P.7 Denton CAD Property ID 52560, being an approximate 61.58 acre tract of land in Denton County, Texas, legally described as Abstract 1299A in the Texas & Pacific Railway Survey, Tract 1;
- Q.11 Denton CAD Property ID 52729, being an approximate 21.9 acre tract of land in Denton County, Texas, legally described as Abstract No. 0791A in the John Morton Survey, Tract 4;
- R.12 Denton CAD Property ID 178532, being an approximate 8.002 acre tract of land in Denton County, Texas, legally described as Abstract No. 0791A in the John Morton Survey, Tract 8A;
- S.14 Denton CAD Property ID 168112, being an approximate 8.5 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 12D;
- T.14 Denton CAD Property ID 173392, being an approximate 1.5 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 12D(1);

U.16	Denton CAD Property ID 176548, being an approximate 24.659 acre tract of land in Denton County, Texas, legally described as Abstract 0211A in the Robert Cowan Survey, Tract 12E;
V.17	Denton CAD Property ID 52881, being an approximate 11.49 acre tract of land in Denton County, Texas, legally described as Abstract 0211A in the Robert Cowan Survey, Tract 34;
W.18	Denton CAD Property ID 133330, being an approximate 3.0 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 12A;
X.21	Denton CAD Property ID 181907, being an approximate 4.5 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 19A;
Y.22	Denton CAD Property ID 52943, being an approximate 10.511 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 20;
Z.23	Denton CAD Property ID 678052, being an approximate 3.115 acre tract of land in Denton County, Texas, legally described as Lot 2, Block A, of Theeringer Estates;
AA.24	Denton CAD Property ID 678051, being an approximate 6.334 acre tract of land in Denton County, Texas, legally described as Lot 1, Block A, of Theeringer Estates.
BB.25	Denton CAD Property ID 84192, being an approximate 11.43 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 15;
CC.27	Denton CAD Property ID 498774, being an approximate 10.0 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 26A;
DD.28	Denton CAD Property ID 632429, being an approximate 64.6724 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 26B;
EE.30	Denton CAD Property ID 84187, being an approximate 10.51 acre tract of land in Denton County, Texas, legally described as Abstract 0211A in the Robert Cowan Survey, Tract 17;
FF.30	Denton CAD Property ID 84190, being an approximate 2.704 acre tract of land in Denton County, Texas, legally described as Abstract 0211A in the Robert Cowan Survey, Tract 16;
GG.31	Collin CAD Property ID 2120675, being an approximate 37.614 acre tract of land in Collin County, Texas, legally described as Abstract A0168, Collin County School Land #16 Survey, Sheet 2, Tract 26;
HH.32	Collin CAD Property ID 991859, being an approximate 37.614 acre tract of land in Collin County, Texas, legally described as Abstract A0168, Collin County School Land #16 Survey, Sheet 2, Tract 21;
II.33	Collin CAD Property ID 990404, being an approximate 73.38 acre tract of land in Collin County, Texas, legally described as Abstract A0124, Henry Bentley Survey, Tract 19;

JJ.34	Collin CAD Property ID 2055071, being an approximate 5.0227 acre tract of land in Collin County, Texas, legally described as Abstract A0124, Henry Bentley Survey, Tract 40;
KK.38	Denton CAD Property ID 75332, being an approximate 10.58 acre tract of land in Denton County, Texas, legally described as Abstract A0211A, A. Cowan Survey, Tract 43;
LL.39	Denton CAD Property ID 52926, being an approximate 6.068 acre tract of land in Denton County, Texas, legally described as Abstract A0211A, A. Cowan Survey, Tract 48;
MM.40	Denton CAD Property ID 122384, being an approximate 6.068 acre tract of land in Denton County, Texas, legally described as Abstract A0211A, A. Cowan Survey, Tract 49;
NN.42	Denton CAD Property ID 52930, being an approximate 12.11 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 51;
OO.43	Denton CAD Property ID 52934, being an approximate 12.11 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 52;
PP.46	Denton CAD Property ID 133328, being an approximate 4.0 acre tract of land in Denton County, Texas, legally described as Abstract A0211A, Cowan Survey, Tract 55;
QQ.51	Collin CAD Property ID 2110480, being an approximate 24.608 acre tract of land in Collin County, Texas, legally described as Abstract A0007, Richard Alderson Survey, Tract 11;
RR.52	Collin CAD Property ID 964790, being an approximate 22.188 acre tract of land in Collin County, Texas, legally described as Abstract A0788, Spencer Rice Survey, Tract 3;
SS.53	Collin CAD Property ID 1647374, being an approximate 16.584 acre tract of land in Collin County, Texas, legally described as Abstract A0788, Spencer Rice Survey, Tract 5;
TT.54	Collin CAD Property ID 2020233, being an approximate 14.056 acre tract of land in Collin County, Texas, legally described as Abstract A0788, Spencer Rice Survey, Tract 8;
UU.58	Collin CAD Property ID 2121924, being an approximate 14.59 acre tract of land in Collin County, Texas, legally described as Abstract A0788, Spencer Rice Survey, Tract 9;
VV.59	Collin CAD Property ID 2523154, being an approximate 1.408 acre tract of land in Collin County, Texas, legally described as Abstract A0788, Spencer Rice Survey, Tract 18-19;
WW.61	Collin CAD Property ID 2121104, being an approximate 26.944 acre tract of land in Collin County, Texas, legally described as Abstract No. A0408 in the P F Hutchinson Survey, Tract 15;
XX.62	Collin CAD Property ID 2121102, being an approximate 10.35 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 1;

YY.63	Collin CAD Property ID 1639338, being an approximate 10.35 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 8;
ZZ.64	Collin CAD Property ID 2545877, being an approximate 1.0 acre tract of land in Collin County, Texas, legally described as Abstract No. A0408 in the P F Hutchinson Survey, Tract 19;
AAA.65	Collin CAD Property ID 2545876, being an approximate 9.96 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 13;
BBB.66	Collin CAD Property ID 1639347, being an approximate 10.368 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 9;
CCC.67	Collin CAD Property ID 2721387, being an approximate 6.0 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 20;
DDD.68	Collin CAD Property ID 1647383, being an approximate 6.546 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 10;
EEE.69	Collin CAD Property ID 2120834, being an approximate 10.27 acre tract of land in Collin County, Texas, legally described as Abstract A0262, William Deavenport Survey, Tract 7;
FFF.71	Collin CAD Property ID 963452, being an approximate 25.54 acre tract of land in Collin County, Texas, legally described as Abstract A0262, William Deavenport Survey, Tract 3;
GGG.72	Collin CAD Property ID 2120832, being an approximate 25.74 acre tract of land in Collin County, Texas, legally described as Abstract A0262, William Deavenport Survey, Tract 1;
HHH.73	Collin CAD Property ID 963443, being an approximate 25.5414 acre tract of land in Collin County, Texas, legally described as Abstract A0262, William Deavenport Survey, Tract 2;
III.74	Collin CAD Property ID 1716860, being an approximate 1.262 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 11;
JJJ.75	Collin CAD Property ID 1716879, being an approximate 13.448 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 12;
KKK.78	Collin CAD Property ID 1622337, being an approximate 5.49 acre tract of land in Collin County, Texas, legally described as Abstract No. A0408 in the P F Hutchinson Survey, Tract 2.
LLL.80	Collin CAD Property ID 163364, being an approximate 11.18 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 6.
MMM.83	Collin CAD Property ID 2517629, being an approximate 3.724 acre tract of land in Collin County, Texas, legally described as Abstract No. A0408 in the P F Hutchinson Survey, Tract 3;

NNN.84	Collin CAD Property ID 2057836, being an approximate 1.0 acre tract of land in Collin County, Texas, legally described as Abstract No. A0788 in the Spencer Rice Survey, Tract 18;
OOO.86	Collin CAD Property ID 2120667, being an approximate 38.803 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14 Survey, Sheet 2, Tract 61;
PPP.87	Collin CAD Property ID 1634592, being an approximate 20.0 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14 Survey, Sheet 2, Tract 83;
QQQ.89	Collin CAD Property ID 2663825, being an approximate 49.9266 acre tract of land in Collin County, Texas, legally described as Abstract A0943, IC Williamson Survey, Tract 7;
RRR.90	Collin CAD Property ID 20982, being an approximate 1.0 acre tract of land in Collin County, Texas, legally described as Abstract A0943, IC Williamson Survey, Tract 7-1;
SSS.91	Collin CAD Property ID 998077, being an approximate 0.441 acre tract of land in Collin County, Texas, legally described as Abstract No. A0943 in the I C Williamson Survey, Tract 9;
TTT.92	Collin CAD Property ID 2509576, being an approximate 0.4714 acre tract of land in Collin County, Texas, legally described as Abstract No. A0943 in the I C Williamson Survey, Tract 19;
UUU.93	Collin CAD Property ID 2663828, being an approximate 5.862 acre tract of land in Collin County, Texas, legally described as Abstract A0132, BBB&C Railway Co. Survey, Tract 25;
VVV.105	Collin CAD Property ID 2071428, being an approximate 9.993 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14 Survey, Sheet 2, Tract 90;
WWW.106	Collin CAD Property ID 2006712, being an approximate 10.0 acre tract of land in Collin County, Texas, legally described as Abstract A0943, IC Williamson Survey, Tract 13;
XXX.107	Collin CAD Property ID 2120670, being an approximate 7.438 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14 Survey, Sheet 4, Tract 86;
YYY.108	Collin CAD Property ID 2501429, being an approximate 1.8705 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 1;
ZZZ.108	Collin CAD Property ID 2501430, being an approximate 2.0150 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 2;
AAAA.108	Collin CAD Property ID 2501432, being an approximate 1.9840 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 4;
BBBB.108	Collin CAD Property ID 2501433, being an approximate 2.0150 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 5;

CCCC.108	Collin CAD Property ID 2501434, being an approximate 1.9841 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 6;
DDDD.108	Collin CAD Property ID 2501435, being an approximate 1.9828 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 7;
EEEE.108	Collin CAD Property ID 2501436, being an approximate 2.0156 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 8;
FFFF.108	Collin CAD Property ID 2501437, being an approximate 2.0589 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 9;
GGGG.108	Collin CAD Property ID 2501440, being an approximate 1.9854 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 12;
HHHH.108	Collin CAD Property ID 2501442, being an approximate 2.0150 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 14;
IIII.108	Collin CAD Property ID 2501443, being an approximate 1.9847 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 15;
JJJJ.108	Collin CAD Property ID 2501444, being an approximate 1.9822 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 16;
KKKK.108	Collin CAD Property ID 2501446, being an approximate 1.8680 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 18;
LLLL.110	Collin CAD Property ID 1584958, being an approximate 3.13 acre tract of land in Collin County, Texas, legally described as Abstract No. A0170 in the Collin County School Land #15 Survey, Sheet 2, Tract 49;
MMMM.111	Collin CAD Property ID 1960382, being an approximate 2.15 acre tract of land in Collin County, Texas, legally described as Abstract No. A0170 in the Collin County School Land #15 Survey, Sheet 2, Tract 61;
NNNN.112	Collin CAD Property ID 997032, being an approximate 19.029 acre tract of land in Collin County, Texas, legally described as Abstract A0731, Samuel Queen Survey, Tract 6;
OOOO.113	Collin CAD Property ID 2110123, being an approximate 9.18 acre tract of land in Collin County, Texas, legally described as Abstract A0731, Samuel Queen Survey, Tract 10
PPPP.114	Collin CAD Property ID 2709494, being an approximate 3.689 acre tract of land in Collin County, Texas, legally described as Thomas Place, Block A, Lot 1;
QQQQ.115	Collin CAD Property ID 2110124, being an approximate 2.5 acre tract of land in Collin County, Texas, legally described as Abstract No. A0731 in the Samuel Queen Survey, Tract 13;

RRRR.116	Collin CAD Property ID 2038564, being an approximate 1.193 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 1;
SSSS.116	Collin CAD Property ID 2038565, being an approximate 1.313 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 2;
TTTT.116	Collin CAD Property ID 2038566, being an approximate 1.313 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 3;
UUUU.116	Collin CAD Property ID 2038567, being an approximate 1.313 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 4;
VVVV.116	Collin CAD Property ID 2038568, being an approximate 1.313 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 5;
WWWW.116	Collin CAD Property ID 2038569, being an approximate 1.313 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 6;
XXXX.116	Collin CAD Property ID 2038570, being an approximate 1.275 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 7;
YYYY.116	Collin CAD Property ID 2038571, being an approximate 1.312 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 8;
ZZZZ.116	Collin CAD Property ID 2038572, being an approximate 1.363 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 9;
AAAAA.116	Collin CAD Property ID 2038573, being an approximate 1.00 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 10;
BBBBB.116	Collin CAD Property ID 2038574, being an approximate 1.00 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 11;
CCCCC.116	Collin CAD Property ID 2038575, being an approximate 1.00 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 12;
DDDDD.116	Collin CAD Property ID 2038576, being an approximate 1.00 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 13;
EEEEE.116	Collin CAD Property ID 2038577, being an approximate 1.00 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 14;
FFFFF.116	Collin CAD Property ID 2506190, being an approximate 1.00 acre tract of land in Collin County, Texas, legally described as Copperfield Settlement, Lot 1;
GGGGG.116	Collin CAD Property ID 2506191, being an approximate 1.397 acre tract of land in Collin County, Texas, legally described as Copperfield Settlement, Lot 2;
HHHHH.116	Collin CAD Property ID 2506192, being an approximate 1.397 acre tract of land in Collin County, Texas, legally described as Copperfield Settlement, Lot 3;

IIII.117	Collin CAD Property ID 2567261, being an approximate 4.046 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 97;
JJJJ.117	Collin CAD Property ID 2567259, being an approximate 4.0 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 5;
KKKKK.118	Collin CAD Property ID 2661898, being an approximate 8.602 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 104;
LLLLL.118	Collin CAD Property ID 2109701, being an approximate 1.79 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 93;
MMMMM.119	Collin CAD Property ID 2661897, being an approximate 1.0 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 6;
NNNNN.120	Collin CAD Property ID 2120663, being an approximate 4.8 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 15;
OOOOO.120	Collin CAD Property ID 2120665, being an approximate 5.98 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 88;
PPPPP.120	Collin CAD Property ID 962550, being an approximate 2.0 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 16;
QQQQQ.121	Collin CAD Property ID 2608104, being an approximate 1.003 acre tract of land in Collin County, Texas, legally described as Owens Development, Lot 2;
RRRRR.121	Collin CAD Property ID 2608105, being an approximate 1.998 acre tract of land in Collin County, Texas, legally described as Owens Development, Lot 3;
SSSSS.121	Collin CAD Property ID 1011531, being an approximate 9.345 acre tract of land in Collin County, Texas, legally described as Abstract A0771 in the C P Rice Survey, Tract 1;
TTTTT.122	Collin CAD Property ID 2608103, being an approximate 1.99 acre tract of land in Collin County, Texas, legally described as Owens Development, Lot 1;
UUUUU.123	Collin CAD Property ID 976386, being an approximate 2.234 acre tract of land in Collin County, Texas, legally described as DR Hunn Addition, Block A, Lot 1;
VVVVV.123	Collin CAD Property ID 2619116, being an approximate 2.0 acre tract of land in Collin County, Texas, legally described as DR Hunn Addition, Block A, Lot 2;
WWWWW.123	Collin CAD Property ID 2715058, being an approximate 2.0 acre tract of land in Collin County, Texas, legally described as DR Hunn Addition, Block A, Lot 3;

XXXXX.123	Collin CAD Property ID 976395, being an approximate 2.0 acre tract of land in Collin County, Texas, legally described as DR Hunn Addition, Block A, Lot 4;
YYYYY.123	Collin CAD Property ID 976402, being an approximate 2.0 acre tract of land in Collin County, Texas, legally described as DR Hunn Addition, Block A, Lot 5;
ZZZZZ.123	Collin CAD Property ID 976411, being an approximate 2.0 acre tract of land in Collin County, Texas, legally described as DR Hunn Addition, Block A, Lot 6;
AAAAAA.125	Collin CAD Property ID 2131657, being an approximate 2.992 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates Phase 2, Block A, Lot 3;
BBBBBB.125	Collin CAD Property ID 2658427, being an approximate 1.317 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates Phase 2, Block A, Lot 1rb;
CCCCCC.125	Collin CAD Property ID 2118132, being an approximate 2.579 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates, Block A, Lot 1;
DDDDDD.125	Collin CAD Property ID 2118133, being an approximate 2.579 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates, Block A, Lot 2;
EEEEEE.125	Collin CAD Property ID 2131659, being an approximate 2.375 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates Phase 2, Block A, Lot 5;
FFFFFF.125	Collin CAD Property ID 2118129, being an approximate 2.844 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates, Block B, Lot 10;
GGGGGG.125	Collin CAD Property ID 2118139, being an approximate 2.826 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates, Block B, Lot 9;
HHHHHH.125	Collin CAD Property ID 2118138, being an approximate 2.826 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates, Block B, Lot 8;
IIIII.125	Collin CAD Property ID 2118137, being an approximate 3.261 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates, Block B, Lot 6;
JJJJJ.126	Collin CAD Property ID 1011700, being an approximate 122.759 acre tract of land in Collin County, Texas, legally described as Abstract No. A0779 in the Levin Routh Survey, Tract 11;
KKKKKK.127	Collin CAD Property ID 2522115, being an approximate 36.89 acre tract of land in Collin County, Texas, legally described as Abstract No. A0779 in the Levin Routh Survey, Tract 21;
LLLLLL.128	Collin CAD Property ID 2655194, being an approximate 4.43 acre tract of land in Collin County, Texas, legally described as Abstract No. A0779 in the Levin Routh Survey, Tract 30;

- MMMMMM.130 Collin CAD Property ID 16747, being an approximate 33.011 acre tract of land in Collin County, Texas, legally described as Abstract No. A1009 in the Mckinzie Wilhite Survey, Tract 2;
- NNNNNN.131 Collin CAD Property ID 2137873, being an approximate 28.693 acre tract of land in Collin County, Texas, legally described as Abstract No. A1008 in the Mckinzie Wilhite Survey, Tract 2;
- OOOOOO.132 Collin CAD Property ID 2122502, being an approximate 17.369 acre tract of land in Collin County, Texas, legally described as Abstract No. A1030 in the Jonathan Westover Survey, Sheet 3, Tract 5;
- PPPPPP.133 Collin CAD Property ID 2691506, being an approximate 1.162 acre tract of land in Collin County, Texas, legally described as Abstract No. A1030 in the Jonathan Westover Survey, Sheet 3, Tract 8;
- QQQQQQ.134 Collin CAD Property ID 965762, being an approximate 19.047 acre tract of land in Collin County, Texas, legally described as Abstract No. A1030 in the Jonathan Westover Survey, Sheet 3, Tract 3.

Mayor Terry noted that item XXX.107 would be pulled out and voted on separately, and items RRRR through EEEEE should read "Oak Hill Country Estates" in place of Prairie Meadows Estates. Councilman Hopkins moved to approve. Councilman Anderson seconded. Motion carried. 4-yes;0-no.

XXX.107 Councilwoman Koehne moved to approve (acknowledging that a letter agreement is to follow and they are to meet City Fire Code). Councilman Hopkins seconded. Motion carried. 5-yes;0-no.

3. Consider and act on approving, and authoring the City Manager to execute, a Chapter 43 Agricultural Agreement and/or Chapter 212 ETJ Development Agreement for any property that is listed on this agenda to be annexed by ordinance if the owner has executed a proposed agreement and requested approval thereof in lieu of annexation.

Councilman Hopkins moved to approve. Councilman Nabors seconded. Motion carried. 6-yes;0-no.

4. Annexation Ordinances:

- A.1. Consider and act upon Ordinance 2017-73 annexing the hereinafter described property known as: Denton CAD Property ID 84821, being an approximate 10.0 acre tract of land in Denton County, Texas, legally described as Abstract No. 1106A in the Aaron Ray Survey, Tract 5 ; Denton CAD Property ID 52816, being an approximate 16.0 acre tract of land in Denton County, Texas, legally described as Abstract 0903A in the T. McIntire Survey, Tract 6 ; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- B.6. Consider and act upon Ordinance 2017-74 annexing the hereinafter described property known as: Denton CAD Property ID 52718, being an approximate 5.0 acre tract of land in Denton County, Texas, legally described as Abstract 1411A in the F. Wilkerson Survey, Tract 15; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilman Nabors seconded. Motion carried. 6-yes;0-no.

- C.8. Consider and act upon Ordinance 2017-75 annexing the hereinafter described property known as: Denton CAD Property ID 52803, being an approximate 113.55 acre tract of land in Denton County, Texas, legally described as Abstract 0309A in the Thomas B. Cox Survey, Tract 1; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- D.9. Consider and act upon Ordinance 2017-76 annexing the hereinafter described property known as: Denton CAD Property ID 52769, being an approximate 36.374 acre tract of land in Denton County, Texas, legally described as Abstract No. 1106A in the Aaron Ray Survey, Tract 5; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Hopkins seconded. Motion carried. 6-yes;0-no.

- E.10. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Denton CAD Property ID 75820, being an approximate 11.049 acre tract of land in Denton County, Texas, legally described as Abstract No. 0791A in the John Morton Survey, Tract 5; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- F.12. Consider and act upon Ordinance 2017-77 annexing the hereinafter described property known as: Denton CAD Property ID 178532, being an approximate 8.002 acre tract of land in Denton County, Texas, legally described as Abstract No. 0791A in the John Morton Survey, Tract 8A; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- G.13. Consider and act upon Ordinance 2017-78 annexing the hereinafter described property known as: Denton CAD Property ID 203151, being an approximate 5.388 acre tract of land in Denton County, Texas, legally described as Eastern Hills Estates, Lot 5B; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- H.14. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Denton CAD Property ID 191266, being an approximate 10.967 acre tract of land in Denton County, Texas, legally described as Eastern Hills Estates, Lot 2; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- I.15. Consider and act upon Ordinance 2017-79 annexing the hereinafter described property known as: Denton CAD Property ID 176549, being an approximate 40.223 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 12F; Denton CAD Property ID 176550, being an approximate 1.0 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 12F(1); Denton CAD Property ID 176551, being an approximate 0.22 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 12F(2); Denton CAD Property ID 168111, being an approximate 1.0 acre tract of land in Denton County, Texas, legally described as Abstract 0211A in the Robert Cowan Survey, Tract 12C; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilman Nabors seconded. Motion carried. 6-yes;0-no.

- J.19. Consider and act upon Ordinance 2017-80 annexing the hereinafter described property known as: Denton CAD Property ID 187667, being an approximate 1.83 acre tract of land in Denton County, Texas, legally described as Lot 1, Meadow View Estates; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- K.20. Consider and act upon Ordinance 2017-81 annexing the hereinafter described property known as: Denton CAD Property ID 84189, being an approximate 29.9897 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 23; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilman Nabors seconded. Motion carried. 6-yes;0-no.

- L.26. Consider and act upon Ordinance 2017-82 annexing the hereinafter described property known as: Denton CAD Property ID 84197, being an approximate 10.0 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 28; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to

include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- M.29. Consider and act upon Ordinance 2017-83 annexing the hereinafter described property known as: Denton CAD Property ID 52939, being an approximate 40.4163 acre tract of land in Denton County, Texas, legally described as Abstract 0211A in the Robert Cowan Survey, Tract 26; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- N.30. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Denton CAD Property ID 699148, being an approximate 1.0 acre tract of land in Denton County, Texas, legally described as Abstract 0211A of the Robert Cowan Survey, Tract 16A; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- O.35. Consider and act upon Ordinance 2017-84 annexing the hereinafter described property known as: Denton CAD Property ID 52916, being an approximate 32.12 acre tract of land in Denton County, Texas, legally described as Abstract A0211A, A. Cowan Survey, Tract 42; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Anderson moved to approve. Councilman Webber seconded. Motion carried. 6-yes;0-no.

- P.36. Consider and act upon Ordinance 2017-85 annexing the hereinafter described property known as: Denton CAD Property ID 75333, being an approximate 10.81 acre tract of land in Denton County, Texas, legally described as Abstract A0211A, A. Cowan Survey, Tract 45; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- Q.37. Consider and act upon Ordinance 2017-86 annexing the hereinafter described property known as: Denton CAD Property ID 52895, being an approximate 10.684 acre tract of land in Denton County, Texas, legally described as Abstract A0211A, A. Cowan Survey, Tract 44; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilwoman Roberts seconded. Motion carried. 6-yes;0-no.

- R.41. Consider and act upon Ordinance 2017-87 annexing the hereinafter described property known as: Denton CAD Property ID 52923, being an approximate 24.22 acre tract of land in Denton County, Texas, legally described as Abstract No. 0211A in the Robert Cowan Survey, Tract 50; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- S.44. Consider and act upon Ordinance 2017-88 annexing the hereinafter described property known as: Denton CAD Property ID 101229, being an approximate 5.0 acre tract of land in Denton County, Texas, legally described as Abstract A0211A, Cowan Survey, Tract 53; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Hopkins seconded. Motion carried. 6-yes;0-no.

- T.45. Consider and act upon Ordinance 2017-89 annexing the hereinafter described property known as: Denton CAD Property ID 52932, being an approximate 4.765 acre tract of land in Denton County, Texas, legally described as Abstract A0211A, Cowan Survey, Tract 54; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilwoman Koehne seconded. Motion carried. 6-yes;0-no.

- U.47. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Denton CAD Property ID 52664, being an approximate 44.495 acre tract of land in Denton County, Texas, legally described as Abstract A1265-A, A. Thompson Survey, Tract 1; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- V.48. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Denton CAD Property ID 254126, being an approximate 1.799 acre tract of land in Denton County, Texas, legally described as Abstract A125A, A. Thompson Survey, Tract 1C; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- W.49. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Denton CAD Property ID 254125, being an approximate 1.799 acre tract of land in Denton County, Texas, legally described as Abstract A125A, A. Thompson Survey, Tract 1B; and any right-

of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- X.50. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Denton CAD Property ID 254127, being an approximate 1.799 acre tract of land in Denton County, Texas, legally described as Abstract A125A, A. Thompson Survey, Tract 1D; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- Y.52. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 964790, being an approximate 22.188 acre tract of land in Collin County, Texas, legally described as Abstract A0788, Spencer Rice Survey, Tract 3; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action

- Z.53. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 1647374, being an approximate 16.584 acre tract of land in Collin County, Texas, legally described as Abstract A0788, Spencer Rice Survey, Tract 5; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- AA.55. Consider and act upon Ordinance 2017-90 annexing the hereinafter described property known as: Collin CAD Property ID 2551056, being an approximate 33.693 acre tract of land in Collin County, Texas, legally described as Abstract A0788, Spencer Rice Survey, Tract 7; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilwoman Roberts seconded. Motion carried. 6-yes;0-no.

- BB.56. Consider and act upon Ordinance 2017-91 annexing the hereinafter described property known as: Collin CAD Property ID 2551057, being an approximate 8.0 acre tract of land in Collin County, Texas, legally described as Abstract A0788, Spencer Rice Survey, Tract 23; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- CC.57. Consider and act upon Ordinance 2017-92 annexing the hereinafter described property known as: Collin CAD Property ID 964807, being an approximate 2.806 acre tract of land in Collin County, Texas, legally described as Abstract A0788, Spencer Rice Survey, Tract 4; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- DD.60. Consider and act upon Ordinance 2017-93 annexing the hereinafter described property known as: Collin CAD Property ID 2551058, being an approximate 19.817 acre tract of land in Collin County, Texas, legally described as Abstract No. A0788 in the Spencer Rice Survey, Tract 22; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- EE.64. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 2545877, being an approximate 1.0 acre tract of land in Collin County, Texas, legally described as Abstract No. A0408 in the P F Hutchinson Survey, Tract 19; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- FF.65. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 2545876, being an approximate 9.96 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 13; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- GG.68. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 1647383, being an approximate 6.546 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 10; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- HH.70. Consider and act upon Ordinance 2017-94 annexing the hereinafter described property known as: Collin CAD Property ID 2120833, being an approximate 39.965 acre tract of land in Collin County, Texas, legally described as Abstract A0262, William Deavenport Survey, Tract 4; and any right-of-way adjacent to

said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilman Nabors seconded. Motion carried. 6-yes;0-no.

- II.74. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 1716860, being an approximate 1.262 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 11; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- JJ.75. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 1716879, being an approximate 13.448 acre tract of land in Collin County, Texas, legally described as Abstract A0408, P.F. Hutchinson Survey, Tract 12; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- KK.76. Consider and act upon Ordinance 2017-95 annexing the hereinafter described property known as: Collin CAD Property ID 1622355, being an approximate 10.27 acre tract of land in Collin County, Texas, legally described as Abstract No. A0408 in the P F Hutchinson Survey, Tract 4; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilwoman Roberts seconded. Motion carried. 6-yes;0-no. Councilman Anderson left the dais at 5:23 p.m. and returned at 5:24 p.m.

- LL.77. Consider and act upon Ordinance 2017-96 annexing the hereinafter described property known as: Collin CAD Property ID 1639329, being an approximate 10.26 acre tract of land in Collin County, Texas, legally described as Abstract No. A0408 in the P F Hutchinson Survey, Tract 7; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- MM.79. Consider and act upon Ordinance 2017-97 annexing the hereinafter described property known as: Collin CAD Property ID 2121105, being an approximate 4.997 acre tract of land in Collin County, Texas, legally described as Abstract No. A0408 in the P F Hutchinson Survey, Tract 16; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- NN.81. Consider and act upon Ordinance 2017-98 annexing the hereinafter described property known as: Collin CAD Property ID 2020231, being an approximate 3.52 acre tract of land in Collin County, Texas, legally described as Abstract No. A0408 in the P F Hutchinson Survey, Tract 14; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilwoman Koehne seconded. Motion carried. 6-yes;0-no.

- OO.82. Consider and act upon Ordinance 2017-99 annexing the hereinafter described property known as: Collin CAD Property ID 2517630, being an approximate 3.728 acre tract of land in Collin County, Texas, legally described as Abstract No. A0408 in the P F Hutchinson Survey, Tract 18; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Hopkins seconded. Motion carried. 6-yes;0-no.

- PP.85. Consider and act upon Ordinance 2017-100 annexing the hereinafter described property known as: Collin CAD Property ID 991332, being an approximate 109.78 acre tract of land in Collin County, Texas, legally described as Abstract A0137, MD Bullion Survey, Tract 1; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- QQ.88. Consider and act upon Ordinance 2017-101 annexing the hereinafter described property known as: Collin CAD Property ID 998095, being an approximate 30.0 acre tract of land in Collin County, Texas, legally described as Abstract A0943, IC Williamson Survey, Tract 11; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- RR.94. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 991118, being an approximate 2.5 acre tract of land in Collin County, Texas, legally described as Abstract A0132, BBB&C Railway Co. Survey, Tract 5; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- SS.95. Consider and act upon Ordinance 2017-102 annexing the hereinafter described property known as: Collin CAD Property ID 2663826, being an approximate 0.372 acre tract of land in Collin County, Texas, legally described as Abstract A0943 IC Williamson Survey, Tract 23; Collin CAD Property ID 2663829, being an approximate 1.458 acre tract of land in Collin County, Texas, legally described as Abstract A0132, BBB&C Railway Co. Survey, Tract 40; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Anderson moved to approve. Councilman Nabors seconded. Motion carried. 6-yes;0-no.

- TT.96. Consider and act upon Ordinance 2017-103 annexing the hereinafter described property known as: Collin CAD Property ID 998068, being an approximate 1.0 acre tract of land in Collin County, Texas, legally described as Abstract A0943, IC Williamson Survey, Tract 8; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- UU.97. Consider and act upon Ordinance 2017-104 annexing the hereinafter described property known as: Collin CAD Property ID 2663827, being an approximate 0.17 acre tract of land in Collin County, Texas, legally described as Abstract A0943, Williamson Survey, Tract 24; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilwoman Roberts seconded. Motion carried. 6-yes;0-no.

- VV.98. Consider and act upon Ordinance 2017-105 annexing the hereinafter described property known as: Collin CAD Property ID 963229, being an approximate 6.0 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14 Survey, Sheet 2, Tract 75; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilman Nabors seconded. Motion carried. 6-yes;0-no.

- WW.99. Consider and act upon Ordinance 2017-106 annexing the hereinafter described property known as: Collin CAD Property ID 2120666, being an approximate 28.24 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14 Survey, Sheet 2, Tract 60; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- XX.100. Consider and act upon Ordinance 2017-107 annexing the hereinafter described property known as: Collin CAD Property ID 962765, being an approximate 3.551 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14 Survey, Sheet 2, Tract 35; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- YY.101. Consider and act upon Ordinance 2017-108 annexing the hereinafter described property known as: Collin CAD Property ID 2760195, being an approximate 1.109 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14 Survey, Sheet R02, Tract 35-1; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- ZZ.102. Consider and act upon Ordinance 2017-109 annexing the hereinafter described property known as: Collin CAD Property ID 2719498, being an approximate 30.90 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14 Survey, Sheet 2, Tract 1; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- AAA.103. Consider and act upon Ordinance 2017-110 annexing the hereinafter described property known as: Collin CAD Property ID 2756720, being an approximate 18.74 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14, Sheet 2, Tract 99; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilwoman Roberts seconded. Motion carried. 6-yes;0-no.

- BBB.104. Consider and act upon Ordinance 2017-111 annexing the hereinafter described property known as: Collin CAD Property ID 963103, being an approximate 11.071 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14 Survey, Sheet 2, Tract 65-9; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Anderson moved to approve. Councilwoman Roberts seconded. Motion carried. 6-yes;0-no.

- CCC.107. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 2120670, being an

approximate 7.438 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14 Survey, Sheet 4, Tract 86; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- DDD.108. Consider and act upon Ordinance 2017-112 annexing the hereinafter described property known as: Collin CAD Property ID 2501431, being an approximate 1.9829 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 3; Collin CAD Property ID 2501438, being an approximate 2.1066 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 10; Collin CAD Property ID 2501445, being an approximate 2.0150 acre tract of land in Collin County, Texas, legally described as Prairie Meadows Estates, Lot 17; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilman Webber seconded. Motion carried. 6-yes;0-no.

- EEE.109. Consider and act upon Ordinance 2017-113 annexing the hereinafter described property known as: Collin CAD Property ID 992199, being an approximate 6.9068 acre tract of land in Collin County, Texas, legally described as Abstract No. A0170 in the Collin County School Land #15 Survey, Sheet 2, Tract 24; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- FFF.111.A. Consider and act upon Ordinance 2017-114 annexing the hereinafter described property known as: Collin CAD Property ID 992117, being an approximate 1.994 acre tract of land in Collin County, Texas, legally described as Abstract No. A0170 in the Collin County School Land #15 Survey, Sheet 2, Tract 17; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- GGG.111.B. Consider and act upon Ordinance 2017-115 annexing the hereinafter described property known as: Collin CAD Property ID 1960300, being an approximate 3.147 acre tract of land in Collin County, Texas, legally described as Abstract No. A0170 in the Collin County School Land #15 Survey, Sheet 2, Tract 60; Collin CAD Property ID 11615, being an approximate 1.1558 acre tract of land in Collin County, Texas, legally described as Abstract No. A0170 in the Collin County School Land #15 Survey, Sheet 2, Tract 58; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Hopkins seconded. Motion carried. 6-yes;0-no.

- HHH.116A. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 2038571, being an approximate 1.312 acre tract of land in Collin County, Texas, legally described Oak Hill Country Estates, Lot 8; Collin CAD Property ID 2038572, being an approximate 1.363 acre tract of land in Collin County, Texas, legally described as Oak Hill Country Estates, Lot 9; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- III.116.B. Consider and act upon Ordinance 2017-116 annexing the hereinafter described property known as: Collin CAD Property ID 2506192, being an approximate 1.397 acre tract of land in Collin County, Texas, legally described as Copperfield Settlement, Lot 3; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- JJJ.117-118. Consider and act upon Ordinance 2017-117 annexing the hereinafter described property known as: Collin CAD Property ID 2133590, being an approximate 2.491 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 94; Collin CAD Property ID 962391, being an approximate 2.74 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 4; Collin CAD Property ID 2120662, being an approximate 5.0 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 9; Collin CAD Property ID 962453, being an approximate 16.97 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 8; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Anderson moved to approve. Councilman Nabors seconded. Motion carried. 6-yes;0-no.

- KKK.120. Consider and act upon Ordinance 2017-118 annexing the hereinafter described property known as: Collin CAD Property ID 2006703, being an approximate 5.0 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 32; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

LLL.121.A. Consider and act upon Ordinance 2017-119 annexing the hereinafter described property known as: Collin CAD Property ID 1986888, being an approximate 0.6 acre tract of land in Collin County, Texas, legally described as Abstract A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 87; Collin CAD Property ID 2121885, being an approximate 7.4 acre tract of land in Collin County, Texas, legally described as Abstract A0771 in the C P Rice Survey, Tract 11; Collin CAD Property ID 2680156, being an approximate 6.09 acre tract of land in Collin County, Texas, legally described as Abstract A0771 in the C P Rice Survey, Tract 12; Collin CAD Property ID 2683029, being an approximate 1.95 acre tract of land in Collin County, Texas, legally described as Carroll Addition, Block A, Lot 1; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

MMM.121.B. Consider and act upon Ordinance 2017-120 annexing the hereinafter described property known as: Collin CAD Property ID 2016580, being an approximate 5.006 acre tract of land in Collin County, Texas, legally described as Abstract A0771 in the C P Rice Survey, Tract 15; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

NNN.124. Consider and act upon Ordinance 2017-121 annexing the hereinafter described property known as: Collin CAD Property ID 962630, being an approximate 16.9873 acre tract of land in Collin County, Texas, legally described as Abstract No. A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 24; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilwoman Roberts seconded. Motion carried. 6-yes;0-no.

OOO.125. Consider and act upon Ordinance 2017-122 annexing the hereinafter described property known as: the entirety of Summerview Lane as designated on Final Plat, Summerview Country Estates, Phase 2, Levin Routh Survey, Abstract 779, Collin County, Texas; ~~Collin CAD Property ID 2131658, being an approximate 3.021 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates Phase 2, Block A, Lot 4;~~ Collin CAD Property ID 2131656, being an approximate 2.992 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates Phase 2, Block A, Lot 2; Collin CAD Property ID 2658426, being an approximate 1.675 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates Phase 2, Block A, Lot 1ra; Collin CAD Property ID 2118125, being an approximate 2.411 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates, Block A, Lot 3; Collin CAD Property ID 2131660, being an approximate 2.37 acre tract of land in Collin

County, Texas, legally described as Summerview Country Estates Phase 2, Block A, Lot 6; Collin CAD Property ID 2131661, being an approximate 2.371 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates Phase 2, Block A, Lot 7; Collin CAD Property ID 2131662, being an approximate 2.371 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates Phase 2, Block A, Lot 8; Collin CAD Property ID 2118134, being an approximate 1.0 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates, Block B, Lot 4; Collin CAD Property ID 2118127, being an approximate 2.416 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates, Block B, Lot 5; ~~Collin CAD Property ID 2118128, being an approximate 2.059 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates, Block B, Lot 7;~~ and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

City Attorney Julie Fort noted the lines in the caption above that have been deleted due to those properties signing agreements. Councilman Webber moved to approve. Councilman Hopkins seconded. Motion carried. 6-yes;0-no.

- PPP.129. Consider and act upon Ordinance 2017-123 annexing the hereinafter described property known as: Collin CAD Property ID 2691386, being an approximate 9.0 acre tract of land in Collin County, Texas, legally described as Abstract No. A0779 in the Levin Routh Survey, Tract 18; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

- QQQ.130. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 16747, being an approximate 33.011 acre tract of land in Collin County, Texas, legally described as Abstract No. A1009 in the Mckinzie Wilhite Survey, Tract 2; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- RRR.131. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 2137873, being an approximate 28.693 acre tract of land in Collin County, Texas, legally described as Abstract No. A1008 in the Mckinzie Wilhite Survey, Tract 2; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- SSS.135. Consider and act upon Ordinance 2017-124 annexing the hereinafter described property known as: Collin CAD Property ID 1521035, being an approximate 7.5 acre tract of land in Collin County, Texas, legally described as Abstract No. A0167 in the Collin County School Land #14 Survey, Sheet 1, Tract 79; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Nabors moved to approve. Councilman Anderson seconded. Motion carried. 6-yes;0-no.

III. **ADJOURNMENT:**

There being no further comment Mayor Terry adjourned the meeting at 5:47 p.m.

Sean Terry, Mayor

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

Date Minutes Approved



**CITY COUNCIL PUBLIC HEARING/SPECIAL MEETING
CELINA CITY HALL CONFERENCE ROOM
142 N. OHIO DR.
CELINA, TEXAS 75009
THURSDAY, NOVEMBER 30, 2017 AT 2:59 P.M.**

MINUTES

I. CALL TO ORDER AND ANNOUNCE A QUORUM PRESENT:

Mayor Terry called the meeting to order at 3:02 p.m. Councilmembers present were Bill Webber, Andy Hopkins and Mindy Koehne. Councilman Wayne Nabors arrived at 3:04 p.m. Councilwoman Carmen Roberts was absent.

II. ACTION ITEMS:

- A. Consider and act upon Ordinance 2017-125 annexing the hereinafter described property known as: Collin CAD Property ID 2071428, being an approximate 9.993 acre tract of land in Collin County, Texas, legally described as Abstract A0167, Collin County School Land #14 Survey, Sheet 2, Tract 90; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Hopkins seconded. Motion carried. 3-yes;0-no.

- B. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 2118132, being an approximate 2.579 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates, Block A, Lot 1; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- C. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Collin CAD Property ID 2118128, being an approximate 2.059 acre tract of land in Collin County, Texas, legally described as Summerview Country Estates, Block B, Lot 7; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- D. Consider and act upon Ordinance _____ annexing the hereinafter described property known as: Denton CAD Property ID 52664, being an approximate 44.495 acre tract of land in Denton County, Texas, legally described as Abstract A1265-A, A. Thompson Survey, Tract 1; Denton CAD Property ID 254126, being an approximate 1.799 acre tract of land in Denton County, Texas, legally described as Abstract A125A, A. Thompson Survey, Tract 1C; Denton

CAD Property ID 254125, being an approximate 1.799 acre tract of land in Denton County, Texas, legally described as Abstract A125A, A. Thompson Survey, Tract 1B; Denton CAD Property ID 254127, being an approximate 1.799 acre tract of land in Denton County, Texas, legally described as Abstract A125A, A. Thompson Survey, Tract 1D; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

No action.

- E. Consider and act upon revoking ratification of City Manager's signature on the following Chapter 43 and Chapter 212 agreements because owner's did not sign version of agreements approved by the City: (a) Collin CAD Property ID 2020233, being an approximate 14.056 acre tract of land in Collin County, Texas, legally described as Abstract A0788, Spencer Rice Survey, Tract 8 and (b) Collin CAD Property ID 2121104, being an approximate 26.944 acre tract of land in Collin County, Texas, legally described as Abstract No. A0408 in the P F Hutchinson Survey, Tract 15.

No action.

- F. Consider and act upon Ordinance 2017-128 annexing the hereinafter described property known as: Collin CAD Property ID 2020233, being an approximate 14.056 acre tract of land in Collin County, Texas, legally described as Abstract A0788, Spencer Rice Survey, Tract 8; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Hopkins moved to approve. Councilman Webber seconded. Motion carried. 4-yes;0-no.

- G. Consider and act upon Ordinance 2017-129 annexing the hereinafter described property known as: Collin CAD Property ID 2121104, being an approximate 26.944 acre tract of land in Collin County, Texas, legally described as Abstract No. A0408 in the P F Hutchinson Survey, Tract 15; and any right-of-way adjacent to said property; extending the boundary limits of the City so as to include the described property, adopting a Service Plan and updating the official map.

Councilman Webber moved to approve. Councilman Hopkins seconded. Motion carried. 4-yes;0-no.

III. ADJOURNMENT:

There being no further comment Mayor Terry adjourned the meeting at 3:05 p.m.

Sean Terry, Mayor

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

Date Minutes Approved



Fire Department
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Mark Metdker, Public Safety Director
CC: Jason Laumer, City Manager
Date: December 12, 2017
Re: Chief recommends approval

Action Requested:

Consider an act upon an agreement by and between the City of Celina and Collin County for Dispatch Services. (Metdker)

Background Information:

Collin County Sheriff's Office has been dispatching us for years. This is simply a means to continue that practice.

Board Review/Citizen Input:

N/A

Alternatives:

none currently

Financial Considerations:

We are not charged for this service

Legal Review:

Supporting Documents:

Staff Recommendation:

Approval

INTERLOCAL DISPATCH SERVICES AGREEMENT

This agreement is entered into on the _____ day of _____, 2017, by and between the Celina Fire Department (the “Fire Department”) and Collin County, a political subdivision of the State of Texas (the “County”).

RECITALS

1. The County, through the Sheriff’s Office, owns and operates communication facilities used in dispatching its law enforcement and emergency service personnel.
2. The Fire Department desires to obtain certain dispatch services from the County. Therefore, under the authority of Texas Government Code, Title 7, Interlocal Cooperation Act, Section 791 et seq., the parties agree as follows:

SECTION 1. DEFINITIONS

DISPATCH SERVICES. The term “Dispatch Services” means all services necessary for the Collin County Sheriff’s Office to receive calls for Fire/EMS services within the Fire Department jurisdiction and to dispatch the Fire personnel in response to such calls.

HOSTING SERVICES. The term “Hosting Services” means the County will store the Fire Department data as it relates to dispatch services.

SECTION 2. TERM

2.01 TERM. The term of this agreement shall commence on October 1, 2017, and shall continue in full force and effect through September 30, 2018.

2.02 TERMINATION. Either party may terminate this agreement by giving ninety (90) days written notice to the other party.

SECTION 3. SERVICES

3.01 The County agrees to provide dispatch services through the Sheriff's Office to the Fire Department in the same manner and under the same work schedule as such services are provided in the operation of the County's law enforcement personnel.

3.02 Hosting Services. The County agrees to provide Hosting Services to the Fire Department and that it will provide 95% uptime availability of the service as covered herein.

3.03 Scheduled Maintenance: The Fire Department hereby acknowledges that the County may, from time to time, perform maintenance service on the County network, with or without notice to the Fire Department, which may result in the unavailability of the County network. Emergency maintenance and maintenance for which the County has not given the Fire Department notice in accordance with this Agreement shall not be deemed scheduled maintenance for purposes of this Agreement. The County will make every effort to notify the Fire Department prior to scheduled maintenance. Notice may be given in various forms including but not limited to email notice and/or phone call.

3.04 Hosted Data Ownership. The Fire Department shall have sole ownership of the Fire Department hosted data and the County shall make no claim to ownership of Fire Department hosted data.

3.05 Hosted Data Back Up. The County will back up the Fire Department hosted data on a daily basis. All data backups will meet Criminal Justice Information Systems (CJIS) requirements. Every effort is made to ensure the reliability of the backed up data in the event that it would be necessary to restore a database. The County, however, makes no guaranties that the backed up database will be error free. Upon request, the County will provide to the Fire Department a current database backup that

can be restored to an alternate location to verify the contents and confirm the quality of the backup. All services required to provide the Fire Department data and/or verify data will be provided in accordance with the County's current rates.

3.06 VPN Agreement. For each user the Fire Department is required to complete and return **Attachment (A)**, Connection Policy and Agreement Form for the Virtual Private Network (VPN) and return to County to the address in 9.02 item (C). No access will be given to user unless County has received a VPN Agreement.

SECTION 4. NONEXCLUSIVITY OF SERVICE PROVISION

The parties agree that the County may contract to perform services similar or identical to those specified in this agreement for such additional governmental or public entities as the County, in its sole discretion, sees fit.

SECTION 5. COMPENSATION

5.01 The dispatch service charges for FY2018 are in the amount of \$0.

SECTION 6. CIVIL LIABILITY

6.01 Any civil liability relating to the furnishing of services under this agreement shall be the responsibility of the Fire Department. The parties agree that the County shall be acting as agent for the Fire Department in performing the services contemplated by this agreement.

6.02 The Fire Department shall hold the County free and harmless from any obligation, costs, claims, judgments, attorney's fees, attachments, and other such liabilities arising from or growing out of the services rendered to the Fire Department pursuant to the terms of this agreement or in any way connected with the rendering of said services, except when the same shall arise because of the willful misconduct or culpable negligence of the County, and the County is adjudged to be guilty of willful misconduct or culpable negligence by a court of competent jurisdiction.

SECTION 7. AMENDMENT

This agreement shall not be amended or modified other than in a written agreement signed by the parties.

SECTION 8. CONTROLLING LAW

This agreement shall be deemed to be made under, governed by, and construed in accordance with the laws of the State of Texas.

SECTION 9. NOTICES

9.01 FORM OF NOTICE. Unless otherwise specified, all communications provided for in this agreement shall be in writing and shall be deemed delivered, whether actually received or not, forty-eight (48) hours after deposit in the United States mail, first class, registered or certified, return receipt requested, with proper postage prepaid or immediately when delivered in person.

9.02 ADDRESSES. All communications provided for in this agreement shall be addressed as follows:

(A) Collin County, to:
Purchasing Department
2300 Bloomdale #3160
McKinney, Texas 75071

(B) If to the Fire Department, to:

(C) Collin County, Virtual Private Network (VPN) to:
Information Technology Department
2300 Bloomdale #3198
McKinney, Texas 75071

Or to such person at such address as may from time to time be specified in a notice given as provided in this Section 9. In addition, notice of termination of this agreement by the Fire Department shall be provided by the Fire Department to the County Judge of Collin County as follows:

The Honorable Keith Self
 Collin County Judge
 Collin County Administration Building
 2300 Bloomdale Rd. Suite 4192
 McKinney, Texas 75071

SECTION 10. CAPTIONS

The headings to the various sections of this agreement have been inserted for the convenient reference only and shall not modify, define, limit or expand the express provision of this agreement.

SECTION 11. COUNTERPARTS

This agreement may be executed in counterparts, each of which, when taken separately, shall be deemed an original.

SECTION 12. OBLIGATIONS OF CONDITION

All obligations of each party under this agreement are conditions to further performance of the other party's continued performance of its obligation under the agreement.

SECTION 13. EXCLUSIVE RIGHT TO ENFORCE THIS AGREEMENT

The County and the Fire Department have the exclusive right to bring suit to enforce this Agreement, and no party may bring suit, as a third-party beneficiary or otherwise, to enforce this agreement.

SECTION 14. PRIOR AGREEMENTS SUPERSEDED

This agreement constitutes the sole and only agreement of the parties hereto and supersedes any prior understanding or written oral agreements between the parties respecting the services to be provided under this agreement.

IN WITNESS WHEREOF, THE PARTIES HERETO HAVE EXECUTED THIS AGREEMENT AS OF THE DAY AND YEAR FIRST ABOVE WRITTEN.

“COUNTY”

COLLIN COUNTY, TEXAS

BY: _____

TITLE: _____

DATE: _____

“FIRE DEPARTMENT”

BY: _____

TITLE: _____

DATE: _____

Attachment “A”

Law Enforcement Officers remote connectivity Policy and Agreement Form Virtual Private Network (VPN)

1.0 Purpose

The purpose of this document is to provide the framework for granting remote access to Collin County services/equipment through a Virtual Private Network (VPN) so that an Authorized Party of a law enforcement agency (Agency) may access its data hosted on Collin County’s network.

2.0 Scope

This policy applies to all Law Enforcement Officers utilizing VPN to access the Collin County network (such persons referred to herein as “Authorized Parties”). This policy applies to all Collin County VPN implementations.

3.0 Policy

Authorized parties may utilize the benefits of VPN, which are a "user managed" service. This means that the Authorized party is responsible for selecting an Internet Service Provider (ISP), coordinating installation, installing any required software, and paying associated fees as may be required to access the VPN.

Additionally,

1. It is the responsibility of the Authorized Party to ensure that unauthorized users are not allowed access to Collin County internal networks. User accounts and passwords are NOT to be shared with anyone.
2. Authorized Parties and the Collin County employees sponsoring the request for VPN are responsible for defining what services/equipment/software the Authorized Parties need access to. Access will be restricted to only those defined objects. Attempting to connect or access any service/device not defined will be considered a violation of the Collin County VPN policy and will be reported to the Authorized Party’s agency
3. The Authorized Parties and the Collin County employees sponsoring the VPN request are also responsible for defining the time scope that the VPN account will be active. All accounts are setup with an expiration date not to exceed 6 months, unless otherwise authorized to be a longer timeframe or permanent by the County.
4. VPN use is to be controlled using either a one-time password authentication such as a token device or a public/private key system with a strong pass phrase.
5. When actively connected to the county network, the VPN will force all traffic to and from the remote PC over the VPN tunnel; all other traffic will be dropped.
6. Dual (split) tunneling is NOT permitted; only one network connection is allowed.
7. VPN gateways will be established and managed by Collin County Information Technology Department.
8. All computers connected to Collin County internal networks via VPN or any other technology must use the most up-to-date anti-virus software from a reputable IT agency; this includes personal computers.
9. All Authorized Parties connecting to the Collin County internal networks via VPN or any other technology must keep their systems up to date with the latest security patches for their operating system and applications installed on their connecting systems.
10. Authorized Parties may be automatically disconnected from Collin County’s network after sixty minutes of inactivity. The user must then logon again to reconnect to the network.
11. Authorized Parties that are not Collin County owned equipment must comply with the Collin County acceptable use policy when accessing the Internet while connected through the VPN.
12. Only approved VPN clients may be used.
13. Upon termination of a contract from Collin County, or at the request of the Collin County staff, the Authorized Party must uninstall the VPN connection from the Authorized Party’s computer.
14. Agency expressly agrees to notify the County of staffing changes involving an Authorized Party with access to the County’s network within 24 hours or next business day.

15. After six months of expired inactivity, Active Directory and VPN accounts of an Authorized Party will be permanently deleted, unless otherwise approved by the County.
16. Accounts will be locked out after a certain number of failed attempts.
17. Authorized Parties who have lost their password will have to contact their sponsoring agency to request a password reset. The sponsoring agency will then contact Collin County IT to reset the password for the VPN user. The sponsoring agency is the Sheriff's Office.
18. It is the responsibility of the Authorized Party to install, configure, setup and support any issues with their systems to connect to Collin County based on the information provided to them.
19. Authorized Parties connect at their own risk and Collin County is not responsible for any damages that they may incur from connecting through the VPN to Collin County
20. Prior to acquiring VPN access all Authorized Parties will be required to pass a background check unless otherwise approved by the County.
21. If the County migrates to a new network connection technology it is the responsibility of the Agency to budget and obtain any required technology upgrade in order to maintain their network connection to the County. The Agency will be provided advance notification for this change.

4.0 Granting Access

To obtain access via VPN, the Agency and Authorized Party must be sponsored by a party currently employed at Collin County and IT must agree this access is needed for the Collin County information systems. The Agency and Authorized Party must sign this form agreeing to protect the security of the Collin County network. For external Authorized Parties, the Request for VPN Access must be signed and approved by the Manager who is responsible for the external Authorized Party's use. VPN expiration will be based on the contract length unless further time is requested by Collin County Management. The initial setup and testing will be performed during normal operating hours, Monday – Friday, 8 am – 5 pm, and requires a minimal of two weeks' notice to schedule.

5.0 Enforcement

Collin County Information Technology Department may actively monitor the VPN concentrator for any suspicious and inappropriate activity. Any Authorized Party found to have violated any part of this policy may have their VPN access terminated immediately.

6.0 Liability

Agency expressly agrees that they shall be liable for any and all damages, including but not limited to actual, consequential, or incidental damages, for disruptions caused by their negligence or intentional misconduct, including that caused by their Authorized Parties, to the County's services/equipment resulting from or related to Agency's connection to the County's networks.

Unauthorized access or use is prohibited and will be prosecuted to the fullest extent. Anyone using this system expressly consents to monitoring and is advised that if such monitoring reveals possible evidence of criminal activity system personnel may provide the evidence of such monitoring to law enforcement officials. Anyone using the system connects at their own risk and assumes all responsibilities for any possible damage to their own equipment.

7.0 Definitions

Term	Definition
VPN	Virtual Private Network. An extension of Collin County's internal private network.
VPN Concentrator	Physical device that manages VPN connections.
VPN Client	Remote computer with VPN software utilizing VPN services.
Agency Management	Person in Agency company that can take responsibility for the liability clause of this document.

Dual (split) tunneling	When utilizing VPN, a connection (tunnel) is created to Collin County's network utilizing the Internet. Dual split tunneling allows for this connection as well as a secondary connection to another source. This technology is NOT supported when utilizing Collin County's VPN.
User	Employee, Agency, contractor, consultant, temporaries, customers, government agencies, etc.
Sponsoring Party	Collin County employee requesting access for a non-employee user to have access to Collin County services/equipment through the VPN. The employee may be someone in IT.

Agency Management's Signature (if applicable)

Printed Name: _____ Signature: _____

E-Mail Address: _____ Phone: _____ Date: _____

VPN Users Signature

Printed Name: _____ Signature: _____

E-Mail Address: _____ Phone: _____ Date: _____

Sponsoring Party's Signature

Printed Name: _____ Signature: _____

E-Mail Address: _____ Phone: _____ Date: _____

Return form to:

Caren Skipworth
2300 Bloomdale #3198
McKinney, Texas 75071



Planning and Zoning Commission
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Ben Rodriguez, Senior Planner
 CC: Jason Laumer, City Manager
 Date: December 12, 2017
 Re: Ownsby Farms Phase 1 Final Plat

Action Requested:

Consider and act upon a Final Plat for The Homestead at Ownsby Farms Phase 1, contingent on staff's comments, being a ±72.55 acre tract of land situated in the Collin County School Land Survey No. 14, Abstract No. 167, containing 205 residential lots and 11 open space lots, located west of Preston Road, south of Ownsby Parkway, east of the BNSF Railroad, and north of Frontier Parkway. (Ownsby Farms Phase 1 Final Plat) (Rodriguez)

Background Information:

Staff has reviewed the proposed Final Plat for Ownsby Farms Phase 1 and determined that the outstanding comments are minor in nature and can be addressed prior to City Council on December 12, 2017.

Board Review/Citizen Input:

At the Planning and Zoning Commission meeting on November 28, 2017 the Commission voted to approve the proposed plat (7-Yes; 0-No).

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

N/A

Supporting Documents:

Plat Exhibit

Staff Recommendation:

Staff recommends approval pending all outstanding comments are addressed prior to the plat being filed.

Revisions:	
Job #:	CEN14007
Drawn By:	SRAMSEY
Checked By:	TBRIDGES
Date:	01/12/17

A Final Plat of
**The Homestead at
Owensby Farms, Phase 1**
SITUATED IN THE COLLIN COUNTY SCHOOL
LAND NO. 14 SURVEY, ABSTRACT NUMBER 167,
CITY OF CELINA, COLLIN COUNTY, TEXAS

Attachment: CEN14007 Final Plat Owensby Farms Phase 1 Final Plat

PELOTON
LAND SOLUTIONS

SHEET
1
OF 2 SHEETS

8800 Hillwood Parkway Ste 250 | Fort Worth, TX 76177 | 817-562-3350

Owner
CADG Owensby Farms LLC
1800 Valley View Lane
Suite 300
Farmers Branch, Texas 75234
469-892-7200
Date of Preparation: October 2015

205 RESIDENTIAL LOTS,
11 OPEN SPACE / COMMON AREAS,
TOTALING 72.55 ACRES
SITUATED IN THE COLLIN COUNTY SCHOOL
LAND NO. 14 SURVEY, ABSTRACT NUMBER 167,
CITY OF CELINA, COLLIN COUNTY, TEXAS

Case No. P-201508-02

Packet Pg. 57

November 2, 2017

8:14 AM

Copyright © 2017 Peloton Land Solutions, Inc.

TBLS Firm Reg. No. 10177700

J:\Job\CEN14007_Owensby_Farms_Sur\CEN14007_PA.dwg

POINT OF BEGINNING

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOT PLATTED

NOTES

1. Selling a portion of this addition by metes and bounds is a violation of city ordinance and state law, and is subject to fines and withholding of utilities and building permits.
2. The undersigned does hereby covenant and agree that he or she or they shall construct upon the fire lane easements, as dedicated as shown hereon, a hard surface in accordance with the City of Celina's paving standards for fire lane, and that he or she or they shall maintain the same in a state of good repair at all times and keep the same free and clear of any structures, fences, trees, shrubs, or other improvements or obstruction, including but not limited to the parking of motor vehicles, trailers, boats or other impediments to the accessibility of fire apparatus. The maintenance of paving on the fire lane easements is the responsibility of the owner, and the owner shall post and maintain appropriate signs in conspicuous places along such fire lanes, stating "Fire Lane, No Parking." The local law enforcement agency(s) is hereby authorized to enforce parking regulations within the fire lanes, and to cause such fire lanes and utility easements to be maintained free and unobstructed at all times for Fire Department and emergency use.
3. The undersigned does hereby covenant and agree that the access easement may be utilized by any person or the general public for ingress and egress to public vehicular and pedestrian use and access, and for Fire Department and emergency use in, along, upon and across said premises, with the right and privilege at all times of the City of Celina, its agents, employees, workmen and representatives having ingress, egress, and regress in, along, upon and across said premises.
4. The area or areas shown on the plat as "VAM" (visibility, access and maintenance) easement(s) are hereby given and granted to the city, its successors and assigns, as an easement to provide visibility, right of access for maintenance upon and across said VAM easement. The city shall have the right but not the obligation to maintain any and all landscaping within the VAM easement. Should the city exercise this maintenance right, then it shall be permitted to remove and dispose of any and all landscaping improvements, including without limitation, any trees, shrubs, flowers, ground cover and fixtures. The city may withdraw maintenance of the VAM easement at any time. The ultimate responsibility for the VAM easement shall rest with the owners. No building, fence, shrub, tree or other improvements or growths, which in any way may endanger or interfere with the visibility, shall be constructed in, on, over, or across the VAM easement. The city shall also have the right but not the obligation to add any landscape improvements to the VAM easement, to erect any traffic control devices or signs on the VAM easement and to remove any obstruction thereon. The city, its successors, assigns, or agents shall have the right and privilege at all times to enter upon the VAM easement or any part thereof for the purposes and with all rights and privileges set forth herein.
5. The ownership, care and maintenance of all open space(common area lots is the responsibility of the HOA.
6. Detention pond to be maintained by the HOA.
7. This plat is hereby adopted by the Owners and approved by the City of Celina (called "City") subject to the following conditions which shall be binded upon the Owners, their heirs, grantees, successors and assigns: Lot 25X and Lot 33X as shown on the plat are called "Drainage and Detention Easement." The Drainage and Detention Easement within the limits of this addition, will remain accessible at all times and will be maintained in a safe and sanitary condition by the owners of the lot or lots that are traversed by or adjacent to the Drainage and Detention Easement. The City will not be responsible for the maintenance and operation of said Easement or for any damage to private property or person that results from conditions in the Easement, or for the control of erosion. No construction of any type of building, fence or any other structure within the Drainage and Detention Easement, as herein above defined shall be permitted, unless approved by the City Engineer. Provided, however, it is understood that in the event it becomes necessary for the City to erect or consider erecting any type of drainage structure in order to improve the storm drainage that may be occasioned by drainage in or adjacent to the subdivision, then in such event, the city shall have the right to enter upon the Drainage and Detention Easement at any point, or points, to investigate, survey or to erect, construct and maintain any drainage facility deemed necessary for drainage purposes. Each property owner shall keep the Drainage and Detention Easement clean and free of debris, silt, and any substance which would result in unsanitary conditions or obstruct the flow of water, and the city shall have the right of ingress and egress for the purpose of inspection and supervision of maintenance work by the property owner to alleviate any undesirable conditions which may occur. The natural drainage through the Drainage and Detention Easement is subject to storm water overflow and natural bank erosion to an extent which cannot be definitely defined. The City shall not be held liable for any damages of any nature resulting from the failure of any structure or structures, within the easement.
8. All corners set are 5/8 inch iron rods with plastic cap stamped "Peloton" unless otherwise noted.

Line Table			Line Table		
Line #	Length	Direction	Line #	Length	Direction
L6	14.14	N45°36'01"W	L43	14.14	N44°31'54"E
L7	14.14	S44°23'59"W	L44	6.88	N44°31'54"E
L9	14.14	N44°31'54"E	L45	14.14	S02°16'31"E
L10	14.94	S07°03'48"W	L46	35.36	N44°31'54"E
L11	14.14	N45°28'06"W	L47	131.31	S89°24'02"W
L12	14.14	N45°28'06"W	L48	35.05	N45°05'56"W
L13	14.14	S44°31'54"W	L49	191.15	S89°23'43"W
L14	15.05	S81°47'32"E	L51	32.00	S00°28'06"E
L15	14.14	N44°31'54"E	L54	114.20	N89°24'02"E
L16	14.14	S45°28'06"E	L56	32.00	S89°23'50"W
L17	14.14	S44°31'54"W	L71	166.76	N89°24'02"E
L18	14.14	N45°28'06"W	L72	32.00	N32°46'44"E
L19	14.14	N44°31'54"E	L78	36.06	N56°46'42"W
L20	14.36	N46°21'08"W	L79	36.06	N55°50'30"E
L21	14.14	N44°31'54"E	L82	36.06	N55°50'30"E
L22	14.14	S45°28'06"E	L83	36.06	S56°46'42"E
L23	14.14	N44°31'54"E	L84	32.00	S00°28'06"E
L24	14.14	S45°28'06"E	L98	75.89	N47°16'32"W
L25	14.14	N45°28'06"W	L104	36.06	N56°46'42"W
L26	14.14	S44°31'54"W	L111	50.00	N37°18'28"W
L27	14.14	N44°31'54"E	L112	60.00	N57°13'16"W
L28	14.14	S45°28'06"E	L113	65.00	N57°13'16"W
L31	14.14	N87°43'29"E	L114	118.99	N32°46'44"E
L32	14.14	S44°31'54"W	L124	55.00	N00°28'06"W
L33	14.14	N45°28'06"W			
L35	35.36	N45°28'06"W			
L36	13.28	S42°05'12"E			
L37	14.14	N44°31'54"E			
L38	14.14	S45°28'06"E			
L39	14.14	S44°31'54"W			
L40	14.14	N45°28'06"W			
L41	16.12	N52°12'52"E			
L42	14.14	N45°28'06"W			

Curve Table					
Curve #	Length	Radius	Delta	Chord Bearing	Chord Distance
C1	27.46'	50.00'	31°27'56"	N49°58'14"E	27.12'
C2	155.50'	57.00'	156°18'24"	S12°26'59"E	111.57'
C3	19.06'	330.00'	3°18'35"	S19°26'28"W	19.06'
C4	15.88'	50.00'	18°11'42"	N81°22'15"W	15.81'
C6	110.30'	50.00'	126°23'23"	N44°31'54"E	89.25'
C8	32.88'	150.00'	12°33'32"	S84°11'20"E	32.81'
C9	15.21'	5.00'	174°20'57"	S19°00'19"W	9.99'
C10	83.64'	375.00'	12°46'45"	N84°12'35"W	83.47'
C11	15.88'	50.00'	18°11'42"	S80°26'03"W	15.81'
C12	110.30'	50.00'	126°23'23"	S45°28'06"E	89.25'
C13	15.88'	50.00'	18°11'42"	N08°37'45"E	15.81'
C14	15.88'	50.00'	18°11'42"	N81°22'15"W	15.81'
C15	110.30'	50.00'	126°23'23"	N44°31'54"E	89.25'
C16	15.88'	50.00'	18°11'42"	S09°33'57"E	15.81'
C17	110.30'	50.00'	126°23'23"	S45°28'06"E	89.25'
C18	15.88'	50.00'	18°11'42"	S80°26'03"W	15.81'
C19	57.86'	50.00'	66°18'18"	S56°22'45"W	54.69'
C20	245.30'	57.00'	248°34'05"	N33°29'20"W	95.30'
C21	15.88'	50.00'	18°11'42"	S08°37'45"W	15.81'
C22	110.30'	50.00'	126°23'23"	N45°28'06"W	89.25'
C23	15.88'	50.00'	18°11'42"	N80°26'03"E	15.81'
C24	245.03'	57.00'	246°18'21"	S32°41'01"W	95.44'
C25	57.86'	50.00'	66°18'18"	S57°18'57"E	54.69'
C27	245.03'	57.00'	246°18'18"	S00°22'25"E	95.44'
C30	26.70'	8.50'	180°00'00"	N00°36'03"W	17.00'
C31	104.54'	325.00'	18°25'48"	S81°23'04"E	104.09'
C32	255.98'	338.50'	43°19'40"	S68°56'22"E	249.92'
C33	78.54'	50.00'	90°00'00"	N44°31'54"E	70.71'
C34	140.16'	200.00'	40°09'15"	S20°32'44"E	137.31'
C35	163.39'	200.00'	46°48'28"	N66°07'41"E	158.88'
C36	254.59'	250.00'	58°20'49"	N29°38'31"W	243.73'
C37	201.64'	365.00'	31°39'11"	N74°38'31"W	199.09'
C38	78.54'	50.00'	90°00'00"	S45°28'06"E	70.71'
C39	112.91'	300.00'	21°33'52"	S10°18'50"W	112.25'
C40	15.88'	50.00'	18°11'42"	S09°33'57"E	15.81'
C41	15.88'	50.00'	18°11'42"	N08°37'45"E	15.81'
C42	414.62'	550.00'	43°11'34"	N68°52'19"W	404.87'
C43	143.02'	368.50'	22°14'16"	S78°24'46"W	142.13'
C44	78.54'	50.00'	90°00'00"	N45°28'06"W	70.71'
C45	78.54'	50.00'	90°00'00"	S45°28'06"E	70.71'
C46	78.54'	50.00'	90°00'00"	N44°31'54"E	70.71'
C47	198.10'	200.00'	56°45'10"	N28°50'41"W	190.10'
C55	57.86'	50.00'	66°18'18"	S89°37'35"W	54.69'
C56	273.35'	361.50'	43°19'26"	S68°56'15"E	266.88'
C59	264.65'	350.00'	43°19'26"	S68°56'15"E	258.39'

WHEREAS, CADG OWNSBY FARMS LLC is the Owner of a tract of land situated in the Collin County School Land Survey, Abstract Number 167, Collin County, Texas and being part of that tract of land described by deed to CADG Ownsby Farms LLC as recorded in Instrument Number 20150306000243010 of the Official Public Records of Collin County, Texas and being more particularly described as follows:

BEGINNING at a 60d nail at the southwest corner of said CADG tract, also being the northwest corner of that of that tract of land described by deed to LFC Land Company II recorded in Instrument Number 20121115001494060 of the said Official Public Records, also being a point in the east line of that tract of land described by deed to LFC Land Company II recorded in Instrument Number 20120423000464780 of said Official Public Records;

THENCE N 00°28'06" W, 175.29 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE S 45°28'05" E, 6.88 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE N 89°31'54" E, 120.13 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE N 44°31'54" E, 14.14 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE N 00°28'06" W, 20.00 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE N 89°31'54" E, 50.00 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE S 00°28'06" E, 20.00 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE S 45°28'06" E, 14.14 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE N 89°31'54" E, 110.00 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE N 00°28'06" W, 830.62 feet to a 5/8" iron rod with plastic cap stamped "Peloton" found;

THENCE S 89°31'54" W, 20.00 feet to a 5/8" iron rod with plastic cap stamped "Peloton" found;

THENCE N 00°28'06" W, 50.00 feet to a 5/8" iron rod with plastic cap stamped "Peloton" found;

THENCE N 89°31'54" E, 20.00 feet to a 5/8" iron rod with plastic cap stamped "Peloton" found;

THENCE N 00°28'06" W, 410.00 feet to a 5/8" iron rod with plastic cap stamped "Peloton" found;

THENCE S 89°31'54" W, 165.54 feet to a 5/8" iron rod with plastic cap stamped "Peloton" found for the beginning of a curve to the left;

THENCE with said curve to the left, an arc distance of 144.03 feet, through a central angle of 25°07'16", having a radius of 328.50 feet, the long chord which bears S 76°58'16" W, 142.88 feet;

THENCE N 00°28'06" W, 1010.18 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE N 89°32'02" E, 266.31 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE S 54°09'22" E, 685.45 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE S 67°23'57" E, 305.71 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE S 48°33'38" E, 699.02 feet to a 5/8" iron rod with plastic cap stamped "Peloton" set;

THENCE S 00°32'58" E, 96.17 feet;

THENCE S 47°14'14" E, 632.14 feet to a 5/8" iron rod with plastic cap stamped "Peloton" found;

THENCE S 88°43'41" E, 330.75 feet to a 5/8" iron rod with plastic cap stamped "Peloton" found;

THENCE S 64°15'48" E, 259.39 feet to a 5/8" iron rod with plastic cap stamped "Peloton" found in the west right-of-way line of State Highway 289 (Preston Road), a variable width right-of-way, recorded in Volume 618, Page 316 of said Official Public Records;

THENCE S 00°36'04" E, 125.28 feet with said west right-of-way line to a 5/8" iron rod with plastic cap stamped "Peloton" found;

THENCE S 00°24'05" W, 366.47 feet with said west right-of-way line to a metal post being the northeast corner of a tract of land described in deed to J. Altus, INC., Profit Sharing Trust recorded in volume 5870, page 5025 of said official public records;

THENCE S 89°23'49" W, 1264.45 feet departing said west right-of-way line to a 1/2" iron rod found;

THENCE S 89°34'11" W, 1334.46 feet to the POINT OF BEGINNING and containing 3,173,233 square feet or 72.85 acres of land more or less.

THENCE S 00°36'04" E, 125.28 feet with said west right-of-way line to a 5/8" iron rod with plastic cap stamped "Peloton" found;

THENCE S 00°24'05" W, 366.47 feet with said west right-of-way line to a metal post being the northeast corner of a tract of land described in deed to J. Altus, INC., Profit Sharing Trust recorded in volume 5870, page 5025 of said official public records;

THENCE S 89°23'49" W, 1264.45 feet departing said west right-of-way line to a 1/2" iron rod found;

THENCE S 89°34'11" W, 1334.46 feet to the POINT OF BEGINNING and containing 3,160,181 square feet or 72.55 acres of land more or less.

OWNER'S DEDICATION

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

THAT _____, ACTING HEREIN BY AND THROUGH ITS DULY AUTHORIZED OFFICERS, DOES HEREBY ADOPT THIS PLAT DESIGNATING THE HEREINAFOVE DESCRIBED PROPERTY AS THE HOMESTEAD AT OWNSBY FARMS, PHASE 1, AN ADDITION TO THE CITY OF CELINA, TEXAS, AND DOES HEREBY DEDICATE, IN FEE SIMPLE TO THE PUBLIC USE FOREVER, THE STREETS, RIGHTS-OF-WAY, AND OTHER PUBLIC IMPROVEMENTS SHOWN THEREON. THE STREETS AND ALLEYS, IF ANY, ARE DEDICATED FOR STREET PURPOSES. THE EASEMENTS AND PUBLIC USE AREAS, AS SHOWN, ARE DEDICATED, FOR THE PUBLIC USE FOREVER, FOR THE PURPOSES INDICATED ON THIS PLAT. NO BUILDINGS, FENCES, TREES, SHRUBS OR OTHER IMPROVEMENTS OR GROWTHS SHALL BE CONSTRUCTED OR PLACED UPON, OVER OR ACROSS THE EASEMENTS AS SHOWN, EXCEPT THAT LANDSCAPE IMPROVEMENTS MAY BE PLACED ON LANDSCAPE EASEMENTS, IF APPROVED BY THE CITY COUNCIL OF THE CITY OF CELINA. IN ADDITION, UTILITY EASEMENTS MAY ALSO BE USED FOR THE MUTUAL USE AND ACCOMMODATION OF ALL PUBLIC UTILITIES DESIRING TO USE OR USING THE SAME UNLESS THE EASEMENT LIMITS THE USE TO PARTICULAR UTILITIES, SAID USE BY PUBLIC UTILITIES BEING SUBORDINATE TO THE PUBLIC'S USE OF OR OF CELINA AND PUBLIC UTILITY USE THEREOF. THE CITY OF CELINA AND PUBLIC UTILITY ENTITIES SHALL HAVE THE FULL RIGHT INGRESS AND EGRESS TO OR FROM THEIR RESPECTIVE EASEMENTS FOR THE PURPOSE OF CONSTRUCTING, RECONSTRUCTING, INSPECTING, PATROLLING, MAINTAINING, READING METERS, AND ADDING TO OR REMOVING ALL OR PARTS OF THEIR RESPECTIVE SYSTEMS WITHOUT THE NECESSITY AT ANY TIME PROCURING PERMISSION FROM ANYONE.

THIS PLAT APPROVED SUBJECT TO ALL PLATTING ORDINANCES, RULES, REGULATIONS AND RESOLUTIONS OF THE CITY OF CELINA, TEXAS

WITNESS, MY HAND THIS THE ____ DAY OF _____, 2017.

CADG Ownsby Farms, LLC,
a Texas limited liability company

By: CADG Holdings, LLC,
a Texas limited liability company
Its Sole Member

By: IMM Ventures, LLC,
a Texas limited liability company
Its Manager

By: ZM Ventures, LLC,
a Delaware limited liability company
Its Manager

By: _____
AUTHORIZED SIGNATURE OF OWNER

PRINTED NAME

TITLE

STATE OF TEXAS
COUNTY OF DALLAS

BEFORE ME, THE UNDERSIGNED AUTHORITY, A NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS, ON THIS DAY PERSONALLY APPEARED _____, OWNER, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSE AND CONSIDERATIONS THEREIN EXPRESSED.

GIVEN UNDER MY AND SEAL OF OFFICE, THIS ____ DAY OF _____, 2017.

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

MY COMMISSION EXPIRES ON: _____

Owner

CADG Ownsby Farms LLC
1800 Valley View Lane
Suite 300
Farmers Branch, Texas 75234
469-892-7200
Date of Preparation: October 2015

Case No. P-201508-02

SURVEYOR'S CERTIFICATION

KNOW ALL MEN BY THESE PRESENTS:

THAT I, Todd A. Bridges, do hereby certify that I prepared this plat from an actual and accurate survey of the land and that the corner monuments shown thereon as "set" were properly placed under my personal supervision in accordance with the subdivision ordinance of the City of Celina.

"Preliminary, this document shall not be recorded for any purpose and shall not be used or viewed or relied upon as a final survey document" 22 TAC 663.18C 11/1/2017

Todd A. Bridges
Peloton Land Solutions
Texas Registration No. 4940
10875 John W. Elliott Dr. Suite 400
Frisco, Texas 75033

STATE OF TEXAS
COUNTY OF TARRANT

Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared Todd A. Bridges, Registered Public Land Surveyor, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my and seal of office, this ____ day of _____, 2017.

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

MY COMMISSION EXPIRES ON: _____

PROPERTY LOCATION STATEMENT

This property is located in the corporate limits of the City of Celina, Collin County, Texas.

Signature of Mayor

Date of Approval

ATTEST:

City Secretary

Date

Approved for preparation of Final Plat following construction of all public improvements (or appropriate sureties thereof) necessary for the subdivision shown on this plat.

RECOMMENDED BY: Planning and Zoning Commission
City of Celina, Texas

Signature of Chairperson

Date of Recommendation

APPROVED BY:



Planning and Zoning Commission
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Ben Rodriguez, Senior Planner
 CC: Jason Laumer, City Manager
 Date: December 12, 2017
 Re: Dickerson Annexation

Action Requested:

Consider and act upon an ordinance of the city of Celina, Texas, adopting the annexation of certain territories contiguous to and adjoining the city of Celina, Texas, to wit being a 63.154 acre tract of land situated in the I.C. Williams survey, Abstract no. 943, Collin County, Texas. The property is generally located north of CR 51, east of Dallas Parkway, west of Preston Road, and south of FM 428. (Glendenning Parkway) (Dickerson Annexation) (Rodriguez)

Background Information:

Below is the anticipated annexation schedule for the property:

~~Tuesday, October 10, 2017 - City Council acts on a resolution to set the public hearing dates;~~

~~Tuesday, November 14, 2017 - Two separate public hearings are held on the same night (Tuesday, November 14, 2017 at 5:00 p.m. and Tuesday, November 14, 2017 at 5:05 p.m.); and~~

Tuesday, December 12, 2017 - City Council acts on an ordinance annexing the property.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

N/A

Supporting Documents:

- Proposed Resolution

Staff Recommendation:

Staff recommends approval as presented.

CITY OF CELINA, TEXAS

ORDINANCE NO. 2017-
DICKERSON TRACT ANNEXATION

AN ORDINANCE OF THE CITY OF CELINA, TEXAS, ADOPTING THE ANNEXATION OF CERTAIN TERRITORIES CONTIGUOUS TO AND ADJOINING THE CITY OF CELINA, TEXAS, TO WIT BEING A 63.154 ACRE TRACT OF LAND SITUATED IN THE I.C. WILLIAMS SURVEY, ABSTRACT NO. 943, 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 TRACTS ARE GENERALLY NORTH OF CR 51 WEST OF THE BURLINGTON NORTHERN SANTA FE RAILROAD, SOUTH OF FM 428 AND EAST OF DALLAS PARKWAY; 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 14th day of November, 2017 and a second hearing also being held on the 14th day of November, 2017 in the Council Chambers located in the First United Methodist Church, 112 N. Colorado 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 notice of the public hearings were published in the Celina Record, a newspaper of general circulation within the City of Celina, Texas, on the 27th day of October, 2017, such date 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", and depicted in Exhibit "B" 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 Collin 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 ___th day of December, 2017.

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: Dickerson Tract Annexation Ordinance (Greenway Annexation)

Exhibit "A"

Metes and Bounds

Being that certain tract of land situated in the I. C. Williams Survey, Abstract Number 943, Collin County, Texas and being that tract of land described in deed to Lewis and Jerry Dickerson recorded in Instrument Number 97-0014408 of and being that tract of land described in deed to Jennifer Hunt recorded in Instrument Number 2001-0017035 of County Records, Collin County, Texas and being more particularly described as follows:

BEGINNING at the southeast corner of said Dickerson tract;

THENCE N 89°18'33" W, 1,619.74 feet;

THENCE N 00°45'25" E, 1,445.90 feet in County Road 52;

THENCE N 00°44'34" E, 270.03 feet;

THENCE S 89°18'42" E, 1,614.03 feet;

THENCE S 01°06'19" W, 282.31 feet;

THENCE S 00°30'06" W, 202.62 feet;

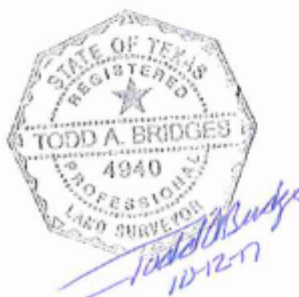
THENCE S 13°16'08" W, 108.03 feet;

THENCE S 00°02'29" W, 952.13 feet;

THENCE S 32°39'37" E, 31.73 feet;

THENCE S 00°30'41" W, 147.07 feet to the Point of Beginning and containing 2,751,006 square feet or 63.15 acres of land.

"This document was prepared under 22 TAC 663.21, does not reflect the results of an on the ground survey, and is not to be used to convey or establish interests in real property except those rights and interests implied or established by the creation or reconfiguration of the boundary of the political subdivision for which it was prepared."



Peloton Job No. PRA16002
CELINA

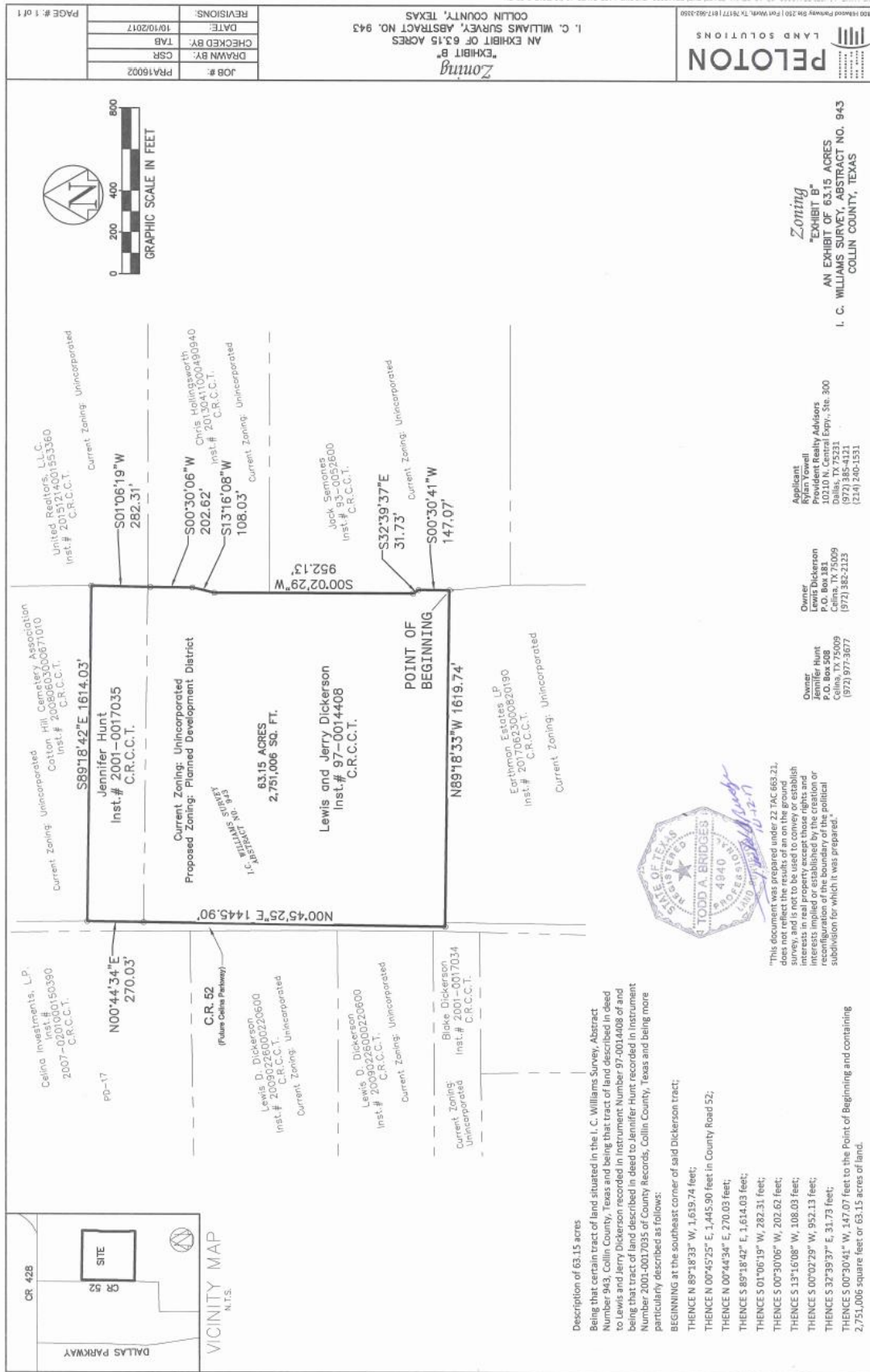
J:\JOB\PRA16002_63 AC CELINA TRACT\SUR\LEGAL\PRA16002_ZN3.DOCX

Tracking No. N/A
October 12, 2017
Page 1 of 2

Attachment: Dickerson Tract Annexation Ordinance (Greenway Annexation)

**EXHIBIT “B”
Graphical Depiction**

Attachment: Dickerson Tract Annexation Ordinance (Greenway Annexation)



**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 includes 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.



Planning and Zoning Commission
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Ben Rodriguez, Senior Planner
 CC: Ben Rodriguez, Senior Planner
 Date: December 12, 2017
 Re: Thompson Annexation Petition

Action Requested:

Consider and act upon a resolution of the City Council of the City of Celina, Texas, setting a date, time and place (Tuesday, January 9, 2018 at 5:00 PM & February 13, 2018 at 5:00 PM) for public hearings on the proposed voluntary annexation of a ±10.936 acre tract of land located in the Hugh C. Roth Survey, Abstract Number 765 and the J.K. Rice Survey, Abstract Number 767. The property is generally located south of CR 94, east of Preston Road, west of CR 97, and north of FM 455. (Rodriguez)

Background Information:

Below is the anticipated annexation schedule for the property:

Tuesday, December 12, 2017 - City Council acts on a resolution to set the public hearing dates;
 Tuesday, January 9, 2018 - First Public Hearing held
 Tuesday, February 13, 2018 - Second Public Hearing Held
 Tuesday, February 13, 2018 - City Council acts on an ordinance annexing the property.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

N/A

Supporting Documents:

- Annexation Petition
- Proposed Resolution

Staff Recommendation:

Staff Recommends Approval as Presented



RECEIVED

DEC 1 2017

CITY OF CELINA

VOLUNTARY ANNEXATION APPLICATION

Property Description: Collin County School Land Survey, Abstract No. 170, Hugh C. Routh Survey,
Survey Name and Abstract No.: Abstract No. 765 and the J. K. Rice Survey, Abstract No. 767 Collin County, 1
Tract Number(s): Lot 5, Block A, Vol. O, Pg. 111, Preston Branch Subdivision Number of Acres: 10.936
Number of People Living on Each Tract of Land (attach an additional sheet if necessary): 0

Current Property
Owner's Name (use additional page for more space): Brooks and Judi Thompson
Company: _____
Address: 8500 Edgewood Cove
City, State, Zip: Frisco, Texas 75033
Phone#: (972) 333-9129 335-9129
Fax #: _____
E-Mail Address: _____
Owners
Signature: *Brooks Thompson*
Judi Thompson
Representative's Name: Clayton Snodgrass
Company: Bluebonnet Capital Partners
Address: 16950 Dallas Parkway #102
City, State, Zip: Dallas, Texas 75248
Phone#: (817) 944-0934
Fax #: _____
E-Mail Address: cs@bluebonnetcp.com

Submittal Requirements

- ☒ Application
- ☒ Application Fee - Minimum \$250.00 or actual costs
- ☒ Metes and bounds description of the property with graphic exhibit. The metes and bounds description on the graphic exhibit must contain an original seal and a signature of a registered professional land surveyor and shall be on an 11" x 17" sheet of paper **Graphic Exhibit must be in black and white.**
- ☒ An exhibit depicting the location of the property location to the nearest existing or future major thoroughfare north, south, east, and west of the property.
- ☐ Properties lying within Marilee Special Utility District (formerly Gunter Special Utility District) Waiver Certificate of Convenience and Necessity area, are required to submit fees in accordance with the settlement agreement (please contact city to get a fee estimate)

TO BE COMPLETED BY PROPERTY OWNER OR REPRESENTATIVE

STATE OF TEXAS

COUNTY OF Collin

BEFORE ME, a Notary Public, on this day personally appeared Brooks Thompson and Judi Thompson the undersigned applicant, who, under oath, stated the following: "I hereby certify that I am the owner, or duly authorized agent of the owner, for the purposes of this application; that all information submitted herein is true and correct."

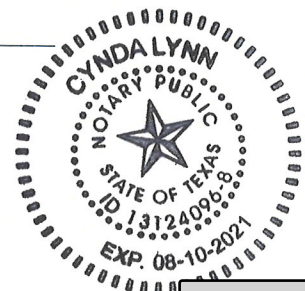
Brooks Thompson
Judi Thompson
 Owner, Applicant, or Representative

SUBSCRIBED AND SWORN TO before me, this the 1st
 My Commission expires 08-10-2021

day of December, 20 17
Cyndalynn
 Notary Public in & for the State of
 Texas

OFFICE USE ONLY

Receipt#: _____
 Check#: _____
 Payor: _____



DESCRIPTION OF A
10.936 TRACT FOR ANNEXATION

BEING A CERTAIN TRACT OF LAND SITUATED IN THE COLLIN COUNTY SCHOOL LAND SURVEY NO. 15, ABSTRACT NUMBER 170, THE HUGH C. ROUTH SURVEY, ABSTRACT NUMBER 765, AND THE J.K. RICE SURVEY, ABSTRACT NUMBER 767, COLLIN COUNTY, TEXAS AND BEING ALL OF LOT 5, PRESTON BRANCH SUBDIVISION, AN ADDITION TO THE CITY OF CELINA, RECORDED IN VOLUME O, PAGE 111 OF THE PLAT RECORDS OF COLLIN COUNTY, TEXAS AND BEING ALL OF THAT TRACT OF LAND DESCRIBED BY DEED TO MARC R. SPERO AND PATRICIA A. SPERO RECORDED IN INSTRUMENT NUMBER D20090202000099540 5 OF THE OFFICIAL PUBLIC RECORDS COLLIN COUNTY, TEXAS AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS;

BEGINNING AT THE NORTHWEST CORNER OF SAID LOT 5, PRESTON BRANCH BEING THE BEGINNING OF A CURVE TO THE RIGHT IN THE SOUTH RIGHT-OF-WAY LINE OF COUNTY ROAD NUMBER 94 (A 120' RIGHT-OF-WAY);

THENCE WITH SAID CURVE TO THE RIGHT AND WITH SAID SOUTH RIGHT-OF-WAY LINE, HAVING AN ARC DISTANCE OF 290.57 FEET, THROUGH A CENTRAL ANGLE OF 00°43'42", HAVING A RADIUS OF 22,858.00 FEET, AND WHOSE CHORD BEARS S 87°29'04"E, 290.56 FEET;

THENCE S 87°07'13"E, 2.36 FEET WITH SAID SOUTH RIGHT-OF-WAY LINE TO THE BEGINNING OF A CURVE TO THE LEFT;

THENCE WITH SAID SOUTH RIGHT-OF-WAY LINE AND WITH SAID CURVE TO THE RIGHT, HAVING AN ARC DISTANCE OF 391.57 FEET, THROUGH A CENTRAL ANGLE OF 00°58'35", HAVING A RADIUS OF 22,978.00 FEET, AND WHOSE CHORD BEARS S 87°36'31"E, 391.57 FEET TO THE NORTHEAST CORNER OF SAID LOT 5 PRESTON BRANCH;

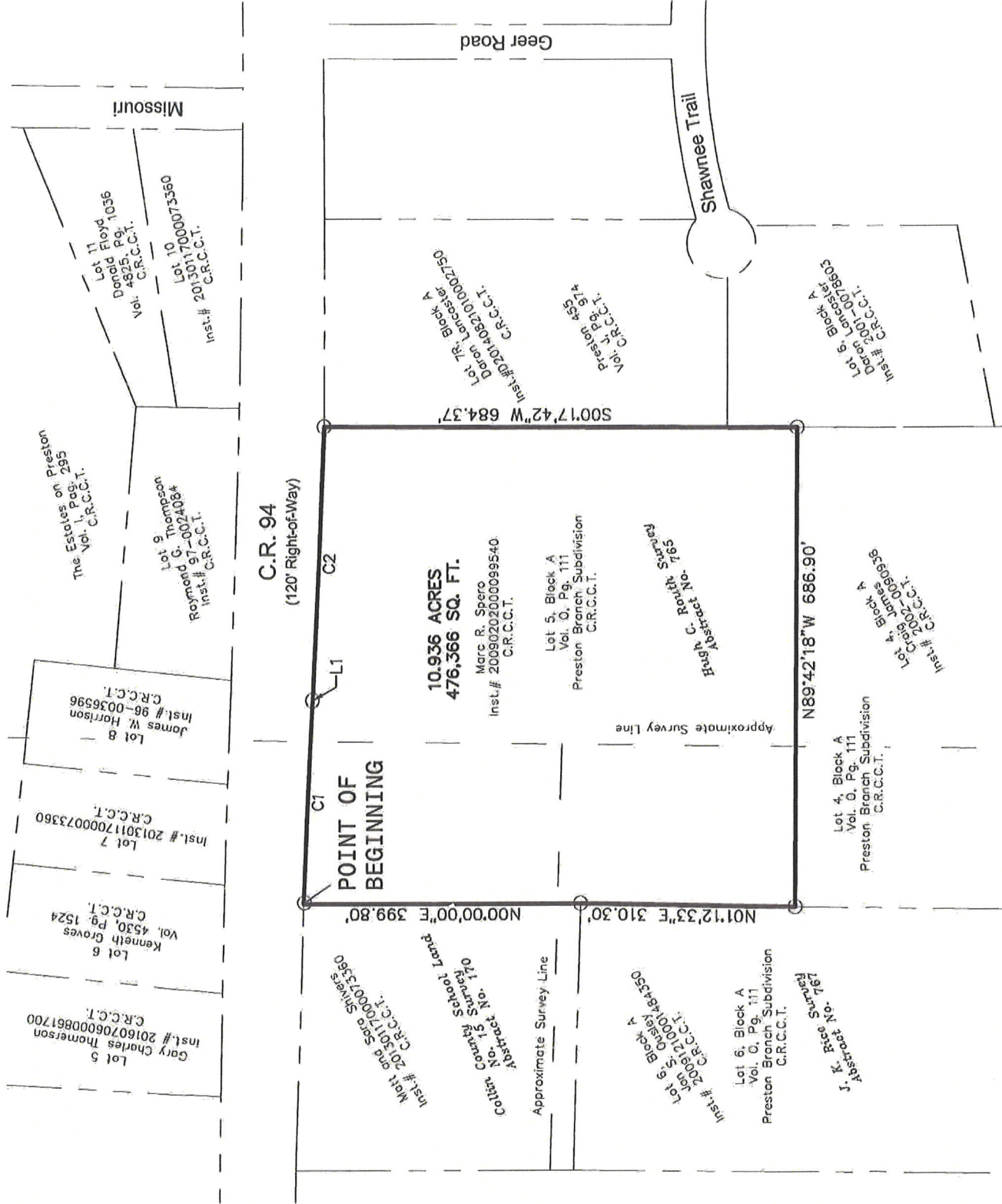
THENCE DEPARTING SAID SOUTH RIGHT-OF-WAY LINE, S 00°17'42"W, 684.37 FEET TO THE SOUTHEAST CORNER OF SAID LOT 5, PRESTON BRANCH;

THENCE N 89°42'18"W, 686.90 FEET, TO THE SOUTHWEST CORNER OF SAID LOT 5, PRESTON BRANCH;

THENCE N 01°12'33"E, 310.30 FEET;

THENCE NORTH, 399.80 FEET TO THE POINT OF BEGINNING AND CONTAINING 476,366 SQUARE FEET OR 10.936 ACRES OF LAND MORE OR LESS.

Attachment: Thompson Petition (Thompson Annexation Petition)



LINE TABLE		
NO.	BEARING	LENGTH
L1	S87°07'13"E	2.36'

CURVE TABLE				
NO.	DELTA	RADIUS	LENGTH	CHORD BEARING
C1	0°43'42"	22858.00'	290.57'	S87°29'04"E
C2	0°58'35"	22978.00'	391.57'	S87°36'31"E

DESCRIPTION OF 10.936 ACRES
BEING A CERTAIN TRACT OF LAND SITUATED IN THE COLLIN COUNTY SCHOOL LAND SURVEY NO. 15, ABSTRACT NUMBER 170, THE HUGH C. ROUTH SURVEY, ABSTRACT NUMBER 765, AND THE J.K. RICE SURVEY, ABSTRACT NUMBER 767, COLLIN COUNTY, TEXAS AND BEING ALL OF LOT 5, PRESTON BRANCH SUBDIVISION, AN ADDITION TO THE CITY OF CELINA, RECORDED IN VOLUME 0, PAGE 111 OF THE PLAT RECORDS OF COLLIN COUNTY, TEXAS AND BEING ALL OF THAT TRACT OF LAND DESCRIBED BY DEED TO MARC R. SPERO AND PATRICIA A. SPERO RECORDED IN INSTRUMENT NUMBER D20090202000099540 5 OF THE OFFICIAL PUBLIC RECORDS COLLIN COUNTY, TEXAS AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SAID LOT 5, PRESTON BRANCH BEING THE BEGINNING OF A CURVE TO THE RIGHT IN THE SOUTH RIGHT-OF-WAY LINE OF COUNTY ROAD NUMBER 94 (A 120' RIGHT-OF-WAY):

THENCE WITH SAID CURVE TO THE RIGHT AND WITH SAID SOUTH RIGHT-OF-WAY LINE, AN ARC DISTANCE OF 290.57 FEET, THROUGH A CENTRAL ANGLE OF 00°43'42", HAVING A RADIUS OF 22,858.00 FEET, AND WHOSE CHORD BEARS S 87°29'04"E, 290.56 FEET;

THENCE S 87°07'13"E, 2.36 FEET WITH SAID SOUTH RIGHT-OF-WAY LINE TO THE BEGINNING OF A CURVE TO THE LEFT;

THENCE WITH SAID SOUTH RIGHT-OF-WAY LINE AND WITH SAID CURVE TO THE RIGHT, AN ARC DISTANCE OF 391.57 FEET, THROUGH A CENTRAL ANGLE OF 00°58'35", HAVING A RADIUS OF 22,978.00 FEET, AND WHOSE CHORD BEARS S 87°36'31"E, 391.57 FEET TO THE NORTHEAST CORNER OF SAID LOT 5 PRESTON BRANCH;

THENCE DEPARTING SAID SOUTH RIGHT-OF-WAY LINE, S 00°17'42"W, 684.37 FEET TO THE SOUTHEAST CORNER OF SAID LOT 5, PRESTON BRANCH;

THENCE N 89°42'18"W, 686.90 FEET, TO THE SOUTHWEST CORNER OF SAID LOT 5, PRESTON BRANCH;

THENCE N 01°12'33"E, 310.30 FEET;

THENCE NORTH, 399.80 FEET TO THE POINT OF BEGINNING AND CONTAINING 476.366 SQUARE FEET OR 10.936 ACRES OF LAND MORE OR LESS.

"This document was prepared under 22 TAC 663.21, does not reflect the results of an on the ground survey, and is not to be used to convey or establish interests in real property except by the creation or interests implied or established by the political reconfiguration of the boundary of the political subdivision for which it was prepared."



**CITY OF CELINA
RESOLUTION NO.**

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS, SETTING A DATE, TIME, AND PLACE FOR PUBLIC HEARINGS ON A PROPOSED ANNEXATION OF CERTAIN PROPERTIES BY THE CITY AND AUTHORIZING AND DIRECTING CITY STAFF TO PUBLISH NOTICE OF SUCH PUBLIC HEARINGS AND AUTHORIZING CITY STAFF TO TAKE ALL NECESSARY ACTION TO FULFILL THE REQUIREMENTS OF THE MUNICIPAL ANNEXATION ACT.

WHEREAS, the City of Celina, Texas (the “City”) is a Home Rule municipality located in Collin County, Texas, and Denton County, Texas created in accordance with the provisions of the Texas Local Government Code and operating pursuant to the Celina Home Rule Charter; and

WHEREAS, the City of Celina is provided the power to annex land under its Home Rule Charter and Section 43.021 of the Texas Local Government Code pursuant to the requirements and limitations set forth in state law; and

WHEREAS, the City of Celina has determined that it is in the best interest of the City and its citizens to consider the potential annexation of certain properties that are located within the City’s extraterritorial jurisdiction; and

WHEREAS, the City of Celina desires to start the process that will enable the City, should it so desire, to annex the properties referenced in Exhibits “A,” and more fully depicted in the attached Exhibit “ B” into the City of Celina, call two public hearings, and set a proposed annexation proceedings schedule.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS;

- I. That on Tuesday, the 9th day of January, 2018 at 5:00 p.m. and on Tuesday, the 13th day of February, 2018 at 5:00 p.m., at 112 N. Colorado, Celina, Texas 75009, the City Council will hold public hearings giving all interested persons the right to appear and be heard on the proposed annexations by the City of Celina of the properties more particularly described in the attached Exhibits “A,” and more fully depicted in the attached Exhibits “B”.
- II. That City Staff is hereby authorized and directed to cause notice of each public hearing to be published once in a newspaper having general circulation in the City and in the territories described in attached Exhibit “A,” and more fully depicted in the attached Exhibits “B” not more than twenty (20) days, nor less than ten (10) days prior to the date of such public hearing, in accordance with the Municipal Annexation Act.

- III.** That the City intends to provide the services listed within the time frames specified in Exhibit “C” upon annexation.

PASSED AND APPROVED by the City Council of the City of Celina, Texas, this the 12th day December, 2017.

SEAN TERRY, MAYOR

VICKI FAULKNER, CITY SECRETARY

Exhibit "A"
DESCRIPTION OF A
10.936 TRACT FOR ANNEXATION

BEING A CERTAIN TRACT OF LAND SITUATED IN THE COLLIN COUNTY SCHOOL LAND SURVEY NO. 15, ABSTRACT NUMBER 170, THE HUGH C. ROUTH SURVEY, ABSTRACT NUMBER 765, AND THE J.K. RICE SURVEY, ABSTRACT NUMBER 767, COLLIN COUNTY, TEXAS AND BEING ALL OF LOT 5, PRESTON BRANCH SUBDIVISION, AN ADDITION TO THE CITY OF CELINA, RECORDED IN VOLUME O, PAGE 111 OF THE PLAT RECORDS OF COLLIN COUNTY, TEXAS AND BEING ALL OF THAT TRACT OF LAND DESCRIBED BY DEED TO MARC R. SPERO AND PATRICIA A. SPERO RECORDED IN INSTRUMENT NUMBER D20090202000099540 5 OF THE OFFICIAL PUBLIC RECORDS COLLIN COUNTY, TEXAS AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS;

BEGINNING AT THE NORTHWEST CORNER OF SAID LOT 5, PRESTON BRANCH BEING THE BEGINNING OF A CURVE TO THE RIGHT IN THE SOUTH RIGHT-OF-WAY LINE OF COUNTY ROAD NUMBER 94 (A 120' RIGHT-OF-WAY);

THENCE WITH SAID CURVE TO THE RIGHT AND WITH SAID SOUTH RIGHT-OF-WAY LINE, HAVING AN ARC DISTANCE OF 290.57 FEET, THROUGH A CENTRAL ANGLE OF 00°43'42", HAVING A RADIUS OF 22,858.00 FEET, AND WHOSE CHORD BEARS S 87°29'04"E, 290.56 FEET;

THENCE S 87°07'13"E, 2.36 FEET WITH SAID SOUTH RIGHT-OF-WAY LINE TO THE BEGINNING OF A CURVE TO THE LEFT;

THENCE WITH SAID SOUTH RIGHT-OF-WAY LINE AND WITH SAID CURVE TO THE RIGHT, HAVING AN ARC DISTANCE OF 391.57 FEET, THROUGH A CENTRAL ANGLE OF 00°58'35", HAVING A RADIUS OF 22,978.00 FEET, AND WHOSE CHORD BEARS S 87°36'31"E, 391.57 FEET TO THE NORTHEAST CORNER OF SAID LOT 5 PRESTON BRANCH;

THENCE DEPARTING SAID SOUTH RIGHT-OF-WAY LINE, S 00°17'42"W, 684.37 FEET TO THE SOUTHEAST CORNER OF SAID LOT 5, PRESTON BRANCH;

THENCE N 89°42'18"W, 686.90 FEET, TO THE SOUTHWEST CORNER OF SAID LOT 5, PRESTON BRANCH;

THENCE N 01°12'33"E, 310.30 FEET;

THENCE NORTH, 399.80 FEET TO THE POINT OF BEGINNING AND CONTAINING 476,366 SQUARE FEET OR 10.936 ACRES OF LAND MORE OR LESS.

Exhibit "B"

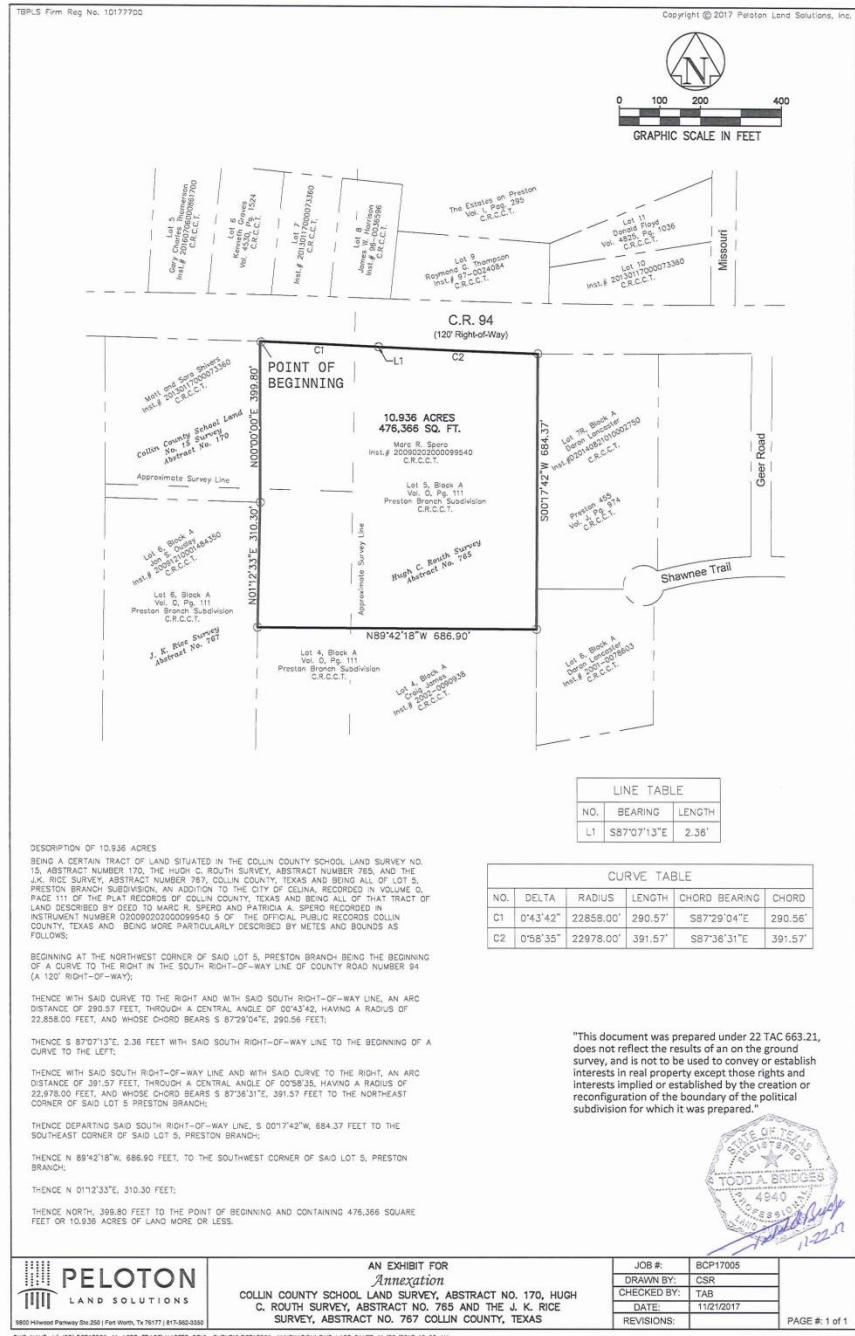


Exhibit “C”

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 includes 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.



Planning and Development Services
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Ben Rodriguez, Senior Planner
 CC: Jason Laumer, City Manager
 Date: December 12, 2017
 Re: Disannexation of a certain Denton County property (2017-86).

Action Requested:

Consider and act upon an ordinance of the City of Celina, Texas, repealing Ordinance No. 2017-86 annexing certain territories contiguous to and adjoining the City of Celina, Texas, to wit being a ± 10.684 tract of land generally located east of Smiley road, west of County Road 6, south of FM 428, north of Carey Road; and being more particularly described by metes and bounds in exhibit "A" and graphically depicted in exhibit "B" attached hereto and incorporated herein. (Rodriguez)

Background Information:

A Chapter 43 pre-annexation agreement was received in time for this Denton County property not to be annexed on November 21, 2017.

Board Review/Citizen Input:

Alternatives:

Financial Considerations:

Legal Review:

The City Land Use Attorney is reviewing this ordinance.

Supporting Documents:

Draft ordinance

Staff Recommendation:

CITY OF CELINA, TEXAS

ORDINANCE NO. 2017-

AN ORDINANCE OF THE CITY OF CELINA, TEXAS, REPEALING ORDINANCE NO. 2017-86 ANNEXING CERTAIN TERRITORIES CONTIGUOUS TO AND ADJOINING THE CITY OF CELINA, TEXAS, TO WIT BEING A ±10.684 ACRES GENERALLY LOCATED EAST OF SMILEY ROAD, WEST OF COUNTY ROAD 6, SOUTH OF FM 428, NORTH OF CAREY ROAD; AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS IN EXHIBIT "A" AND GRAPHICALLY DEPICTED IN EXHIBIT "B" ATTACHED HERETO AND INCORPORATED HEREIN; PROVIDING FOR 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 and operating pursuant to the enabling legislation of the State of Texas and the Celina City Charter (the "City"); and

WHEREAS, the City Council of the City of Celina, Texas (the "City Council") has the authority to enact, amend and repeal ordinances adopted by the City Council; and

WHEREAS, the City Council previously adopted Ordinance No. 2017-86 on November 21, 2017, annexing an approximate 10.684 acre tract of land identified with Denton County Appraisal District as Property ID No. 52895 and legally described as Abstract A0211A, A. Cowan Survey, Tract 44 in Denton County, Texas, located within the City's extraterritorial jurisdiction, being more particularly described in Exhibit "A", and depicted in Exhibit "B" which is incorporated herein (the "Property"); and

WHEREAS, the Property is appraised for ad valorem tax purposes as agricultural land and cannot be annexed without first offering a development agreement pursuant to Section 43.035 of the Texas Local Government Code; and

WHEREAS, a development agreement dated [REDACTED] (the "Agreement") was entered into pursuant to Sections 43.035 and 212.172 of the Texas Local Government Code by and between the City and property owner (the "Owner") to have the Property remain in the City's extraterritorial jurisdiction; and

WHEREAS, the Agreement is binding upon the City and the Owner and their respective successors and assigns for the term defined within the Agreement; and

WHEREAS, a key term of the Agreement is the guaranteed 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 defined within the Agreement; and

WHEREAS, the City Council of the City of Celina, Texas has investigated into, has determined and officially finds Ordinance No. 2017-86 is void ab initio due to the requirements placed on the City by Chapter 43 and the executed Agreement.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF

Attachment: Disannexation Ord. Repealing No. 2017-86 (Disannex)

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 and are declared to be the legislative findings of the City Council.

SECTION 2
REPEAL OF ORDINANCE NO. 2017-86

Ordinance No. 2017-86 adopted by City Council on November 21, 2017, is hereby repealed in its entirety.

SECTION 3
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 4
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 5
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 6
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 December, 2017.

Sean Terry, Mayor
City of Celina, Texas

Attachment: Disannexation Ord. Repealing No. 2017-86 (Disannex)

ATTEST:

APPROVED AS TO FORM:

Vicki Faulkner, City Secretary
City of Celina, Texas

City Attorney
City of Celina, Texas

DRAFT

Attachment: Disannexation Ord. Repealing No. 2017-86 (Disannex)

Exhibit "A"

SITUATED in the State of Texas and County of Denton, being part of the R. Cowan Survey, Abstract No. 211, being a resurvey of a 10.68 acre tract as recorded in Volume 4694, Page 1534 of the Deed Records of Denton County, Texas, said premises being more particularly described as follows:

BEGINNING at a capped iron rod found marking the northeast corner of said premises and said 10.68 acres;

THENCE with the east line of said premises, South 01° 13' 37" West, 527.80 feet to a 1/2 inch iron rod found marking the southeast corner of said premises;

THENCE with the south line of said premises, North 88° 49' 25" West, 880.64 feet to a capped iron rod set marking the southwest corner of said premises;

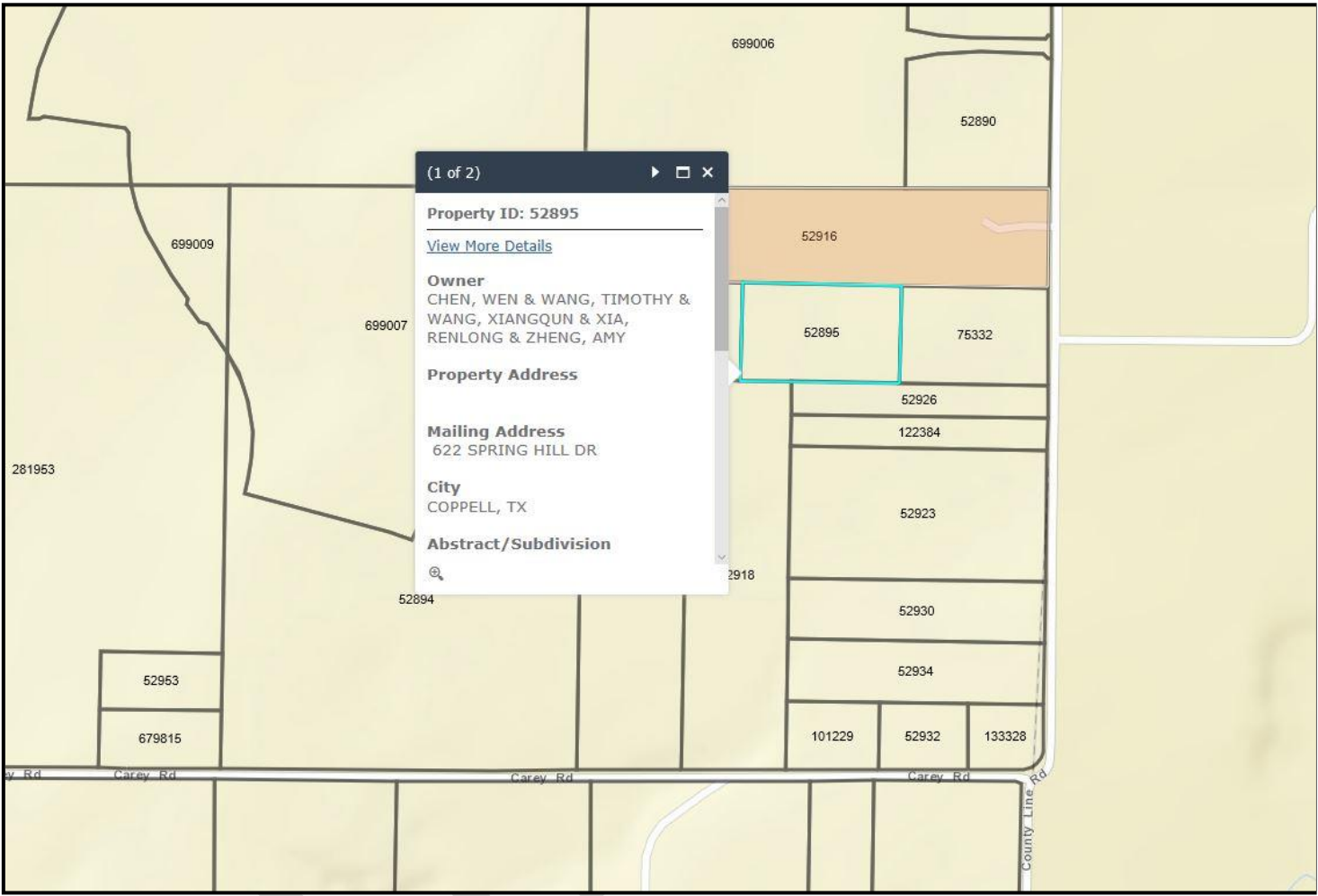
THENCE with the west line of said premises, North 01° 11' 54" East, 529.02 feet to a capped iron rod found marking the northwest corner of said premises;

THENCE with the north line of said premises, South 88° 44' 38" East, 880.90 feet to the place of beginning and containing 10.684 acres of land.

DRAFT

Attachment: Disannexation Ord. Repealing No. 2017-86 (Disannex)

Exhibit “B”



Attachment: Disannexation Ord. Repealing No. 2017-86 (Disannex)



Finance Department
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Jay Toutouchian, Finance Director
CC: Lance Vanzant, City Attorney
Date: December 12, 2017
Re: MuniCap, Inc. Administrative Services

Action Requested:

Consider and act upon an agreement by and between the City of Celina and MuniCap, Inc. for administrative services related to Public Improvement Districts. (Toutouchian)

Background Information:

Board Review/Citizen Input:

N/A

Alternatives:

Financial Considerations:

Legal Review:

The City Attorney has reviewed this agreement

Supporting Documents:

Staff Recommendation:



Finance Department
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Jay Toutounchian, Finance Director
CC: Jason Laumer, City Manager
Date: December 12, 2017
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. (Toutounchian)

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. 2017-____

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, entryways, pedestrian pathways, signage and traffic signalization and the acquisition of land and rights-of-way therefor and (vi) constructing, equipping and improving fire-fighting facilities (collectively, the "Project"), (vii) acquiring, constructing, improving and equipping park and recreation facilities, including the acquisition of land; 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 \$55,000,000.

SECTION 2: This Resolution shall be in force and effect from and after its passage on the date shown below.

PASSED AND ADOPTED, this December 12, 2017.

CITY OF CELINA, TEXAS

ATTEST:

Mayor

City Secretary

(City Seal)



GENERAL FUND

CAPITAL IMPROVEMENTS PROJECTS MASTER LIST

DESCRIPTION	FY2018	FY2019
DOWNTOWN DEVELOPMENT	\$ 1,500,000	
Downtown Development Project	\$ 1,500,000	
FACILITIES	\$ 5,780,000	
Annex Renovations	\$ 3,950,000	
Downtown Parking at Lumber Yard and Police Station	\$ 780,000	
City Hall Remodel	\$ 250,000	
EDC/Main Street Building Remodel	\$ 800,000	
STREETS	\$ 6,219,060	\$ -
Sunset Blvd	\$ 552,060	
Downtown Street Improvements	\$ 2,153,000	
Preston Hills	\$ 514,000	
1461 Bridge-City Share	\$ 3,000,000	
FIRE DEPARTMENT	\$ -	\$ 7,500,000
Fire Station No. 2-Construction		\$ 7,500,000
TOTAL GENERAL FUND	\$ 13,499,060	7,500,000



Finance Department
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Jay Toutouchian, Finance Director
Date: December 12, 2017
Re: Check Signing Resolution

Action Requested:

Consider and act upon a resolution of the City Council of the City of Celina, Texas, authorizing the Mayor, Council Members, City Manager, City Secretary, Accounting Manager and City Treasurer to sign checks and drafts on city accounts. (Toutouchian)

Background Information:

Recent changes in management have necessitated additions to the check signing policy on city accounts.

Board Review/Citizen Input:

Alternatives:

Financial Considerations:

Legal Review:

Supporting Documents:

Staff Recommendation:

RESOLUTION NO. 2017 -R

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS, AUTHORIZING THE MAYOR, COUNCIL MEMBERS, CITY MANAGER, CITY SECRETARY, CITY FINANCE DIRECTOR / TREASURER AND CITY ACCOUNTING MANAGER TO SIGN CHECKS AND DRAFTS ON CITY OPERATING ACCOUNT.

WHEREAS, there is a continuing need for the processing of the City's financial business;

WHEREAS, city disbursements/checks/drafts (payroll/accounts payable) are required to have two signatures, and

WHEREAS, it is not necessary for City Council approval to remit disbursements/checks/drafts that have been approved under the FY budget (payroll/accounts payable);

WHEREAS, named City Council members and staff will sign on the operating account only;

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS THAT THE NAMED MAYOR, CITY COUNCIL MEMBERS, CITY MANAGER, CITY SECRETARY, FINANCE DIRECTOR / TREASURER AND CITY ACCOUNTING MANAGER BE AUTHORIZED TO SIGN CHECKS AND DRAFTS AND THAT ALL OTHER PREVIOUSLY NAMED OFFICIALS BE REMOVED FROM THE AUTHORIZED LIST.

The following officials are authorized to sign checks and drafts on the operating account ending in 0258:

Mayor, Sean Terry

Councilman, Chad Anderson

City Manager, Jason Laumer

The following officials are authorized to sign checks and drafts on all city financial business:

City Treasurer, Jay Toutounchian

Attachment: BANK SIGNATORY RESOLUTION 12-17 (Check signing)

City Secretary, Vicki Faulkner

Accounting Manager, Patricia Martinez

PASSED AND APPROVED by the City Council of the City of Celina, Texas, on the 12th day of December, 2017.

Sean Terry, Mayor

Vicki Faulkner, City Secretary

Attachment: BANK SIGNATORY RESOLUTION 12-17 (Check signing)



Public Works
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Alan Fourmentin, Director of Public Works
CC: Jason Laumer, City Manager
Date: December 12, 2017
Re: Sanitary Sewer Evaluation Study

Action Requested:

Consider and act to authorize the City Manager to execute a contract between the City of Celina and Pipeline Analysis, LLC in the amount of \$184,186.28 for professional services relating to a sanitary sewer evaluation study. (Fourmentin)

Background Information:

Pipeline Analysis, LLC will provide project management and oversight of field tasks to include smoke testing, manhole and pipe evaluation, collect GPS data on wastewater manholes and defects, review of field data, updating the City's GIS, and developing a field report with CIP recommendations to address the system defects as detailed in the attached proposal.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

Budgeted in FY 2017-18 line item 202 - 522 - 02 - 5149

Legal Review:

City Attorney has reviewed

Supporting Documents:

Pipeline Analysis Proposal

Staff Recommendation:

Approve

Professional Services Contract
City of Celina, Texas
Sanitary Sewer Evaluation Survey
Doe Branch Study



December 1, 2017



PIPELINE ANALYSIS LLC
1115 Main Street
Garland, Texas 75040
800-637-0164
TBPE Firm No. F-6538

Attachment: Doe Branch Study Contract REV1 (I&I Professional Services)

CONTRACT FOR PROFESSIONAL ENGINEERING SERVICES

THIS CONTRACT made and entered into on the date last stated below between the City of Celina, hereinafter called "City", acting by and through Alan Fourmentin, duly authorized to act on behalf of CITY and Pipeline Analysis, LLC hereinafter called "ENGINEER", acting by and through James H. Forbes, Jr., P.E. (Project Manager) duly authorized to so act on behalf of the ENGINEER.

WHEREAS, the CITY desires professional engineering services in connection with the Sanitary Sewer Evaluation Survey of sewer on a specified portion of the City of Celina, Texas, hereinafter called "the PROJECT"; and

WHEREAS, the CITY has determined that the ENGINEER has experience in the area involved in the Project and is qualified to perform the work, and the ENGINEER is willing to enter into a contract with CITY to perform the engineering services desired by CITY in connection with the PROJECT.

THE CITY AND ENGINEER AGREE AS FOLLOWS:

The CITY hereby retains the ENGINEER to perform engineering services in connection with the PROJECT described above.

1. SCOPE OF SERVICES

The scope of Engineering services to be performed by the ENGINEER shall be as follows:

1.1 Approach to Project

This project will perform various field testing and inspection of the wastewater collection system within the Study Area as defined on the map included in Exhibit A and prepare a final report that recommend system repairs and estimated costs.

1.2 Detailed Scope of Services

See Exhibit A attached.

2. CITY'S RESPONSIBILITIES

So as not to delay the services of ENGINEER, the CITY shall do the following in a timely manner:

Attachment: Doe Branch Study Contract REV1 (I&I Professional Services)

2.1 Provide Existing Data

CITY will provide to ENGINEER at no cost those sewer maps and any applicable previous reports.

Existing data delivered to the ENGINEER by the CITY remains the property of the CITY and must be returned to the CITY after completion of the PROJECT.

2.2 Provide Access

Arrange for access to, and make all provisions for, ENGINEER to perform services under this AGREEMENT.

2.3 CITY Representative

CITY designates Alan Fourmentin, Director of Public Works as representative to act as the contact person on behalf of the CITY.

3. SCHEDULE

3.1 Schedule

The ENGINEER'S services shall be performed in a timely manner consistent with sound professional practices. The ENGINEER will complete the work according to the schedule presented in Exhibit A.

The time limits set forth in the schedule shall include allowances for reasonable and expected review time by the CITY and approval by authorities having jurisdiction over the PROJECT, and shall not be allowed as cause for delay or adjustments to the schedule. Delays in the project critical path caused by review times by the CITY or a permitting agency exceeding those anticipated by the ENGINEER'S schedule are cause for adjustments in the schedule. Any adjustments made to the agreed upon schedule shall be made in writing and acceptable to both parties.

The ENGINEER shall begin work immediately upon receipt of the executed CONTRACT and/or written Notice to Proceed.

3.2 Completion of Services

ENGINEER'S services under each item of the finalized Scope of Work shall be considered complete on the date when the submissions for that item have been accepted by CITY.

3.3 Changes

If the CITY requests significant modifications or changes in the Scope of Services, general scope, extent or character of the PROJECT, the time of performance of ENGINEER'S services, the various rates of compensation and schedule shall be adjusted equitably.

3.4 Written Authorization for Additional Work

Any provision in this CONTRACT notwithstanding, it is specifically understood and agreed that the ENGINEER shall not authorize or undertake any work pursuant to this CONTRACT which would require the payment of any fee, expense or reimbursement in addition to the fees stipulated in Section 4 (Payment for Services) of this CONTRACT, without first having obtained the specific written authority to do so from CITY.

4. PAYMENT FOR SERVICES

4.1 Terms

Terms used in describing the applicable method of payment for services provided by the ENGINEER shall have the meaning indicated below:

Basic Engineering Fee:

Basic Engineering Fee shall mean those expenses incurred by the ENGINEER in prosecuting the PROJECT Scope of Services.

Reimbursable Expenses

Not applicable

Additional Services

Additional services **not** covered under the Scope of Services, will be provided to the CITY on a unit price or lump sum basis. A revised written detailed scope of services for additional services will be provided with the pricing summary. Additional services must be approved by City along with a written notice to proceed.

4.2 Basis and Amount of Compensation for Basic Services

Compensation for basic services will be as shown in Exhibit A. These services will be billed monthly based on a percentage completed and will not exceed the total presented.

4.3 Basis and Amount of Compensation for Additional Services

Not applicable. No additional services are anticipated.

4.4 Partial Payments for Services

Partial fee payments may be applied for at monthly intervals, based upon statements which reflect the percentage of work completed for the various items listed under Scope of Services. These statements shall be prepared by the ENGINEER and must be verified and approved by CITY.

4.5 Delay

If ENGINEER'S design services or service during construction of the PROJECT are delayed or suspended in whole or in part by the CITY for more than one year for reasons beyond ENGINEER'S control the various rates of compensation, including Additional Services, provided for elsewhere in this CONTRACT shall be subject to equitable adjustment.

5. TERMINATION, SUSPENSIONS OR ABANDONMENT

5.1 Termination

The CITY or the ENGINEER may terminate this CONTRACT for reasons identified elsewhere in this CONTRACT. In the event such termination becomes necessary, the party effecting termination shall so notify the other party, and termination will become effective thirty (30) calendar days after receipt of the termination notice. Irrespective of which party shall effect termination or the cause therefore, CITY shall within thirty (30) calendar days of termination remunerate ENGINEER for services rendered and costs incurred, in accordance with the ENGINEER'S prevailing fee schedule (Exhibit A). Services shall include those rendered up to the time of termination. All plans, field survey, and other data related to the PROJECT shall become the property of CITY upon termination of the CONTRACT and shall be promptly delivered to CITY in a reasonably organized form. Should CITY subsequently contract with a new Engineer for continuation of services on the PROJECT, ENGINEER shall cooperate in providing information. No amount shall be due for lost or anticipated profits.

5.2 Suspension

If the Project is suspended by CITY for more than 30 consecutive days, the ENGINEER shall be compensated for services performed prior to notice of such suspension. When the Project is resumed, the ENGINEER'S compensation shall be equitably adjusted to provide for expenses incurred in the interruption and resumption of the ENGINEER'S services.

5.3 Abandonment

This CONTRACT may be terminated by CITY upon not less than seven (7) days written notice to the ENGINEER in the event that the Project is permanently abandoned. If the Project is abandoned by CITY for more than ninety (90) consecutive days, the ENGINEER or CITY may terminate this CONTRACT by giving written notice.

5.4 Failure to Pay

Failure of CITY to make payments to the ENGINEER in accordance with this CONTRACT shall be considered substantial nonperformance and cause for termination.

If CITY fails to make payment to ENGINEER within thirty (30) days of a statement for services properly performed, the ENGINEER may, upon fourteen (14) days written notice to CITY, suspend performance of services under this CONTRACT. Unless ENGINEER receives payment in full within fourteen (14) days of the date of the notice, the suspension shall take effect without further notice. In the event of a suspension of services under this section, the ENGINEER shall have no liability to CITY for delay or damage caused CITY because of such suspension of services.

6. GENERAL CONSIDERATIONS

6.1 Professional Standards

Services performed by the ENGINEER under this CONTRACT will be conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. The ENGINEER shall comply with the applicable laws and rules of the current "Texas Engineering Practice Act". CITY's approval, acceptance, use of or payment for all or any part of the ENGINEER'S services herein under or of the project itself shall in no way alter the ENGINEER'S obligations or CITY'S rights thereunder.

6.2 Progress and Performance

The provisions of this CONTRACT and the compensation to ENGINEER have been agreed to in anticipation of continuous and orderly progress through the completion of the ENGINEER'S services. Time for performance shall be extended to the extent necessary for delays due to circumstances over which the ENGINEER has no control. If the ENGINEER'S services are suspended or delayed the times of performance shall be extended to the extent of such delay or suspension. A delay or suspension shall not terminate this CONTRACT unless ENGINEER elects to terminate in accordance with the provisions of Section 5 of this CONTRACT. If a delay or suspension extends for a period of greater than one year for reasons beyond the control of the ENGINEER, the fees and rates of compensation set forth in Section 4 shall be subject to re-negotiating.

6.3 CITY Control

It is understood and agreed that CITY shall have complete control of the services to be rendered, and that no work shall be done under this CONTRACT until the ENGINEER is instructed to proceed with the work.

6.4 Independent Agent

ENGINEER and CITY agreed that ENGINEER and any officer, employee or agent of ENGINEER, in the performance of this CONTRACT shall act in an independent capacity and not as an officer, agent or employee of CITY.

6.5 Compliance with Laws

ENGINEER shall comply with all Federal, State, and local laws and ordinances in the execution of all work in connection with this PROJECT.

6.6 No Additional Work Without Authorization

Any provision in the CONTRACT notwithstanding, it is specifically understood and agreed that the ENGINEER shall not authorize or undertake any work pursuant to this CONTRACT, which would require the payment of any fee, expense or reimbursement in addition to the fee stipulated in Article 4 of this CONTRACT, without having first obtained specific written authority therefore from CITY.

6.7 Assignment & Subcontracting

This CONTRACT shall not be assigned or subcontracted in whole or part without the written consent of CITY.

6.8 Indemnification

ENGINEER, its officers, agents and employees agree to indemnify, hold harmless, and defend CITY, at ENGINEER'S cost, its officers, agents, and employees from and against any and all claims or suits for injuries, damages, loss, or liability of whatever kind of character, arising out of or in connection with the performance by the ENGINEER of those services contemplated by the CONTRACT, based upon negligent acts or omissions of ENGINEER, its officers, agents, employees, consultants and subcontractors, whether or not caused solely by the ENGINEER, its officers, agents, employees, consultants or subcontractors or jointly with any other party.

ENGINEER agrees that he is solely responsible for the safety of himself and his employees in the performance of this CONTRACT and agrees to indemnify and hold harmless CITY, its officers and agents from and against any liability arising from the personal injury or death of the ENGINEER or the employees of the ENGINEER arising

out of or in connection with this CONTRACT.

6.9 Insurance

ENGINEER shall secure and maintain insurance that will protect him from claims under the Worker's Compensation Act (statutory amounts).

ENGINEER shall secure and maintain Commercial General Liability Insurance that will protect him from claims for bodily injury, death or property damage which may arise from the performance of his services under this CONTRACT, written on an occurrence basis, in the following amounts:

For engineering design contracts for more than \$10,000.00, insurance in an amount not less than \$500,000 per occurrence and \$1,000,000 annual aggregate for bodily injury or death and property damage. ENGINEER shall maintain Comprehensive Automobile Liability Insurance covering all owned, non-owned, and hired vehicles with combined single limit coverage of \$1,000,000 for bodily injury, death or property damage.

ENGINEER shall maintain, at no expense to CITY, a professional liability (errors and omissions) insurance policy placed with a company rated at least A-/VII by Best's Key Rating Guide, authorized to do business in Texas. This coverage must be maintained for at least two (2) years after the PROJECT is completed. Coverage must be written on an occurrence basis. However, at its sole discretion, the CITY may accept coverage written on a claims-made basis if the policy provides for a retroactive date equivalent to the inception date of the CONTRACT or earlier, maintained during the full term of the CONTRACT. The minimum limits of coverage shall be in the following amounts:

For engineering contracts over \$50,000, insurance in an amount not less than five hundred thousand dollars (\$500,000).

All policies, except Worker's Compensation and Professional Liability, shall name the CITY as additional insured. All policies shall contain a waiver of subrogation in favor of the CITY and shall require the giving of written notice to CITY at least thirty (30) days prior to cancellation, non-renewal or material modification of any policies, evidenced by return receipt of United States Certified Mail. ENGINEER shall furnish CITY with copies of said policies or certificates evidencing such coverage.

6.10 Property

All documents, including drawings, field notes, surveys, tracings, calculations, computer input and output, digital or computer files, etc., prepared by the ENGINEER pursuant to this contract shall become the property of CITY. The ENGINEER may retain copies of all documents. Any reuse of the documents shall conform to The Texas Engineering Practice Act.

6.11 Governing Law

This CONTRACT has been made under and shall be governed by the laws of the State of Texas. The parties agree that the performance and all matters related thereto shall be in Celina, Texas.

7. DOCUMENT EXECUTION

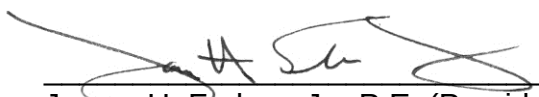
IN WITNESS WHEREOF, the parties have executed this CONTRACT the _____ day of _____, 2017.

**City of Celina, Texas
142 No. Ohio Street
Celina, Texas 75009
(972)382-2682**

By: _____

Date: _____

**ENGINEER
Pipeline Analysis, LLC
1115 Main Street
Garland, Texas 75040
(800)637-0164
(972)479-0659 FAX**

By: 

James H. Forbes, Jr., P.E. (President)

Date: December 1, 2017

Attachment: Doe Branch Study Contract REV1 (I&I Professional Services)

Exhibit A

Detailed Scope of Services

The purpose of this project is to perform a condition assessment on a portion of the City of Celina wastewater collection system and identify system defects that contribute to wet weather infiltration/inflow. The following summarizes the project tasks and approach to the project:

TASK 100 MOBILIZATION

Mobilize project team and coordinate startup. Establish personnel assignments and responsibilities. Inventory equipment needs and order expendable supplies. Review all relevant existing materials, previous reports, etc. developed for or by the City of Celina.

Deliverable:

1. Delivery of equipment and personnel
2. Work maps with delineated boundaries

To Be Provided by City:

1. Previous studies for the service area to be investigated
2. Sewer maps
3. Previous inspection data where available
4. Access for placement of equipment and personnel
5. Copies of all applicable reports, maps and historical data for the study area at no cost to ENGINEER
6. As-built drawings, sewer key maps, street plans, electronic aerial photographs if available and if requested at no cost to ENGINEER

TASK 200 MANHOLE/PIPE INSPECTION

Manholes can be a significant source of extraneous infiltration/inflow and thereby reduce system wet weather capacity. For this reason, each manhole within the study area is inspected. For the study area designated, field inspection crews will perform an inspection of manholes. The data gathered during this phase of the project will be used to prioritize manholes for rehabilitation and establish the base data necessary to accurately determine mainline sewer rehabilitation alternatives and costs. Other important deliverables resulting from this work task are the updating of the collection system map, determination of debris levels in pipes and verification of pipe sizes. This information is critical in preparing subsequent

rehabilitation plans, cleaning requirements to restore capacity and updating of the system maps.

Inspection personnel will use digital cameras during the inspection of all manholes on this project. All photographs will be included so that a permanent electronic record can be maintained. During inspection, each of the following types of information will be obtained to establish the condition and prioritize least cost repairs:

1. Study Area Designation
2. Manhole/Cleanout ID
3. Inspection Status (buried, could not locate, no access, etc.)
4. Address and Sub-meter GPS coordinate (x,y) of manhole
5. Surface cover, grade, type of cover (paved, yard, etc.)
6. Material of construction – brick, concrete, etc.
7. Area and Internal photo of manhole
8. All incoming and outgoing pipe depths from rim to invert
9. All incoming and outgoing pipe digital photographs
10. Outgoing pipe length
11. Defects – Active, Evidence or No Infiltration/Inflow with digital photographs
12. Field corrections to collection system map

To Be Provided by City:

1. Current collection system map
2. Access (if requested) to manholes that are buried or could not be opened.
3. Assistance in locating assets (if requested)

Measurement of Payment:

Payment for this work task shall be a unit price for each manhole documented. Those manholes that are located, but buried or could not be opened will be noted and a list provided to the City. Manholes that could not be located using metal detectors or probes will be listed as Could Not Located (CNL). CNL manholes will not be billed. Manholes located, but were buried or could not be opened will be billed. The City will provide replacement covers at no cost should a cover be broken while attempting opening.

TASK 300 SMOKE TESTING/PUBLIC AWARENESS/DATA ENTRY & ANALYSIS

Smoke testing will provide detailed information on wet weather inflow sources for the study area. In order to identify defects in the lines, a non-toxic smoke will be forced into the sewer by high capacity blowers. Data documentation includes measurements from two permanent points and will be sufficient to establish the location of each defect and determine the best repair method and priority. Color digital photographs will be taken to document each defect during the smoke test.

Forty-eight (48) hours prior to testing, door hangers will be used to notify residents. A local telephone number will be provided for those individuals with questions or for anyone requiring special assistance. Each day the fire department will be notified of the crew location since smoke may enter homes through defective plumbing.

To Be Provided by City:

1. Review and approval of Notice to Residents
2. Letter of introduction to be carried by field crews
3. Previous City smoke testing data, if any

**Review
Draft**



SMOKE TESTING NOTICE TO RESIDENT

For the next few days, inspection crews will conduct a physical survey of the wastewater collection system. Pipeline Analysis will perform this study, which involves opening manholes in the streets and backyard utility easements. Information gained from this study will be used to repair and improve the wastewater collection system.

One important task of the survey will be **smoke testing** of sewer lines to locate breaks and defects in the system. During this testing, white smoke will exit through vent pipes on the roofs of homes and through sewer line breaks. **The smoke is non-toxic, leaves no residue, and creates no fire hazard.** The smoke should not enter your home unless defective plumbing exists or drain traps are dry.

If you have seldom-used drains, please pour a gallon of water in the drain to fill the drain trap. This procedure will help prevent the possibility of smoke entering your living areas through those drains.

Field crews will perform testing of all sewers in the area. **At no time will field crews have to enter your business or residence.**

Your cooperation is appreciated. Should you have any additional questions concerning this study or if you desire special assistance, please phone:



Attachment: Doe Branch Study Contract REV1 (I&I Professional Services)

Review Draft



PRUEBAS DE HUMO AVISO A LOS RESIDENTES

Para los próximos días, los equipos de inspección llevarán a cabo una inspección física de la red de alcantarillado. El Análisis de Pipeline Company, LLC llevará a cabo este estudio bajo contrato con la ciudad de Plano. El proyecto consiste en la apertura de pozos en las calles y servidumbres domésticas de servicios públicos. La información obtenida de este estudio se utilizarán para reparar y mejorar el sistema de recolección de aguas residuales.

Una tarea importante de la encuesta serán las pruebas de humo de líneas de alcantarillado para localizar roturas y defectos en el sistema. Durante esta prueba, el humo blanco saldrá a través de tubos de ventilación en los techos de las casas y por medio de saltos de línea de alcantarillado. El humo no es tóxico, no deja ningún residuo, y no crea ningún peligro de incendio. El humo no debe entrar a su casa a menos que exista o plomería defectuosa sifones están secos.

Si ha utilizado muy pocas veces-piso, lavabo, bañera o ducha desagües, por favor, vierta un litro de agua en el desagüe para llenar el sifón. Este procedimiento le ayudará a prevenir la posibilidad de humo introducción de sus áreas vivas a través de los desagües.

El personal de campo se realizan pruebas de todos los desagües de la zona. En ningún momento desplegar los equipos tiene que introducir su negocio o residencia.

Su cooperación es apreciada. Si tiene alguna pregunta adicional sobre este estudio o si desea recibir asistencia especial, por favor llame al:

972-479-0655



Attachment: Doe Branch Study Contract REV1 (I&I Professional Services)

Task 400 Dye Flooding

Pipeline Analysis staff will provide a listing of recommended location(s) for dye water flooding. Dye water flooding can be anticipated to assist in the locating of specific defects during CCTV inspection of specific defects. Non-toxic dye may be introduced as a powder or liquid. Cross-connections, roof drains and area drains that are suspected of being connected to the sanitary sewer may be positively identified using the dye tracer procedure. Internal CCTV inspection, while the dye flooding is taking place, will determine the exact source of the 'cross-connection'. The City of Celina staff will perform this phase of the work in coordination with Pipeline Analysis.

To Be Provided by City:

1. Cleaning and CCTV crew
2. Water for dye flooding
3. Documentation of results (forms to be provided by Pipeline Analysis)

To Be Provided by Pipeline Analysis:

1. Locations for dye water flooding
2. Liquid or powder dye for use by the City
3. Field Forms to be used to document results

TASK 500 & 600 PREPARATORY CLEANING AND CCTV INSPECTION

Task 500 and 600 will be performed by City crews. Pipeline Analysis staff will prepare a detailed listing of line segments recommended for cleaning and CCTV inspection. Preparatory cleaning shall consist of hydraulic jet cleaning to facilitate the internal CCTV inspection. The City of Celina staff will perform this phase of the work in coordination with Pipeline Analysis.

To Be Provided by City:

1. Preparatory cleaning of CCTV pipe segments
2. CCTV inspection of recommended pipe segments
3. Provide CCTV video including:
 - a. Date inspected
 - b. Line segment inspected
 - c. Location (Address) and Asset ID
 - d. Digital video of inspection and written logs of work performed

To Be Provided by Pipeline Analysis:

1. Review video and logs

TASK 700 ADMINISTRATION AND PROJECT MANAGEMENT

This task includes internal project administration and oversight including scheduling, budget, quality assurance and control meetings and reporting. The project schedule will be reviewed and milestones for the completion of each task will be assigned. The project schedule will be reviewed and updated monthly to ensure that all tasks are completed in a timely and organized fashion.

Management work items include:

1. Field crew supervision and project planning
2. Prepare cleaning, CCTV and dye flooding documentation for City
3. Prepare monthly billings
4. Schedule equipment and order supplies

Major system deficiencies that are identified during the field inspections that if corrected would result in significant reduction in I/I or is deemed to be of a safety concern will be recorded and forwarded as soon as possible to City's designated project manager. Likewise, should City undertake a major repair within the study area, they will immediately notify ENGINEER to determine the impact on data analysis.

Deliverables:

1. Monthly invoice
2. Status reports
3. Project schedule and updates

TASK 800 DEFECT ANALYSIS/ REHABILITATION PLAN/FINAL REPORT

This project will generate a considerable amount of data that will require proper entry and quality control. Data collection will include the following:

1. All collected defect data will be correlated between sources to address duplicate defects that were identified by different testing methods. Identify duplicate defects to ensure multiple rehabilitation methods are not recommended for the same defect.
2. Much of the baseline data required for rehabilitation decision is gathered during the normal course of field investigations. For example, "area photos" are taken of each manhole in the direction of the outgoing pipe. This photograph not only shows the location of the manhole but also provide data on the line cover and easement conditions.
3. Rehabilitation recommendations will consider the best repair for the particular asset (manhole, pipeline, etc.) being rehabilitated. A long-term least-cost solution may have an initial higher cost, but provide a higher level of service and lower operating and maintenance cost. The supporting data will be provided in electronic format.

To Be Provided by City:

- Complaint records and SSO database
- Review and comments on rehabilitation methods, cost estimates, and alternatives

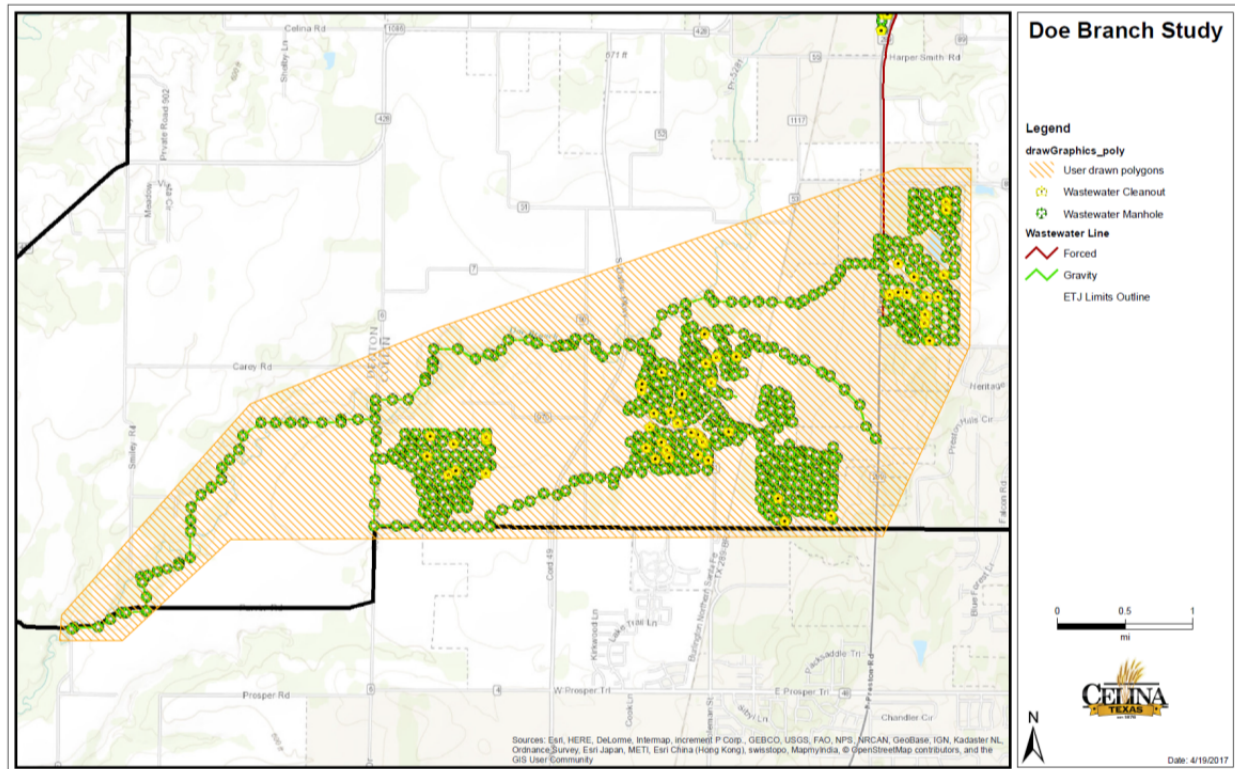
- Engineer will provide electronic files of the City corrected GIS maps in ArcGIS. The City will have the final authority to accept the changes and update their master GIS map files.

Prepare and submit a Final Report that includes the following:

- Executive Summary
- Description of all tasks
- Updated map(s)
- Manhole and pipe inspection summary of field observations and inventory
- Manhole defect summary
- Pipeline defect summary
- Service lateral defect summary
- Smoke test data summary and location sketches
- Dye Flooding and CCTV data summary
- Digital photographs and CCTV video
- Prioritized Recommendations and Cost Estimates for Private and Public sector repairs

Prepare and submit three (3) Final Reports and electronic files.

Study Area Map



Estimated Cost Sewer System Evaluation Survey

Study Area Quantities

Total Manholes: 601

Manholes to be Inspected: 601

Study Area Footage to be Smoke Tested: 188,776 l.f.

Sanitary Sewer Evaluation Survey

Task	Description	Estimated Quantity	Unit Price	Total
100	Mobilization	L.S.	L.S.	\$ 1,220.00
200	Manhole/Pipe Inspection	601	\$115.00	\$ 69,115.00
300	Smoke Testing, Public Awareness, Data Entry & Analysis	188,776	\$ 0.53	\$100,051.28
400*	Dye Flooding (By City with Pipeline Analysis assistance)	TBD		\$ -
500*	Preparatory Cleaning (By City with Pipeline Analysis assistance)	TBD		\$ -
600*	CCTV Inspection (By City with Pipeline Analysis assistance)	TBD		\$ -
700	Admin., Project Mgt.	L.S.	L.S.	\$ 3,850.00
800	Defect Analysis/Rehabilitation Plan/Final Report	L.S.	L.S.	\$ 9,950.00
Total Not To Exceed				\$184,186.28

*To be completed by City



Public Works
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Alan Fourmentin, Director of Public Works
CC: Jason Laumer, City Manager
Date: December 12, 2017
Re: Ground and Tower Lease Agreement

Action Requested:

Consider and act to authorize the City Manager to negotiate and execute a lease agreement by and between the City of Celina and New Cingular Wireless PCS, LLC located at the Light Farms Elevated Storage Tower. (Laumer)

Background Information:

New Cingular Wireless PCS, LLC (AT&T) has requested to lease a portion of property located at 1803 Light Farms Way approximately 435 square feet along with installation of twelve (12) antennas approximately 55 feet from the bottom of the elevated storage tower.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

The proposed lease will collect \$3,000 per month rent and provide for an additional \$250 per month for each additional added antenna.

Legal Review:

City Attorney has reviewed the contract

Supporting Documents:

Proposed lease

Staff Recommendation:

Approve contingent upon staff and legal review

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

GROUND AND TOWER LEASE AGREEMENT

THIS GROUND AND TOWER LEASE AGREEMENT ("Lease"), is entered into as of the ____ day of _____, 2017 ("Effective Date"), by and between the *City of Celina*, a Texas municipal corporation ("OWNER"), and New Cingular Wireless PCS, LLC, a Delaware limited liability company, having a mailing address of 575 Morosgo Drive NE, 13F Atlanta, GA 30324 ("TENANT").

In consideration of the promises and of the mutual obligations and agreements set forth in this Lease, the parties agree as follows:

1) THE LEASED SITE

a) OWNER is the owner of or has the right to control a certain parcel of real property upon which a water tower has been constructed, such parcel and water tower is located at 1803 Light Farms Way, Prosper, County of Collin, State of Texas, and is more specifically described on the attached Exhibit "A" (such parcel referred to as "OWNER's Property").

b) OWNER hereby leases to TENANT a portion of OWNER's Property and of the Primary RAD Space (as defined below) on the water tower located on OWNER's Property (the "Tower"), together with a right of ingress, egress and other access and a right to install utilities (the "Leased Site"). The ground space portion of the Leased Site which is the subject of this Lease is approximately 435 square feet and is located within OWNER's Property substantially as shown on the attached Exhibit "B". The portion of the Tower dedicated for TENANT's exclusive use consists of an envelope of twelve (12) contiguous vertical feet of space within which any portion of TENANT's communication equipment and improvements may be located, operated or maintained (the "**Primary RAD Space**"). The Primary RAD Space includes any area on a horizontal plane, extending in all directions from the Tower, that is perpendicular to such 12-foot vertical envelope and any portion of vertical space on the Tower on which TENANT's communication equipment is located. The location of the Primary RAD Space is set forth on the attached Exhibit "C" (any sketches in Exhibits may not be to scale and therefore are not intended to be used for measurement purposes), such Exhibit also showing the location for the initial installation of the Antenna Facilities. TENANT has the right to install, modify, supplement, replace, upgrade, expand the Antenna Facility (including, for example, increasing the number of antennas or adding microwave dishes) or relocate the Antenna Facility within the Leased Site at any time during the Term and at no additional cost to TENANT, other than the rent owed under Section 3. At any time during the Term of this Lease, TENANT may use portions of the Tower outside of, but adjacent to, the Primary RAD Space to accommodate TENANT's improvements and equipment that extend outside the Primary RAD Space (the "**Extended Primary RAD Space**"), subject to TENANT's confirmation that the space is available and that sufficient structural loading capacity is available or can be made available through structural modifications of the Tower. The Primary RAD Space, as it might be expanded by the Extended Primary RAD Space at any time during the Term of this Lease, shall continue to be referred to as the Primary RAD Space. As used herein, "Antenna Facilities" shall be deemed to mean all equipment, including antennae support structures, to be used by TENANT in connection with the operation of its

112/07/1742/05/1711-09/47

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

telecommunications facility on the Leased Site, including the equipment described on Exhibit "C" attached hereto, as such equipment may be modified or added to from time to time in accordance herewith. TENANT shall have the right to run cables, wires, conduits and pipes under, over and across OWNER's Property to connect TENANT's Antenna Facilities on the Tower to its Antenna Facilities in its equipment building, if any, to be constructed on the ground space portion of the Leased Site. TENANT, its agents, employees, contractors, subcontractors and authorized representatives may park their vehicles on OWNER's Property when TENANT is constructing, removing, replacing, servicing, maintaining, securing and/or operating its Antenna Facilities as provided in this Lease.

c) OWNER agrees that TENANT may use and occupy additional space on the Tower at any additional RAD center(s) (each, an "Additional RAD," and the additional space that TENANT uses or occupies, the "Additional RAD Space") upon the same terms and conditions set forth herein, provided that such space is available or becomes available and subject to TENANT's confirmation that sufficient structural loading capacity is available or can be made available through structural modification of the Tower. Additional RAD Space includes any area on a horizontal plane, extending in all directions from the Tower, that is perpendicular to any portion of vertical space on the Tower on which the additional equipment is located, operated, or maintained. TENANT may also use additional ground space at the Property in increments of one square foot outside of the Leased Site, provided that such space is available or might be made available (the "Incremental Ground Space"). Upon TENANT's use of any Additional RAD, Additional RAD Space, or Incremental Ground Space, such RAD or space shall be deemed part of the Leased Site. In the event that TENANT uses or occupies an Additional RAD, Rent shall be increased by Two Hundred Fifty and No/100 Dollars (\$250.00) per month per each Additional RAD (the "Additional RAD Rent"). The initial amount of Additional RAD Rent shall be subject to adjustment as provided in Section 3(c) of this Agreement. In the event that TENANT uses or occupies Incremental Ground Space, Rent shall be increased by Six and 32/100 Dollars (\$6.32) per month per square foot of space (the "Incremental Ground Space Rent"). The initial amount of Incremental Ground Space Rent shall be subject to adjustment as provided in Section 4(e) of this Agreement.

d) In the event that TENANT uses or occupies any Additional RAD Space and (i) TENANT has used all of the Allowed Wind Load Surface Area, (ii) structural modifications are required because TENANT's use or occupancy of the Additional RAD Space causes the Site to exceed the maximum allowable combined stress ratio under the structural standards generally accepted within the telecommunications industry (the "Structural Standards"), and (iii) TENANT elects under Section 1(e) to have OWNER pay for those structural modifications, Rent shall be increased by the amount of \$0.08 per square inch of Wind Load Surface Area that exceeds the Allowed Wind Load Surface Area (the "Incremental Use Rent"). Otherwise, TENANT's rent to use or occupy the Additional RAD Space shall be \$0.00. The initial amount of Incremental Use Rent shall be subject to adjustment as provided in Section 3 (c) of this Agreement.

e) OWNER shall maintain the Tower's structural integrity at all times (which shall mean that at no time will OWNER allow the Tower's condition to become, or remain, overstressed under the applicable structural standards set forth in the then-current version of the ANSI TIA-222).

12/07/1742/054744-0947

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

OWNER shall at all times during the Term of this Lease reserve and have ready for TENANT's immediate use sufficient structural loading capacity on the Tower to support TENANT's installation of up to thirty-five thousand square inches (35,000 sq. in.) of Wind Load Surface Area, in the aggregate, of Antenna Facilities anywhere on the Tower (the "Allowed Wind Load Surface Area"). "Wind Load Surface Area" means the Flat Plate Equivalent Area, as defined in ANSI TIA standards, of any appurtenance (excluding all mounts, platforms, cables and other non-operating equipment) at ninety degrees (90°) perpendicular to wind direction, possessing the characteristics of flat material, with associated drag factors. OWNER shall be responsible for the costs of all structural modifications to the Tower, including the costs of related Government Approvals or other approvals, to support the Allowed Wind Load Surface Area. In the event that TENANT has used the Allowed Wind Load Surface Area and an installation of Communication Facilities within the Primary RAD Space will require structural modifications to comply with the Structural Standards, TENANT will pay OWNER for the portion of the structural modifications that is necessary to support TENANT's loading in excess of the Allowed Wind Load Surface Area. In the event that TENANT has used the Allowed Wind Load Surface Area and an installation of Antenna Facilities within the Additional RAD Space will require structural modifications to comply with the Structural Standards, TENANT may, in its sole discretion, pay OWNER either (i) the portion of the structural modifications that is necessary to support TENANT's loading in excess of the Allowed Wind Load Surface Area; or (ii) an incremental increase in Rent in accordance with Section 1(c) of this Agreement. In no event shall TENANT be responsible for Tower modification costs to support the installations of other tenants or for the Tower to comply with applicable law so long as TENANT's installation is within the Allowed Wind Load Surface Area.

f) OWNER reserves the right to require TENANT to relocate its Antenna Facilities to a mutually agreeable location on the Tower ("Alternate Premises"), temporarily or permanently, within ninety (90) days after written notice from OWNER. Any relocation expenses shall be the sole responsibility of TENANT, unless the OWNER's relocation requirement results from OWNER's desire to lease space on the Tower to a non-governmental third-party user. In such a case, the third-party user shall be obligated to reimburse TENANT for its reasonable relocation costs. TENANT shall not be required to permanently relocate TENANT's Antenna Facilities to any location which would result in any deterioration or diminution of the quality of communication services or other services provided by TENANT from the Leased Site, nor shall TENANT be required to conduct such permanent relocation in a manner which would cause any deterioration or diminution of such quality or which would cause any interruption of such service. This Lease is not a franchise nor is it a permit to use Town rights-of-way. Any such franchise or permit must be obtained separately from OWNER.

g) TENANT's equipment building, if any, on the ground portion of the Leased Site shall be installed on a slab foundation at TENANT's expense and shall be painted to match the Tower. The Antenna Facilities shall also be painted by TENANT to match the Tower. TENANT shall be enclosed by a decorative iron fence surrounded by a screening hedge which will achieve a height of at least six (6) feet, but shall not be less than three (3) feet in height when planted. Said equipment buildings and Antenna Facilities shall be owned by TENANT and shall be removed from the site by

[11/2/07/1742/05/1711-09/17](#)

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

TENANT within a reasonable period following termination of this Lease. Notwithstanding the foregoing, TENANT will not be required to remove any foundations, landscaping or underground utilities. The building shall be used to house TENANT's communications equipment and all associated or related equipment of any type as deemed necessary or desirable by TENANT (this equipment shall be included as part of the Antenna Facilities listed on Exhibit "C"). The building will be placed adjacent to the Tower in the location described on Exhibit "B".

2) LEASE AND EASEMENT

a) During the term of this Lease, OWNER leases the Leased Site to TENANT and grants to TENANT a non-exclusive easement to access the Leased Site to install, remove, replace, and maintain the Antenna Facilities listed in Exhibit "C".

b) At all times throughout the Term of this Lease, and at no additional charge to TENANT, TENANT and its employees, agents, and subcontractors, will have twenty-four (24) hour per day, seven (7) day per week pedestrian and vehicular access to ground space portion of the Leased Site. TENANT shall have access to the Primary RAD Space only with prior notice to OWNER. TENANT shall notify OWNER twenty-four (24) hours in advance, except in an emergency. A representative of OWNER may accompany TENANT on the Leased Site, at OWNER's sole option. The foregoing shall not limit OWNER's right to access the Leased Site at reasonable times to examine and inspect the premises for safety reasons or to ensure that the TENANT's covenants are being met, provided that OWNER shall not disrupt TENANT's operations and shall be accompanied by a representative of TENANT at all times.

3) TERM AND RENT

a) The initial term of this Lease shall be five (5) years (the "Initial Term"), commencing on the Effective Date indicated above and expire on the fifth anniversary thereof. During the first year of the Initial Term, TENANT shall pay to OWNER as a lease payment the sum of Three Thousand and No/100 Dollars (\$3,000) per month ("Rent"), such payment being due in advance on or before the fifth (5th) day of the respective month. However, TENANT may aggregate its lease payments by paying annually, in advance. OWNER agrees to provide TENANT with a W-9 form in advance of receiving Rent.

b) Upon the expiration of the Initial Term, this Lease shall be automatically extended for one (1) "Renewal Term" of five (5) additional years unless TENANT notifies OWNER in writing at least ninety (90) days prior of its intention not to renew the Lease. Thereafter, upon the expiration of the first Renewal Term, unless TENANT notifies OWNER in this same above-described manner, this Lease shall automatically renew and extend for up to three (3) additional five (5) year Renewal Terms, each beginning upon the expiration of the term then in effect.

c) Beginning upon the first anniversary of the Effective Date ("Anniversary Date"), and each Anniversary Date thereafter during both the Initial Term and any and all Renewal Terms, if any,

11/2/07/1712/05/1711/09/17

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

the monthly rent shall be increased by an amount equal to two percent (2%) of the then current Rent. As provided above, the monthly Rent shall be due in advance on or before the fifth (5th) day of the respective month. However, TENANT may aggregate its lease payments by paying annually, in advance.

d) Should this Lease still be in effect at the conclusion of all of the Renewal Terms provided for herein, this Lease shall continue in effect on the same terms and conditions, other than monthly Rent which shall be an amount equal to the monthly Rent in effect for the preceding year, increased by two percent (2%) for a further period of one (1) year, and for like annual periods thereafter, until and unless terminated by either party by giving to the other at least thirty (30) days prior written notice of its intention to so terminate at the end of the annual term.

e) TENANT shall pay OWNER a late payment charge equal to five percent (5%) of the late payment for any payment (including rental payments) not paid when due. Any amounts not paid when due shall bear interest until paid at the lesser of the rate of two percent (2%) per month or the highest rate permitted by law.

4) USE OF THE LEASED SITE

a) TENANT shall use the Leased Site for the installation, operation, and maintenance of its Antenna Facilities for the transmission, reception and operation of a communications system and uses incidental thereto and for no other uses. By taking possession of the Leased Site, TENANT accepts the Leased Site in the condition existing as of the commencement date of the Lease. OWNER makes no representation or warranty with respect to the condition of the Leased Site and OWNER shall not be liable for any latent or patent defect in the Leased Site. OWNER may permit others to use other portions of OWNER's Property (including the Tower), provided, however, TENANT shall have the exclusive use of its Antenna Facilities, equipment shelters and Primary RAD Space as shown on Exhibit "C" hereto. TENANT may erect and operate additional Antenna Facilities in accordance with the terms of this Lease.

TENANT shall, at its own expense, comply with all present and future federal state, and local laws, ordinances, rules and regulations (including laws and ordinances relating to health, radio frequency emissions, other radiation and safety) in connection with the use, operation, maintenance, construction and/or installation of the Antenna Facilities. OWNER agrees to reasonably cooperate with TENANT in obtaining, at TENANT's expense any federal licenses and permits required for or substantially required by TENANT's use of the Property.

b) OWNER acknowledges that TENANT's ability to use the Leased Site for TENANT's intended purposes is contingent upon TENANT's obtaining and maintaining, both before and after the commencement date of this Lease, all of the certificates, permits, licenses and other approvals (collectively known as "Governmental Approvals") that may be required by any federal, state or local authority for the foregoing uses and improvements to the Leased Site desired by TENANT. OWNER

Commented [N.E.W.1]: This would require business approval.

12/07/1712:05:1711:09:47

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

shall promptly cooperate with TENANT in TENANT's efforts to obtain such Governmental Approvals and shall take no action that would adversely affect TENANT's obtaining or maintaining such Governmental Approvals.

c) TENANT shall, at its own expense, maintain the Leased Site and any equipment on or attached to the Leased Site in a safe condition, in good repair and in a manner so as not to conflict with the use of or other leasing of the Leased Site by OWNER, subject to the terms of Paragraph 18 herein.

d) TENANT shall have sole responsibility for the maintenance, repair, and security of its equipment and personal property, Antenna Facilities, and leasehold improvements located on the Leased Site, and shall keep the same in good repair and condition during the Lease term.

e) TENANT shall keep the Leased Site free of debris and anything of a dangerous, noxious or offensive nature or which would create a hazard or undue vibration, heat, noise or interference.

f) In the event the OWNER or any other tenant undertakes painting, construction or other alterations on the Leased Site, OWNER shall give TENANT at least ninety (90) days' prior written notice and TENANT shall take reasonable measures at TENANT's cost to cover or temporarily remove TENANT's equipment, personal property or Antenna Facilities and protect such from paint and debris fallout which may occur during the painting, construction or alteration process. OWNER agrees to use its reasonable efforts to permit TENANT to place temporary transmission and reception facilities on OWNER's Property at no additional Rent until such time as TENANT is able to reinstall TENANT's equipment, personal property or Antenna Facilities on the Tower. OWNER is not responsible or liable for any damage or injury that may occur if TENANT elects not to temporarily remove its Antenna Facilities, equipment or other personal property. All such construction, repairs or alterations shall be subject to the terms of Paragraph 19 hereof.

5) TERMINATION

a) In addition to the other events giving rise to a right of lease termination, as such are set forth in this Lease, if any of the following occurs, TENANT shall have the right to immediately terminate this Lease for cause by giving written notice to OWNER of such termination:

i) TENANT determines, in its sole discretion, that it will be unable to obtain all necessary Governmental Approvals for TENANT's intended use of and improvements to the Leased Site desired by TENANT; or

ii) TENANT's application for any Governmental Approvals necessary for TENANT's use of the Leased Site and improvements desired by TENANT is denied; or

| [12/07/17+2/05/17+11/09/17](#)

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

iii) any Governmental Approvals necessary for TENANT's use of the Leased Site and/or improvements to the Leased Site, whether now or hereafter desired by TENANT, are canceled, expired, lapsed or are otherwise withdrawn, terminated or denied so that TENANT, in its reasonable judgment, determines that it will no longer be able to use the Leased Site for TENANT's intended use; or

iv) the Federal Communications Commission (which allocates the frequencies at which TENANT may operate its antennas and equipment) changes the frequencies at which TENANT operates its antennas and equipment, which change, in TENANT's reasonable judgment, renders its operation of a communications facility at the Leased Site obsolete; or

v) TENANT obtains, in its reasonable judgment, unacceptable results of any radio test, survey, title report or environmental study.

Each of the above conditions shall operate independently with regard to each Tower location leased by TENANT within the Leased Site. Any termination notice rendered by TENANT pursuant to this Paragraph shall cause the respective portion of the Lease to expire with the same force and effect as though the date set forth in such notice was the date originally set as the expiration date of the Lease. In the event of such termination, any prepaid, unearned rent shall be refunded to TENANT by OWNER.

b) In addition, and provided that TENANT is not then in default under this Lease, TENANT may, during any Renewal Term, upon ninety (90) days written notice to OWNER, terminate and cancel all or a portion of this Lease if TENANT determines that any portion of the Leased Site have become unsuitable for TENANT's operations, upon payment in guaranteed funds to OWNER of a termination fee equal to six (6) months' rent at the rate then in effect. As to such termination fee, TENANT shall receive a credit equal to the amount of any unearned rent as of the date of such termination.

6) ASSIGNMENT AND SUBLETTING

a) Except to a "Partner Company," "Affiliate" or "Subsidiary" of TENANT (as defined below), or to an entity acquiring all or substantially all of TENANT's assets through merger, acquisition, sale or other similar transaction, TENANT shall not assign this Lease, or allow it to be assigned, in whole or in part, by operation of law or otherwise, or mortgage or pledge the same, or sublet the Leased Site, or any part thereof, without the prior written consent of OWNER, such consent not to be unreasonably withheld or delayed.

b) Each of the members of TENANT is a Partner Company. An Affiliate of an entity is any entity which directly or indirectly controls, is controlled by, or under common control with, that party. "Control" of a person or entity means the power (directly or indirectly) to direct the management or policies of that person or entity, whether through the ownership of voting securities,

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

by contract, by agency or otherwise. A Subsidiary of an entity is any entity eighty percent (80%) or more of the ownership of which is owned by such entity.

c) No consent by OWNER to any assignment or sublease by TENANT shall relieve TENANT of any obligation to be performed by TENANT under this Lease, whether arising before or after the assignment or sublease. The consent by OWNER to any assignment or sublease shall not relieve TENANT from the obligation to obtain OWNER's express written consent to any other assignment or sublease.

d) Any sale or other transfer, including by consolidation, merger or reorganization, of a majority of the voting stock of TENANT, if TENANT is a corporation, or any sale or other transfer of a majority in interest (whether of profits, losses, capital or voting power) or a majority of the persons comprising the managers of the partnership, if TENANT is a partnership, shall not be an assignment for purposes of this Paragraph 6.

7) FIRE OR OTHER CASUALTY

a) If the Tower, or access to it, is damaged or destroyed by a casualty covered by the insurance carried by OWNER, it shall be OWNER's option whether or not to commence appropriate repairs (to be diligently prosecuted to completion entirely at OWNER's expense). If OWNER decides to repair the Tower, this Lease shall continue in full force and effect. If, however, the Tower is damaged to the extent that OWNER decides not to repair it, OWNER shall deliver written notice to TENANT, within thirty (30) days after the casualty, of OWNER's election not to repair, restore and/or reconstruct the Tower but to designate a site on which TENANT may relocate in accordance with Paragraph 7.C. below. If, as a result of any such casualty, any portion of the Leased Site becomes totally or partially unusable by TENANT, rent shall abate during the period of repair in the same proportion to the total rent as the portion of the Leased Site rendered unusable bears to the entirety of the Leased Site.

b) If OWNER (i) undertakes the repair, restoration and/or reconstruction of the Tower(s) or of any access thereto, but fails to complete such repair, restoration and/or reconstruction within forty-five (45) days after the casualty, (ii) notifies TENANT of OWNER's intention not to repair restore and/or reconstruct the Tower, or (iii) fails to deliver to TENANT the written notice required under Paragraph 7.A. within thirty (30) days, then TENANT may immediately cancel this Lease by giving written notice of its election to cancel to OWNER.

c) OWNER agrees that during any period of repair, restoration and/or reconstruction, OWNER will exercise its best efforts to designate a site TENANT may use to place temporary transmission and reception facilities, provided such site is available. The exact site to which TENANT may relocate will be determined by OWNER, and it may be upon any portion of OWNER's Property (or other property owned or controlled by OWNER), provided that TENANT reasonably approves the site as equally suitable for TENANT's intended uses. . In the event the Parties cannot reasonably agree on a mutually acceptable alternative location on the Property, TENANT shall have

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

the right to terminate this Lease immediately upon written notice to OWNER without incurring any further financial liability to OWNER for such early termination.

8) INDEMNIFICATION AND INSURANCE

a) TENANT hereby agrees to indemnify and hold OWNER harmless from and against any and all claims of liability for personal injury, property damage or business interference to the extent that they result from or arise out of the acts or omissions of TENANT, its agents and employees in, on or about the Tower and/or the Leased Site, whether during the installation of the Antenna Facilities and Equipment, or the operation and/or maintenance of such. OWNER agrees to indemnify, defend and hold TENANT harmless from and against any and all injury, loss, damage or liability, costs or expenses in connection with a third party claim (including reasonable attorneys' fees and court costs) arising directly from the actions or failure to act of OWNER, its employees, invitees, agents or independent contractors, or OWNER's breach of any provision of this Lease, except to the extent attributable to the negligent or intentional act or omission of TENANT, its employees, agents or independent contractors. The indemnified party: (i) shall promptly provide the indemnifying party with written notice of any claim, demand, lawsuit, or the like for which it seeks indemnification pursuant to this Section 9 and provide the indemnifying party with copies of any demands, notices, summonses, or legal papers received in connection with such claim, demand, lawsuit, or the like; (ii) shall not settle any such claim, demand, lawsuit, or the like without the prior written consent of the indemnifying party; and (iii) shall fully cooperate with the indemnifying party in the defense of the claim, demand, lawsuit, or the like. A delay in notice shall not relieve the indemnifying party of its indemnity obligation, except (1) to the extent the indemnifying party can show it was prejudiced by the delay; and (2) the indemnifying party shall not be liable for any settlement or litigation expenses incurred before the time when notice is given. Except for the indemnity obligations set forth in this Lease, and otherwise notwithstanding anything to the contrary in this Lease, TENANT and OWNER each waives any claims that each may have against the other with respect to consequential, incidental or special damages, however caused, based on any theory of liability.

b) TENANT shall provide OWNER with a certificate of insurance issued by an insurance company eligible to do business in Texas indicating that TENANT carries commercial general liability insurance including contractual liability coverage with limits of liability thereunder of \$1 million combined single limit, per occurrence and in the aggregate, for bodily injury and/or property damage. Such insurance shall include OWNER as an additional insured with respect to matters arising out of TENANT's use of and operations at the Leased Site. OWNER'S additional insured status shall (i) be limited to bodily injury, property damage or personal and advertising injury caused, in whole or in part, by TENANT, its employees, agents or independent contractors; (ii) not extend to claims for punitive or exemplary damages arising out of the acts or omissions of OWNER, its employees, agents or independent contractors or where such coverage is prohibited by law or to claims arising out of the gross negligence of OWNER, its employees, agents or independent contractors; and, (iii) not exceed TENANT'S indemnification obligation under this Agreement, if any. TENANT will provide OWNER with a renewal certificate within ten (10) business days of OWNER's written request for such certificate. Any insurance required to be provided by TENANT

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

under this Paragraph 8 may be provided by a blanket insurance policy covering the Leased Site and other locations of TENANT, provided such blanket insurance policy complies with all of the other requirements of this Lease with respect to the type and amount of insurance required. TENANT may also fulfill its requirements under this Paragraph 8 through a program of self-insurance. If TENANT elects to self-insure, then TENANT shall furnish OWNER with a letter stating that there is a self-insurance program in effect that provides for the same, or greater, coverage than required of TENANT herein.

c) Tenant shall provide at least thirty (30) days prior written notification to Licensor of cancellation of any required coverage that is not replaced.

d) TENANT agrees to indemnify and save harmless OWNER from and against the payment of any deductible and from the payment of any premium on any insurance policy required to be furnished by this Lease.

e) TENANT shall endeavor to require that each and every one of its contractors and their subcontractors carry, in full force and effect, workers' compensation, commercial general liability and automobile liability insurance coverages of the type which TENANT is required to obtain under the terms of this paragraph with appropriate limits of insurance.

f) Once during the Initial Term and once during each Renewal Term, OWNER may review the insurance coverages to be carried by TENANT. If OWNER reasonably determines that higher limits of coverage are necessary to protect the interests of OWNER, TENANT shall be so notified and shall obtain the additional limits of insurance, at its sole cost and expense.

9) UTILITIES

TENANT shall be responsible directly to the serving entities for all utilities required by TENANT's use of the Leased Site, however, OWNER agrees to cooperate with TENANT in its efforts to obtain utilities from any location provided by the OWNER or the servicing utility. Should electric power be provided by OWNER, TENANT will install an electric meter and TENANT's usage shall be read by OWNER (or, at TENANT's option and cost, by a meter reading service selected by TENANT) on a monthly basis and the cost of electricity used by TENANT shall be paid monthly by TENANT to OWNER, upon thirty (30) days written notice thereof, as a payment separate from rent. OWNER agrees that it will not include a markup on the utility charges. If TENANT submeters electricity from OWNER, OWNER agrees to give TENANT at least twenty-four (24) hours advanced notice of any planned interruptions of said electricity. OWNER acknowledges that TENANT provides a communication service which requires electrical power to operate and must operate twenty-four (24) hours per day, seven (7) days per week. If the interruption is for an extended period of time, in TENANT's reasonable determination, OWNER agrees to allow TENANT the right to bring in a temporary source of power for the duration of the interruption. OWNER will not be responsible for interference with, interruption of or failure, beyond the reasonable control of OWNER, of such services to be furnished or supplied by OWNER. OWNER agrees to grant to any utility

12/07/1742:05:4744:0947

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

company providing utility services to TENANT, an easement for the purpose of constructing, operating and maintaining utilities to provide such services to the Leased Site. Such easement shall be in a location to be approved by OWNER, which approval shall not be unreasonably withheld, conditioned or delayed. Upon TENANT's or a utility company's request, OWNER will execute a separate recordable easement evidencing this grant.

10) RIGHTS TO EQUIPMENT; CONDITION ON SURRENDER

TENANT's Antenna Facilities shall remain personal to and the property of TENANT. OWNER waives any and all lien rights it may have, statutory or otherwise, concerning the Antenna Facilities or any portion thereof. The Antenna Facilities shall be deemed personal property for purposes of this Agreement, regardless of whether any portion is deemed real or personal property under applicable law; OWNER consents to TENANT's right to remove all or any portion of the Antenna Facilities from time to time in TENANT's sole discretion and without OWNER's consent. At the termination or expiration of this Lease, TENANT shall (A) remove its Antenna Facilities, (B) repair any damage caused by such removal, (C) with respect to any land leased, remove all of its equipment, other than utilities or foundations that are at or below grade, and (D) otherwise surrender the Leased Site at the expiration of the term (as the same may have been extended or the earlier termination thereof) in good condition, ordinary wear and tear, damage by fire and other casualty excepted.

11) TENANT DEFAULTS

a) The occurrence of any one or more of the following events shall constitute an "Event of Default" hereunder by TENANT:

i) The failure by TENANT to make any payment of Rent or any other payment required to be made by TENANT hereunder, as and when due, where such failure shall continue for a period of twenty (20) days after written notice thereof is received by TENANT from OWNER.

ii) The failure by TENANT to observe or perform any of the covenants or provisions of this Lease to be observed or performed by TENANT, other than as specified in Paragraph 11.A.(i), where such failure shall continue for a period of thirty (30) days after written notice thereof is received by TENANT from OWNER; provided, however, that it shall not be deemed an Event of Default by TENANT if TENANT shall commence to cure such failure within said thirty (30) day period and thereafter diligently prosecutes such cure to completion.

b) If there occurs an Event of Default by TENANT, in addition to any other remedies available to OWNER at law or in equity, OWNER shall have option to terminate this Lease and all rights of TENANT hereunder.

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

c) If there occurs an Event of Default by TENANT and the Lease is terminated, OWNER shall have the right to re-enter the Leased Site and remove persons or property from the Leased Site or the Tower if TENANT fails to do so within sixty (60) days from the termination date of the LEASE.

(d) The following will be deemed a default by OWNER and a breach of this Agreement: (i) failure to provide access to the Leased Site or to cure an interference problem within forty-eight (48) hours after receipt of written notice of such default; or (ii) OWNER's failure to perform any term, condition or breach of any warranty or covenant under this Agreement within forty-five (45) days after receipt of written notice from TENANT specifying the failure. No such failure, however, will be deemed to exist if OWNER has commenced to cure the default within such period and provided such efforts are prosecuted to completion with reasonable diligence. Delay in curing a default will be excused if due to causes beyond the reasonable control of OWNER. If OWNER remains in default beyond any applicable cure period, TENANT will have: (i) the right to cure OWNER's default and to deduct the costs of such cure from any monies due to OWNER from TENANT, and (ii) any and all other rights available to it under law and equity.

12) NOTICES

All notices hereunder must be in writing and, unless otherwise provided herein, shall be deemed validly given if sent by certified mail, return receipt requested, addressed as follows (or to any other mailing address which the party to be notified may designate to the other party by such notice). Notice by any other method (whether by hand-delivery, overnight delivery service, or otherwise) shall only be deemed effective upon receipt by the intended recipient. Should OWNER or TENANT have a change of address, the other party shall immediately be notified as provided in this Paragraph of such change. Unless OWNER otherwise specifies in writing, rent checks from TENANT shall be sent to the person listed below to whom notices are sent.

TENANT:

New Cingular Wireless PCS, LLC
 Attn: Network Real Estate Administration
 Re: Cell Site#: DX0050; Cell Site Name: City of Celina (TX)
 Fixed Asset No: 12842469
 575 Morosgo Drive NE
 Atlanta, Georgia 30324

With a copy to:

New Cingular Wireless PCS, LLC
 Attn: Legal Department
 Re: Cell Site#: DX0050; Cell Site Name: City of Celina (TX)
 Fixed Asset No: 12842469
 208 S. Akard Street

11/2/07/1712/05/1711/09/17

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

Dallas, TX 75202-4206

OWNER:

City of Celina
 142 North Ohio Street
 Celina, Texas 75009

13) SALE OR TRANSFER BY OWNER

(a) Should OWNER, at any time during the term of this Lease, sell, lease, transfer or otherwise convey all or any part of OWNER's Property to any transferee other than TENANT, then such transfer shall be under and subject to this Lease and all of TENANT's rights hereunder. In the event of a change in ownership, transfer or sale of the OWNER's Property, within ten (10) days of such transfer, OWNER or its successor will send the documents listed below in this subsection (b) to TENANT. Until TENANT receives all such documents, TENANT shall not be responsible for any failure to make payments under this Agreement and reserves the right to hold payments due under this Agreement.

- i. New IRS Form W-9
- ii. Full contact information for new OWNER including all phone number(s)
- iii. Copy of deed or other instrument of transfer

(b) If at any time after the date of this Agreement, OWNER receives a bona fide written offer from a third party seeking an assignment of the rental stream associated with this Agreement ("Rental Stream Offer"), OWNER shall immediately furnish TENANT with a copy of the Rental Stream Offer. TENANT shall have the right within twenty (20) days after it receives such copy and representation to match the Rental Stream Offer and agree in writing to match the terms of the Rental Stream Offer. Such writing shall be in the form of a contract substantially similar to the Rental Stream Offer. If TENANT chooses not to exercise this right or fails to provide written notice to OWNER within the twenty (20) day period, OWNER may assign the rental stream pursuant to the Rental Stream Offer, subject to the terms of this Agreement.

14) HAZARDOUS SUBSTANCES

a) TENANT represents and warrants that its use of the Leased Site herein will not generate any hazardous substance, and it will not store or dispose on the Leased Site nor transport to or over the Leased Site any hazardous substance in violation of any laws or regulations relating thereto. TENANT further agrees to hold OWNER harmless from and indemnify OWNER against any release of any such hazardous substance and any damage, loss, or expense or liability resulting from such release including all attorneys' fees, costs and penalties incurred as a result thereof except any release caused by the negligence of OWNER, its employees or agents. "Hazardous substance" shall be interpreted broadly to mean any substance or material defined or designated as hazardous or

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

toxic waste, hazardous or toxic material, hazardous or toxic or radioactive substance, or other similar term by any federal, state or local environmental law, regulation or rule presently in effect or promulgated in the future, as such laws, regulations or rules may be amended from time to time; and it shall be interpreted to include, but not be limited to, any substance which after release into the environment will or may reasonably be anticipated to cause sickness, death or disease. OWNER has no knowledge of any Hazardous substance located on or about the OWNER's Property, nor will OWNER allow any such substance or hazardous condition to exist. To the extent allowed by law, OWNER agrees to hold harmless and indemnify TENANT from, and to assume all duties, responsibilities and liabilities at the sole cost and expense of OWNER for, payment of penalties, sanctions, forfeitures, losses, costs or damages, and for responding to any action, notice, claim, order, summons, citation, directive, litigation, investigation or proceeding, to the extent arising from subsurface or other contamination of the OWNER's Property with hazardous substances prior to the effective date of this Agreement or from such contamination caused by the acts or omissions of the OWNER during the Term. In the event TENANT becomes aware of any hazardous materials on the OWNER's Property, or any environmental, health or safety condition or matter relating to the OWNER's Property, that were not caused by TENANT and, in TENANT's sole determination, renders the condition of the Leased Site or OWNER's Property unsuitable for TENANT's use, or if TENANT believes that the leasing or continued leasing of the Leased Site would expose TENANT to undue risks of liability to a government agency or third party, TENANT will have the right, in addition to any other rights it may have at law or in equity, to terminate this Agreement upon written notice to OWNER.

15) CONDEMNATION

a) In the event the whole of OWNER's Property, including without limitation the Leased Site and the Tower, shall be taken or condemned, either temporarily or permanently, for public purposes, or sold to a condemning authority under threat of condemnation to prevent taking, then this Lease shall forthwith automatically cease and terminate.

b) In the event any portion of the Leased Site or the Tower shall be taken or condemned, either temporarily or permanently, for public purposes, or sold to a condemning authority under threat of condemnation to prevent taking, then OWNER agrees that TENANT may use and/or construct upon an alternative portion of OWNER's Property, as selected by OWNER, which is equally suitable for TENANT's purposes, provided such space is available. The exact site to which TENANT may relocate will be determined by OWNER, and it may be upon any portion of OWNER's Property (or other property owned or controlled by OWNER), provided that TENANT reasonably approves the site as equally suitable for TENANT's intended uses. OWNER will designate a site to which TENANT may relocate prior to the taking, condemnation or sale. In the event no alternative portion of the OWNER's Property (or other property owned or controlled by OWNER) is equally suitable for the purposes of TENANT, then this Lease shall forthwith automatically cease and terminate.

c) OWNER shall receive the entire condemnation award for land, the Tower and such other improvements as are paid for by OWNER, and TENANT hereby expressly assigns to OWNER

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

any and all right, title and interest of TENANT now or hereafter arising in and to any such award. TENANT shall have the right to recover from such authority, but not from OWNER, any compensation as may be awarded to TENANT on account of the leasehold interest, moving and relocation expenses, and depreciation to and removal of the personal property and fixtures of TENANT.

16) LIENS

TENANT shall keep the Leased Site free from any liens arising out of any work performed, materials furnished, or obligations incurred by or for TENANT. TENANT shall, within sixty (60) days following the imposition of any such lien, cause the same to be released of record by payment or posting of a proper bond. No work which OWNER permits TENANT to perform on the Leased Site shall be deemed to be for the use and benefit of OWNER so that no mechanic's or other lien shall be allowed against the estate of OWNER by reason of its consent to such work. OWNER shall have the right to post notices that it is not responsible for payment for any such work.

17) TAXES

a) OWNER shall be responsible for timely payment of all taxes and assessments levied upon the lands, improvements and other property of OWNER, including any such taxes that may be calculated by the taxing authority using any method, including the income method. TENANT shall be liable for and shall pay to the applicable taxing authority, if billed directly to TENANT, or to OWNER if billed to OWNER, upon thirty (30) days prior written notice from OWNER, any and all taxes and assessments levied against any personal property or trade or other fixtures placed by TENANT in or about the Leased Site.

b) TENANT shall pay as additional rent any increases in real property taxes levied against OWNER's Property, including the Tower, as a result of the improvements constructed by TENANT on the Leased Site. Nothing herein shall require TENANT to pay any inheritance, franchise, income, payroll, excise, privilege, rent, capital stock, stamp, documentary, estate or profit tax, or any tax of similar nature, that is or may be imposed upon OWNER. OWNER shall provide TENANT with copies of all assessment notices on or including the Leased Site within thirty (30) days after receipt by OWNER, along with sufficient written documentation detailing any assessment increases attributable to the leasehold improvements, if available. If OWNER does not provide such notice or notices to TENANT in a timely manner and TENANT's rights with respect to such taxes are prejudiced by the delay, OWNER shall reimburse TENANT for any increased costs directly resulting from the delay. TENANT shall have the right to contest, in good faith, the validity or the amount of any tax or assessment levied against the Leased Site by such appellate or other proceedings as may be appropriate in the jurisdiction, and may defer payment of such obligations, pay same under protest, or take such other steps as TENANT may deem appropriate. This right shall include the ability to institute any legal, regulatory or informal action in the name of OWNER, TENANT, or both, with respect to the valuation of the Leased Site. OWNER shall cooperate in the institution and prosecution of any such proceedings and will execute the relevant documents required therefor. The expense of

12/07/1712:05:1711:09:47

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

any such proceedings shall be borne by TENANT and any refunds or rebates secured as a result of TENANT's action shall belong to TENANT.

c) TENANT shall have the right but not the obligation to pay any taxes due by OWNER hereunder if OWNER fails to timely do so, in addition to any other rights or remedies of TENANT. In the event that TENANT exercises its rights under this Section 17(c) due to such OWNER default, TENANT shall have the right to deduct such tax amounts paid from any monies due to OWNER from TENANT.

18) QUIET ENJOYMENT AND NON-INTERFERENCE

a) OWNER warrants and agrees that TENANT, upon paying the Rent and performing the covenants herein provided, shall peaceably and quietly have and enjoy the Leased Site. Owner shall nevertheless continue to have access to the Leased Site as set forth herein.

b) OWNER hereby grants to TENANT, as a primary inducement to TENANT's entering into this Lease, the right to install its Antenna Facilities on the Tower (as set forth and listed on Exhibits "B" and "C") and operate its communications facility on the Tower and the ground space portion of the Leased Site (as set forth on Exhibit "B"). Where there are existing radio frequency user(s) on the OWNER's Property, OWNER will provide TENANT, upon execution of this Agreement, with a list of all existing radio frequency user(s) on the OWNER's Property to allow TENANT to evaluate the potential for interference. TENANT represents and warrants that its use and operation of its Antenna Facilities shall not interfere with existing radio frequency user(s) on the OWNER's Property so disclosed by OWNER, as long as the existing radio frequency user(s) operate and continue to operate within their respective frequencies and in accordance with all applicable laws and regulations. If TENANT's Antenna Facilities cause such interference, TENANT shall take all measures reasonably necessary to correct and eliminate the interference. If the interference cannot be eliminated in a reasonable time, TENANT shall immediately cease operating its facilities until the interference has been eliminated. If the interference cannot be eliminated within twenty (20) days, OWNER may terminate this Lease as its sole and exclusive remedy. TENANT's installation, operation, and maintenance of its Antenna Facilities shall not damage or interfere in any way with OWNER's operations or related repair and maintenance activities or with such activities of other pre-existing tenants. TENANT agrees to cease all such actions which materially interfere with OWNER's use of the Leased Site immediately upon actual notice of such interference, provided however, in such case, TENANT shall have the right to terminate the Lease.

c) OWNER, at all times during this Lease, reserves the right to take any action it deems necessary, in its sole discretion, to repair, maintain alter or improve the Leased Site in connection with its operations as may be necessary, including leasing parts of its Property and Tower to others. From time to time, OWNER may grant to other entities the right to operate communications facilities at the Leased Site and/or the right to install antennas in connection with the operation of such facilities or other communications facilities, provided that OWNER will not grant, after the Effective Date, a lease, license or any other right to any third party, if the exercise of such grant may in any way

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

adversely affect or interfere with the Antenna Facilities, the operations of TENANT or the rights of TENANT under this Lease. OWNER will notify TENANT in writing prior to granting any third party the right to install and operate communications equipment on the OWNER's Property. OWNER will not, nor will OWNER permit its employees, tenants, licensees, invitees, agents or independent contractors to interfere in any way with the Antenna Facilities, the operations of TENANT or the rights of TENANT under this Lease.

d). For the purposes of this provision, "interference" may include, but is not limited to, any other use on the Property or any other use on OWNER's other properties that causes electronic, physical or obstruction interference with, or degradation of the communications signals from TENANT's facility. In general, pre-existing facilities expressly excluded, the parties agree that the physical location within One Hundred Thirty feet (130') of TENANT's facility of another communications facility may cause interference. If TENANT notifies OWNER that there is interference, OWNER will cause such interference to cease within forty-eight (48) hours after receipt of notice of interference from TENANT, and if such interference is not cured within forty-eight (48) hours, TENANT will have the option to (i) terminate this Agreement by giving OWNER ten (10) days' written notice of its election to terminate, or (ii) if TENANT elects not to terminate this Agreement, OWNER agrees to allow TENANT, in place of OWNER, and to take any action, in law or in equity, necessary to cause the interfering tenant or licensee to eliminate such interference. TENANT acknowledges that its grant does not exclude other communication facilities on the Property (other than the Premises) and TENANT agrees to reasonably cooperate with OWNER and other potential communication facility operators as to their proposed operations not inconsistent with this Agreement.

19) COORDINATION OF OPERATION

As a consequence of the proposed twenty-four (24) hour daily basis of operation by TENANT, OWNER acknowledges that any action undertaken or permitted by OWNER in making repairs, alterations, additions or improvements to the Tower that might interfere with, suspend, cut-off or terminate access to or use by TENANT of the Leased Site or TENANT's Antenna Facilities, including without limitation, air-conditioning and utilities thereto, could cause inconvenience, expense and economic loss to TENANT. Therefore, OWNER agrees (i) to use its best efforts to minimize such inconvenience, possible loss or expense to TENANT by using its best efforts not to cause or permit any interruption or interfere with the operations of TENANT's antennas or equipment, particularly during the hours of 4:00 p.m. to 7:00 p.m. on any weekday, and (ii) except in emergency situations, as determined to exist by the OWNER, to give TENANT sixty (60) days advance notice of any normal or routine repairs, alterations, additions or improvements to be made with respect to the maintenance and operation of the Tower and the Leased Site or of any planned shutdowns associated with the Tower for scheduled or routine maintenance that might adversely affect the operation of TENANT's communications facility or Antenna Facilities.

20) BROKERS

| [11/2/07/1742/05/1744/09/47](#)

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

OWNER and TENANT represent to each other that they have not negotiated with any real estate broker in connection with this Lease.

21) ESTOPPEL CERTIFICATES

a) TENANT, at the request of OWNER, shall provide OWNER with a certificate stating: (i) that this Lease is unmodified and in full force and effect (or, if there has been any modification, that the same is in full force and effect as modified and stating the modification); (ii) whether or not, to TENANT's knowledge, there are then existing any set-offs, or defenses against the enforcement by OWNER of any of TENANT's agreements, terms, covenants or conditions hereof (and, if so specifying the same); and (iii) the dates, if any, to which the rent has been paid in advance.

b) OWNER, at the request of TENANT, shall provide TENANT with a certificate stating: (i) whether OWNER has any claim against TENANT and if so, stating the nature of such claim; (ii) that OWNER recognizes TENANT's right to TENANT's antennas, equipment and other property; (iii) that TENANT has the right to remove TENANT's equipment and other property from the Leased Site notwithstanding that same may be considered a fixture under local law; and (iv) that OWNER has no interest in and disclaims any interest to TENANT's equipment and other property.

22) MISCELLANEOUS PROVISIONS

a) OWNER warrants and agrees that OWNER is seized of good and sufficient title to and interest in the Leased Site and has full authority to enter into and execute this Lease and that there are no undisclosed liens, judgments or impediments of title on OWNER's Property that would affect this Lease.

b) This Lease, including attached exhibits which are hereby incorporated by reference, incorporates all agreements and understandings between OWNER and TENANT, and no verbal agreements or understandings shall be binding upon either OWNER or TENANT, and any addition, variation or modification to this Lease shall be ineffective unless made in writing and signed by the parties.

c) OWNER agrees that OWNER's Property (including, without limitation, the Tower), and all improvements, comply and during the term of this Lease shall continue to comply with all building, life/safety, disability and other laws, codes and regulations of any applicable governmental or quasi-governmental authority. All such compliance shall be accomplished at OWNER's sole cost and expense.

d) This Lease and the performance hereof shall be governed, interpreted, construed and regulated by the laws of the State of Texas.

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

e) This Lease, and each and every covenant and condition herein, is intended to benefit the Leased Site and shall extend to and bind the heirs, personal representatives, successors and assigns of the parties.

f) The parties agree that all of the provisions hereof shall be construed as both covenants and conditions, the same as if the words importing such covenants and conditions had been used in each separate paragraph.

g) The parties acknowledge that each has had an opportunity to review and negotiate this Lease and have executed this Lease only after such review and negotiation. The language of each part of this Lease shall be construed simply and according to its fair meaning, and this Lease shall not be construed more strictly in favor or against either party.

h) Provided OWNER uses its best efforts to provide promptly to TENANT a mutually agreeable Subordination, Non-Disturbance and Attornment Agreement, any mortgage now or subsequently placed upon any property of which the Leased Site are a part shall be deemed to be prior in time and senior to the rights of the TENANT under this Lease, and TENANT shall subordinate all of its interest in the leasehold estate created by this Lease to the lien of any such mortgage. TENANT shall, at OWNER's request, execute any commercially reasonable, additional documents necessary to indicate this subordination.

i) If OWNER breaches this Lease in any manner or substantially breaches any material term contained in any mortgage or deed of trust superior to TENANT's estate or contained in any lease under which OWNER holds title to any portion of OWNER's Property, and if OWNER fails to commence to cure such breach within thirty (30) days after receiving a written notice from TENANT exactly specifying the violation (or if OWNER fails thereafter to diligently prosecute the cure to completion), then TENANT may, in addition to any other rights or remedies it may have, immediately terminate the Lease.

j) If any portion of this Lease is declared by a court of competent jurisdiction to be invalid or unenforceable, then such portion shall be deemed modified to the extent necessary in such court's opinion to render such portion enforceable and, as so modified, such portion and the balance of this Lease shall continue in full force and effect.

k) The captions of the paragraphs of this Lease are for convenience of reference only and shall not affect the interpretation of this Lease.

l) Only qualified and adequately insured agents, contractors or persons under TENANT's direct supervision will be permitted to climb the Tower or to install or remove TENANT's Antenna Facilities from the Tower. OWNER retains the right to permit its own employees and agents and employees and agents of subsequent users of the Tower, to climb the Tower for all purposes that do not interfere with the TENANT's use of the Tower, as long as such subsequent users comply with the non-interference provisions of this Lease.

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

m) Concurrently with the execution of this Lease, OWNER shall execute before a notary and deliver to TENANT for recording a "Memorandum of Lease Agreement" in the form attached as Exhibit "D", with the same Exhibits "A", "B", and "C" as are attached to this Lease. Such Memorandum shall not disclose any financial terms, unless required to do so by the laws of such jurisdiction.

IN WITNESS WHEREOF, OWNER and TENANT have duly executed this Lease as of the date first above written.

TENANT:

New Cingular Wireless PCS, LLC,
 a Delaware limited liability company
 By: AT&T Mobility Corporation
 Its: Manager

By: _____
 Name: Leigh Ann Dodson
 Title: Area Manager RE&C NTX Network Ops
 Date: _____

OWNER:

CITY OF CELINA

By: _____
 Name: _____
 Title: _____
 Date: _____

12/07/17 12:05:17 11-09:47

Site Name: City of Celina
Site Number: DX0050
Fixed Asset No: 12842469

EXHIBIT "A"

LEGAL DESCRIPTION OF OWNER'S PROPERTY

Attachment: DX0050 City of Celina 11-2-17 (Ground and Tower Lease Agreement)

[12/07/1712/05/1711-09/17](#)

Site Name: City of Celina
Site Number: DX0050
Fixed Asset No: 12842469

EXHIBIT "B"

DESCRIPTION OF LEASED SITE

Attachment: DX0050 City of Celina 11-2-17 (Ground and Tower Lease Agreement)

[12/07/1712/05/1711-09/17](#)

Site Name: City of Celina
Site Number: DX0050
Fixed Asset No: 12842469

EXHIBIT "C"

Tower space portion of the Leased Site

Attachment: DX0050 City of Celina 11-2-17 (Ground and Tower Lease Agreement)

[12/07/1712:05:1711:09:17](#)

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

EXHIBIT "D"

MEMORANDUM OF LEASE AGREEMENT

This Memorandum made this ____ day of _____, 2017, between the CITY OF CELINA, TEXAS, with its principal mailing address of 142 North Ohio Street, Celina, Texas 75009, hereinafter designated OWNER, and New Cingular Wireless PCS, LLC having a mailing address of 12555 Cingular Way, Suite 1300, Alpharetta, GA 30004, for a term of five (5) years with the right to renew for four (4) additional five (5) year terms, plus automatic one (1) year renewals thereafter, unless terminated in accordance with the terms of the Agreement. A copy of the Agreement is on file at the principal office of the OWNER and the TENANT.

2. OWNER hereby leases to TENANT a portion of that certain space on the OWNER's water tower, hereinafter referred to as the Water Tower, located at 1803 Light Farms Way, Prosper, Texas 75078, and more particularly described on attached Exhibit "A", together with a parcel of land sufficient for the installation of TENANT's equipment building as shown on Exhibit "B", attached hereto and made a part hereof, together with the non-exclusive right for ingress and egress, seven (7) days a week, twenty-four (24) hours a day, on foot or motor vehicle, including trucks, along a twenty five (25) foot wide right-of-way extending from the nearest public right-of-way, to the demised premises, and the non-exclusive right for the installation and maintenance of utility wires, poles, cables, conduits, and pipes over, under, or along one or more rights-of-way from the demised premises, said demised premises and rights-of-way being substantially as described herein in Exhibit "B" and attached hereto and made a part hereof.

3. The Agreement commences on the first (1st) day of the month following the date the Agreement is executed by the parties or the first (1st) day of the month following the date TENANT is granted a building permit by the governmental agency charged with issuing such permits, whichever event occurs last.

4. The terms, covenants and provisions of the Agreement of which this is a Memorandum, shall extend to and be binding upon the respective executors, administrators, heirs, successors and assigns of OWNER and TENANT.

IN WITNESS WHEREOF, hereunto OWNER and TENANT have caused this Memorandum to be duly executed on the day and year first written above.

| [11/2/07/1742/05/1711/09/17](#)

Site Name: City of Celina
Site Number: DX0050
Fixed Asset No: 12842469

OWNER:

CITY OF CELINA

By: _____
Name: _____
Title: _____
Date: _____

TENANT:

New Cingular Wireless PCS, LLC,
a Delaware limited liability company
By: AT&T Mobility Corporation
Its: Manager

By: _____
Name: Leigh Ann Dodson
Title: Area Manager RE&C NTX Network Ops
Date: _____

Attachment: DX0050 City of Celina 11-2-17 (Ground and Tower Lease Agreement)

Site Name: City of Celina
 Site Number: DX0050
 Fixed Asset No: 12842469

NOTARY ACKNOWLEDGEMENT

STATE OF TEXAS

COUNTY OF COLLIN

The foregoing instrument was acknowledged before me this ____ day of _____, 2017, by _____, as _____ on behalf of said City. He is personally known to me or has produced a driver's license as identification.

(AFFIX NOTARIAL SEAL)

 (OFFICIAL NOTARY SIGNATURE)
 NOTARY PUBLIC — STATE OF TEXAS

My commission expires:

 (Printed, Typed or Stamped Name of Notary)

STATE OF TEXAS

COUNTY OF DALLAS

The foregoing instrument was acknowledged before me this ____ day of _____, 2017, by Leigh Ann Dodson, Area Manager RE&C NTX Ops, of AT&T Mobility Corporation, the Manager of New Cingular Wireless PCS, LLC on behalf of said company. She is personally known to me.

(AFFIX NOTARIAL SEAL)

 (OFFICIAL NOTARY SIGNATURE)
 NOTARY PUBLIC — STATE OF TEXAS

My commission expires:

 (Printed, Typed or Stamped Name of Notary)

 12/07/1712/05/1711/09/17



Public Works
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Alan Fourmentin, Director of Public Works
CC: Jason Laumer, City Manager
Date: December 12, 2017
Re: Pump Stations Improvement Project

Action Requested:

Consider and act to authorize the City Manager to execute a contract by and between the City of Celina and Felix Construction Company in the amount of \$5,193,349 for the construction of improvements to the Celina Road and Downtown Pump Stations. (Fourmentin)

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:

City Attorney has reviewed the contract

Supporting Documents:

Letter of recommendation
Bid tabulation
Contract

Staff Recommendation:

Approve



3010 Gaylord Parkway
Suite 190
Frisco, TX 75034
TEL 972.377.7480
FAX 972.377.8380
www.GarverUSA.com

12/5/2017

Mr. Alan Fourmentin
City of Celina
142 N. Ohio Drive
Celina, TX 75009

Re: Celina Booster Pump Stations Improvements
Recommendation of Award

Dear Mr. Fourmentin:

Bids were received for the Celina Booster Pump Stations Improvements Project at City Hall at 10:00 AM on December 5, 2017. 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 2 bids were received on the project. Felix Construction Company submitted the low base bid for the project in the amount of \$3,909,450. Felix Construction Company also submitted the low base bid and additive alternatives total in the amount of \$5,193,349.

We conducted reference checks on the provided references and they have been positive. All submitted qualifications and similar projects meet the size and scope of this project. Therefore, we believe that the bid submitted by Felix Construction Company represents a responsive and responsible bid. We recommend that the construction contract for the Celina Booster Pump Stations Improvements be awarded to Felix Construction Company, along with any alternatives that you wish.

Please call me if you have any questions.

Sincerely,

GARVER, LLC

Lance Klement, P.E.
Project Manager

Attachments: Bid Tabulation

Attachment: 2017-12-6 Recommendation of Award (Pump Stations Improvement Project)



Celina Booster Pump Stations Improvements
Bid Tabulation

Pre-Qualified Contractors	Felix Construction Company	Gracon Construction, Inc.
Attended Pre-Bid	Yes	Yes
Acknowledgement of All Addenda	Yes	Yes
Bid contains the following forms:		
1. Proposal	Yes	Yes
2. Bid Form	Yes	Yes
3. List of Manufacturer's	Yes	Yes
4. Receipt of Addendum 1	Yes	Yes
5. Bidder Qualification Statement	Yes	Yes
6. COI forms	Yes	Yes
a. Conflict of Interest	Yes	Yes
b. Certificate of Interested Parties	Yes	No
7. Bid Bond	Yes	Yes
Bid Prices as Opened 12/05/2017 (All values expressed in full dollars)		
Celina Road Pump Station Improvements, in accordance with specifications and drawings	\$1,749,350	\$1,882,000
Downtown Pump Station Improvements, in accordance with specifications and drawings	\$2,011,931	\$2,087,000
Storm Water Pollution Prevention Plan (SWPPP)	\$3,960	\$1,000
Power Coordination Study	\$24,209	\$21,300
Independent Testing Allowance	\$20,000	\$20,000
Work Change Directives Allowance	\$100,000	\$100,000
Total Lump Sum Base Bid Price	\$3,909,450	\$4,111,300
Note:		
Additive Alternates		
Alternate 1: Celina Road Backup Power	\$581,388	\$650,000
Alternate 2: Downtown Backup Power	\$465,388	\$526,000
Alternate 3: Paved Driveways, at both Celina Road and Downtown locations	\$237,123	\$242,000
Total Additive Alternates	\$1,283,899	\$1,418,000
Total Lump Sum Base Bid and Additive Alternates Price	\$5,193,349	\$5,529,300

Pre-Qualified Contractors	Felix	Gracon
Key Sub-Contractors		
1. Electrical	CF Electric	None Listed

Attachment: 2017-12-6 Recommendation of Award (Pump Stations Improvement Project)

SPECIFICATIONS AND CONTRACT DOCUMENTS



CELINA, TX

CELINA PUMP STATIONS IMPROVEMENTS

Volume 1: Bidding Requirements, Contract
Documents, and Technical Specifications
Divisions 01 - 23

Garver Project ID: 17088075
eBidDoc # 5422530

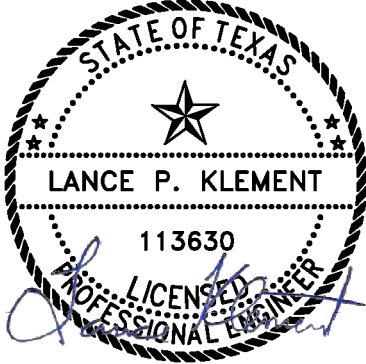
Prepared For:

City of Celina

November 2017

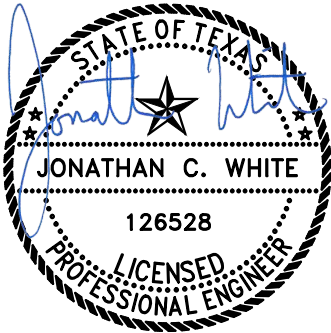


000001 – CERTIFICATIONS

	CELINA PUMP STATIONS IMPROVEMENTS GARVER PROJECT NO. 17088075 eBidDocTM # 5422530	
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	
Lance Klement, P.E.  Digitally Signed: November 17, 2017	Front Ends Division 01 General Requirements Division 02 Existing Conditions Division 22 Plumbing Division 23 HVAC Division 31 Earthwork Division 32 Exterior Improvements Division 33 Utilities Division 40 Process Integration Division 44 Pollution Control Equipment	
Kipp Martin, P.E.  Digitally Signed: November 17, 2017	Division 03 Concrete Division 05 Metals Division 06 Wood and Plastics Division 07 Thermal and Moisture Protection Division 08 Openings Division 09 Finishes Division 10 Specialties Division 13 Special Construction	

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

000001 – CERTIFICATIONS

Jonathan White, P.E.  Digitally Signed: November 17, 2017	Division 26 Electrical
--	-------------------------------

GARVER, LLC CERTIFICATE OF AUTHORIZATION:
TX ENGINEERING REGISTRATION NO. F-5713 Expiration Date: 01/31/18 3010 Gaylord Parkway Suite 190 Frisco, TX 75034 972-377-7480

CITY OF CELINA
CELINA PUMP STATIONS IMPROVEMENTS

TABLE OF CONTENTS

VOLUME 1 BIDDING REQUIREMENTS, CONTRACT DOCUMENTS, AND SPECIFICATIONS

Description

PART 1 - BIDDING DOCUMENTS

SECTION 1	Notice to Bidders
SECTION 2	Prevailing Wage Rates for Municipal Construction
SECTION 3	Proposal
SECTION 4	Bidder Qualification Statement
SECTION 5	Bid Bond
SECTION 6	Standard Form of Agreement
SECTION 7	Performance Bond and Payment Bond
SECTION 8	Maintenance Bond
SECTION 9	General Conditions of Agreement
SECTION 10	Special Provisions/Specifications

PART 2 – ATTACHMENTS

APPENDIX A	Drug-Free Jobsite on City Construction Projects
APPENDIX B	Contractor's Affidavit of Final Payment and Release
1	Pay Estimate Check List
2	Inspection Report- Erosion Control
3	Change Order Request Form
4	Request for Information Form (RFI)

TECHNICAL SPECIFICATIONS

DIVISION 01 GENERAL REQUIREMENT

01 11 00	SUMMARY OF WORK
01 11 20	ADDITIVE BID ALTERNATES COORDINATION
01 14 00	WORK RESTRICTIONS
01 26 00	CONTRACT MODIFICATION PROCEDURES
01 29 00	PAYMENT PROCEDURES
01 31 00	PROJECT MANAGEMENT AND COORDINATION
01 31 19	PROJECT MEETINGS
01 32 90	SAFETY PLAN
01 33 00	SUBMITTAL PROCEDURES
01 34 00	PHOTOGRAPHIC AND VIDEOGRAPHIC DOCUMENTATION
01 41 00	REGULATORY REQUIREMENTS
01 42 00	REFERENCES
01 45 00	QUALITY CONTROL
01 50 00	TEMPORARY FACILITIES AND CONTROLS
01 60 00	PRODUCT REQUIREMENTS
01 73 20	CUTTING AND PATCHING
01 75 60	TESTING, TRAINING, AND FACILITY START-UP
01 77 00	CLOSEOUT PROCEDURES
01 78 23	OPERATION AND MAINTENANCE DATA

01 79 00	DEMONSTRATION AND TRAINING
01 79 00.1	SUPPLEMENT 1 – MANUFACTURERS CERTIFICATE OF PROPER INSTALLATION
01 79 00.2	SUPPLEMENT 2 – UNIT PROCESS STARTUP FORM
01 79 00.3	SUPPLEMENT 3 – FACILITY PERFORMANCE DEMONSTRATION CERTIFICATION FORM
01 79 01	SPARE PARTS AND MAINTENANCE
01 81 02	SEISMIC DESIGN CRITERIA
01 81 04	WIND DESIGN CRITERIA

DIVISION 02 EXISTING CONDITIONS

02 41 00	DEMOLITION
----------	------------

DIVISION 03 CONCRETE

03 01 00	CONCRETE SURFACE REPAIR
03 11 00	CONCRETE FORMWORK
03 15 00	CONCRETE ACCESSORIES
03 20 00	CONCRETE REINFORCEMENT
03 30 00	CAST-IN-PLACE CONCRETE
03 41 00	PRECAST CONCRETE
03 60 00	GROUT
03 60 00.1	GROUT SUPPLEMENT
03 64 00	CONCRETE REPAIR CRACK INJECTION

DIVISION 05 METALS

05 31 10	LONG SPAN METAL DECK
----------	----------------------

DIVISION 06 WOOD & PLASTICS

06 10 00	ROUGH CARPENTRY
06 22 00	CABINETWORK

DIVISION 07 THERMAL AND MOISTURE PROTECTION

07 21 01	METAL BUILDING INSULATION
07 72 33	ALUMINUM ROOF HATCHES
07 29 00	JOINT SEALANTS

DIVISION 08 OPENINGS

08 11 13	STEEL DOORS AND FRAMES
08 71 00	DOOR HARDWARE

DIVISION 09 FINISHES

09 90 00	PAINTING AND PROTECTIVE COATINGS
----------	----------------------------------

DIVISION 10 SPECIALTIES

10 21 13	TOILET PARTITIONS AND SCREENS
10 28 00	TOILET AND BATH ACCESSORIES

DIVISION 13 SPECIAL CONSTRUCTION

13 30 11	PLUGGING AND ABANDONING EXISTING WATER WELL
13 34 19	METAL BUILDING SYSTEMS

DIVISION 22 PLUMBING

22 05 00	PLUMBING GENERAL
22 05 29	PROCESS SUPPORTS AND ANCHORS
22 05 53	MECHANICAL IDENTIFICATION
22 11 16	PLUMBING PIPING
22 13 16	SANITARY WASTE AND VENT PIPING

22 40 00 PLUMBING FIXTURES

DIVISION 23 HVAC

23 01 00 MECHANICAL GENERAL
 23 05 00 COMMON WORK RESULTS FOR MECHANICAL
 23 05 53 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT
 23 05 93 TESTING, ADJUSTING, AND BALACING
 23 07 00 DUCT INSULATION
 23 09 13 HVAC CONTROLS
 23 31 13 METAL DUCTS
 23 33 00 AIR DUCT ACCESSORIES
 23 34 23 FANS
 23 37 13 AIR OUTLETS AND INLETS
 23 74 13 PACKAGED AIR CONDITIONING UNITS
 23 81 27 MINI SPLIT SYSTEM AIR CONDITIONING UNITS
 23 83 01 HEATING UNITS

VOLUME 2 TECHNICAL SPECIFICATIONS

DIVISION 26 ELECTRICAL

26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
 26 05 14 WIRING DEVICES
 26 05 15 ELECTRIC MOTORS
 26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS & CABLES
 26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
 26 05 29 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
 26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
 26 05 36 CABLE TRAYS FOR ELECTRICAL SYSTEMS
 26 05 43 UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS
 26 05 48 VIBRATION AND SEISMIC CONTROL FOR ELECTRICAL SYSTEMS
 26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS
 26 05 70 POWER SYSTEM STUDY
 26 09 43 FIBER OPTIC NETWORK
 26 22 00 LOW-VOLTAGE TRANSFORMERS
 26 24 13 SWITCHBOARDS
 26 24 16 PANELBOARDS
 26 24 19 MOTOR CONTROL CENTERS
 26 28 13 FUSES
 26 28 16 ENCLOSED SWITCHES AND CIRCUIT BREAKERS
 26 29 13 ENCLOSED CONTROLLERS
 26 29 23 VARIABLE FREQUENCY MOTOR CONTROLLERS
 26 32 13 ENGINE GENERATORS
 26 36 00 TRANSFER SWITCHES
 26 43 13 SURGE PROTECTION FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS
 26 51 00 INTERIOR LIGHTING
 26 56 00 EXTERIOR LIGHTING
 26 67 05 COMMUNICATION CABLE AND EQUIPMENT
 26 90 00 GENERAL INSTRUMENTATION AND CONTROL
 26 90 10 PROCESS AND ANALYTICAL INSTRUMENTS
 26 90 20 PLC CONTROL PANELS
 26 90 30 SCADA SYSTEMS
 26 90 40 PROCESS CONTROL DESCRIPTIONS

DIVISION 31 EARTHWORK

31 11 00 SITE PREPARATION

31 22 13	SUBGRADE PREPARATION
31 22 19	GRADING
31 23 16	EXCAVATION
31 23 16.13	TRENCHING FOR SITE UTILITIES
31 23 19	DEWATERING
31 23 23.13	FILL AND BACKFILL
31 23 23.16	TRENCH BACKFILL
31 23 23.33	FLOWABLE FILL
31 32 00	SOIL EROSION STABILIZATION
31 50 00	EXCAVATION SUPPORT SYSTEMS

DIVISION 32 - EXTERIOR IMPROVEMENTS

32 10 00	CONCRETE SIDEWALKS
32 11 00	BASE COURSE
32 13 13	PORTLAND CEMENT CONCRETE PAVING

DIVISION 33 UTILITIES

33 11 11	PIPING LEAKAGE TESTING
33 13 00	DISINFECTION OF WATER SYSTEMS
33 31 26	TESTING WATER DISTRIBUTION SYSTEMS
33 39 13.13	PRE-CAST CONCRETE MANHOLES

DIVISION 40 PROCESS INTEGRATION

40 23 39	PROCESS PIPING - GENERAL
40 23 39.1	PROCESS PIPING SCHEDULE
40 23 39.13	CEMENT-MORTAR-LINED DUCTILE IRON PIPE AND FITTINGS
40 23 39.40	C900 & C905 PVC PIPE AND FITTINGS
40 23 39.53	COPPER PIPE, TUBING AND FITTINGS
40 23 39.60	REINFORCED PVC TUBING
40 23 43	PROCESS VALVES
40 24 00	PROCESS PIPING SPECIALTIES
40 41 13	HEAT TRACING
40 42 00	PROCESS MECHANICAL INSULATION
40 92 16	VALVE AND GATE OPERATORS

DIVISION 44 POLLUTION CONTROL EQUIPMENT

44 42 56 29	HORIZONTAL SPLIT-CASE CENTRIFUGAL PUMPS
44 42 56 29.3	HORIZONTAL SPLIT-CASE PUMP DS
44 42 57	VERTICAL SPLIT-CASE CENTRIFUGAL PUMPS
44 42 57.1	VERTICAL SPLIT-CASE PUMP DS
44 42 57.2	VERTICAL SPLIT-CASE PUMP DS
44 44 16	CHLORINATOR EQUIPMENT AND SHELTER

VOLUME 3 DRAWINGS

VOLUME 4 STANDARD DETAILS

PART 1

BIDDING DOCUMENTS

PROJECT NO. 17088075

PROPOSAL, SPECIAL PROVISIONS, CONTRACT AND BOND FORMS FOR:

CELINA PUMP STATIONS IMPROVEMENTS



Note: All interested CONTRACTORs must attend the mandatory pre-bidder's meeting, set for November 28, 2017 at 3:00 PM at the Celina City Hall located at 142 N. Ohio Dr., Celina, Texas 75009 to discuss work under this item. The City of Celina will not accept bids from bidders who fail to attend the pre-bidder's meeting.

CITY OF CELINA, TX 75009

November 2017

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)



CITY OF CELINA

ADVERTISEMENT FOR BIDS

CELINA PUMP STATIONS
IMPROVEMENTS
17088075

Sealed Bids will be received at the **Celina City Hall located at 142 N. Ohio Dr., Celina, Texas 75009 until 10:00 AM on Tuesday, December 5, 2017.** The bids will be publicly opened and read for furnishing of all labor, materials, equipment and performing all work required for the CELINA PUMP STATIONS IMPROVEMENTS at **10:00 AM on Tuesday, December 5, 2017 at the City Hall.** No bids will be accepted after 10:00 AM on December 5, 2017.

Plans, specifications and bidding are available at www.GarverUSA.com for a fee of \$40. These documents may be downloaded by selecting this project from the “Plan Room” link, and by entering Quest Project Number **5422530** on the “Browse Projects” page. For assistance and free membership registration, contact QuestCDN at 952.233.1632 or info@questcdn.com. Addendums to the bid package will be issued through the online Plan Holders List; therefore, all prime bidders shall be responsible for downloading the bid documents from the online plan room in order to be included in the Plan Holders List. Prime bidders should be registered on the Plan Holders List in order to submit a bid on the project.

A **Mandatory** Pre-Bid Meeting is scheduled for **3:00 PM on November 28, 2017, at the Celina City Hall located at 142 N. Ohio Dr., Celina, Texas.**

Published: Celina Record, November 17, 2017 and November 24, 2017.

TABLE OF CONTENTS

SECTION 1	Notice to Bidders
SECTION 2	Prevailing Wage Rates for Municipal Construction
SECTION 3	Proposal
SECTION 4	Bidder Qualification Statement
SECTION 5	Bid Bond
SECTION 6	Standard Form of Agreement
SECTION 7	Performance Bond and Payment Bond
SECTION 8	Maintenance Bond
SECTION 9	General Conditions of Agreement
SECTION 10	Special Provisions/Specifications
APPENDIX A	Drug-Free Jobsite on City Construction Projects
APPENDIX B	Contractor's Affidavit of Final Payment and Release
ATTACHMENT "1"	Pay Estimate Check List
ATTACHMENT "2"	Inspection Report – Erosion Control
ATTACHMENT "3"	Change Order Request Form
ATTACHMENT "4"	Request For Information Form (RFI)

SECTION 1

NOTICE TO BIDDERS

Sealed bids addressed to the City Council of Celina, Texas, will be received at the Celina City Hall located at 142 N. Ohio Dr., Celina, Texas 75009, until 10:00 AM, December 5, 2017, and then publicly opened and read, for furnishing all labor, material, and equipment required for the CELINA PUMP STATIONS IMPROVEMENTS project. Bid related information shall be documented on the blank form(s) of the proposal as furnished with the Project Name, Number, and date of bid opening clearly documented on the upper left-hand corner.

All proposals shall be accompanied by a cashier's check or certified check drafted upon a national or state bank in the amount of five (5) percent 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 a payment and performance bonds within ten (10) days after award of contract. Bids without check or bid bond will not be considered.

The OWNER will attempt to award the Contract within 90 days after the opening of proposals. The award, if made, shall be to the lowest bidder or the lowest bidder with bid alternative; but in no case shall the award be made until after investigations are made as the responsibility of the bidder to whom it is proposed to award the Contract. If awarded the Contract, the bidder shall execute the Contract and furnish the required bonds and evidence of insurance within 10 days after receipt of the awarded Contract.

All bid securities will be returned to the respective bidders within thirty (30) days after the bids are opened, except those which the OWNER elects to hold until the successful bidder has executed the contract. Thereafter, all remaining securities, including security of the successful bidder, will be returned within fifteen (15) days.

The successful bidder shall furnish a Performance Bond and Payment Bond, on the forms which are attached hereto, in the amount of 100% of the contract price from an approved surety company holding a permit from the State of Texas to act as surety (and acceptable according to the latest list of companies holding certificates of authority from the Secretary of the Treasury of the United States) or other surety or sureties acceptable to the OWNER.

The right is reserved, as the interest of the OWNER may require, to reject any and all bids and to waive all formalities in bids received.

Bidders may be disqualified and their proposals not considered for any of the following specific reasons:

- (1) reasonable belief that collusion exists among the bidders;
- (2) reasonable belief that any bidder is interested in more than one proposal for the work contemplated;
- (3) the bidder having a history of filing frequent, excessive and merit less claims, or fraudulent claims, against the OWNER, or against other CONTRACTORS on a project of the OWNER;
- (4) the bidder having withdrawn a previous bid after the bid was opened, or the bidder failing to enter into a Contract after submitting a bid;
- (5) the bidder or its surety having defaulted on a previous Contract, or the bidder performing poorly on a previous Contract;
- (6) lack of competency, skill, judgment, financial capability, integrity, reputation, reliability or responsibility to perform the work as revealed by the bid proposal, bid questionnaires, financial statement, performance history or other relevant information obtained by the OWNER;
- (7) uncompleted work which in the judgment of the OWNER shall prevent or hinder the prompt completion of additional work if awarded;
- (8) failure of the bidder to submit a bid bond, or submission of a cashier's check drawn on a state or national bank not located in the OWNER'S jurisdictional area; or
- (9) unbalanced value of any bid items;
- (10) the bidder, its supervisors, or its SUBCONTRACTORS having an unacceptable safety record;
- (11) the bidder, its supervisors, or its SUBCONTRACTORS having misrepresented information in the bid documents including the Bidder's Qualifications or the bidder, its supervisors, or its SUBCONTRACTORS having misrepresented any information on this or past dealings with the OWNER.

Bidders should carefully examine the plans, specifications, and other documents; visit the work site; fully inform themselves as to all conditions and matters that can in any way affect the work or the costs thereof. Should a bidder find discrepancies or omissions from the plans, specifications or any other documents or should be in doubt as to the meaning, the bidder should immediately notify the ENGINEER and obtain clarification prior to submitting any bid.

Plans, specifications and bidding are available at www.GarverUSA.com for a fee of \$40. These documents may be downloaded by selecting this project from the "Plan Room" link, and by entering Quest Project Number **5422530** on the "Browse Projects" page. For assistance and free membership registration, contact QuestCDN at 952.233.1632 or info@questcdn.com. Addendums to the bid package will be issued through the online Plan Holders List; therefore, all prime bidders shall be responsible for downloading the bid documents from the online plan room in order to be included in the Plan Holders List. Prime bidders should be registered on the Plan Holders List in order to submit a bid on the project.

SPECIAL NOTES:

1. **Bidder Qualification Statement:** The “Bidder Qualification Statement” shall be submitted with this Bid (See Section 4).

2. **Prior to beginning construction, the successful BIDDER shall:**
 - Submit a Construction Schedule.
 - Submit site-specific trench safety plans.
 - Distribute City-Generated letters to affected residents.
 - Provide a 24-hour emergency telephone contact.

3. **Within ten (10) working days following the City Council’s Award of the Contract:**
 - The CONTRACTOR shall execute all Bid Documents, Applicable Bonds, Certificate of Insurance (Certificate of Insurance in favor of the OWNER and ENGINEER with a thirty (30) day notice of cancellation, **naming the “City of Celina” and “Garver, LLC” as an additional insured** and showing that the CONTRACTOR has the coverage required herein. **All coverage shall include a waiver of subrogation clause in favor of the OWNER.** The CONTRACTOR shall also file with the OWNER and ENGINEER valid Certificates of Insurance covering all sub-CONTRACTORS.), and Worker Compensation Insurance.
 - Attend a pre-construction meeting with Full Time Superintendent for the CONTRACTOR present.
 - The CONTRACTOR shall sign the necessary agreements entering into the required Contract with the OWNER. No Contract shall be binding on the OWNER until all authorized signatures required by law have been affixed and the executed Contract delivered to the CONTRACTOR.
 - Failure to Execute: The failure of the CONTRACTOR to execute the Contract or provide the required statutory surety bonds within 10 business days after the Contract is awarded shall constitute a breach of its proposal and the OWNER may annul the award and retain the proceeds of the bid security. The contract may be terminated by the OWNER for any good cause or causes, among others of which special reference is made to the items listed in the Special Notes of the Notice to Bidders and in Section 9-7.01 Abandonment by CONTRACTOR. In the event the OWNER should re-advertise for bids, the defaulting CONTRACTOR may not be eligible to bid.
 - Upon OWNER receipt of the executed Contract and the required insurance and surety bonds, a notice to proceed shall be issued by the OWNER indicating the date upon which the Contract time shall start and the projected date of completion. The CONTRACTOR shall commence work within 10 days from the date specified in the written Notice to Proceed. No work shall commence before the notice to proceed has been issued.

4. A **Mandatory** Pre-Bid Meeting is scheduled for 3:00 PM on November 28, 2017, at the Celina City Hall located at 142 N. Ohio Dr., Celina, Texas.

5. The CONTRACTOR will not be allowed to work on Sundays or the following holidays:
 1. New Year's Day
 2. Martin Luther King Jr. Day
 3. Memorial Day
 4. Independence Day
 5. Labor Day
 6. Thanksgiving Day and succeeding Friday
 7. Christmas Eve
 8. Christmas Day
6. Alteration of a sealed document without proper notification of the responsible Engineer is an offense under the Texas Engineering Practice Act.
7. The successful CONTRACTOR is required to provide all bonding information to his/her SUBCONTRACTORS and suppliers upon request; also all SUBCONTRACTORS shall provide proof of insurance and workman's compensation documents to the general CONTRACTOR.
8. The CONTRACTOR must provide proof of current certificate of insurance throughout the duration of the project.
9. The contract (including any or all sections or alternates) will be awarded to the lowest responsible Bidder (which may include any combination of alternatives) whose evaluation by OWNER indicates that the award will be in the best interests of the OWNER.
10. Mobilization, bonding and insurance costs due to project changes and delays shall be subsidiary to the individual bid items and shall not be billed separately.
11. Change Order proposals shall not include separate costs for labor, equipment and fuel charges unless method 'C' is incorporated in "Section 9-6.04 Extra Work" and shall be agreed upon by the OWNER prior to commencing the extra work by the CONTRACTOR.
12. Extra work such as Change Orders shall utilize the same unit costs submitted by the CONTRACTOR at the time of bidding the Project. See "Section 9-5.02 Estimated Quantities".

SECTION 2

PREVAILING WAGE RATE FOR MUNICIPAL CONSTRUCTION IN CELINA, TEXAS (Revised January 4, 2013 from the General Decision Dated August 3, 2011)

The CONTRACTOR shall pay workers and trades, in accordance with statutory requirements and prevailing local wages.

All worker and trade compensation shall be made as provided in the labor standards contract clauses (29 CFR. 5.5 (a) (1) (ii)).

The CONTRACTOR shall comply with all State and Federal Laws applicable to such work. Bidders shall base their bids on rates they expect to pay, if in excess of prevailing local wages. The OWNER will not consider claims for extra payment to CONTRACTOR on account of payment of wages higher than those specified.

SECTION 3

PROPOSAL TO CITY OF CELINA, TEXAS (OWNER)

For CELINA PUMP STATIONS IMPROVEMENTS

The undersigned, as bidder, declares that the only persons or parties interested in this proposal as principals are those named herein; that this proposal is made without collusion with any other person, firm, or corporation; that the bidder has carefully examined the form of contract, notice to CONTRACTORS, specifications, and the plans therein referred to; that the bidder has carefully examined the locations, conditions, and classes of materials of the proposed work, apparatus, and other items incidental to construction; and that the bidder will do all work and furnish all materials called for in the contract and specifications in the manner prescribed therein and according to the requirements of the ENGINEER as therein set forth.

It is understood that the quantities of work to be performed at unit prices are approximate and are intended principally to serve as a guide in evaluating bids.

The OWNER reserves the right to make changes in the quantities of the work, as may be considered necessary or desirable, and such changes shall not be considered as waiving or invalidating any conditions or provisions of the contract or bonds. The CONTRACTOR shall perform the work as altered, whether increased or decreased, and no allowances shall be made for anticipated profits.

It is further agreed that the quantities of work to be performed at unit prices; or materials to be furnished, may be increased or decreased as deemed necessary by the ENGINEER to fully complete the work as planned. The OWNER reserves the right to increase or decrease the amount of work to be performed by an amount not to exceed twenty-five (25) percent of the original bid. In the event the increase pertains to items not in the original bid, the CONTRACTOR shall submit a bid in writing for the ENGINEER'S review.

It is further agreed that lump sum prices for individual bid items may be increased to cover additional work ordered by the ENGINEER but not shown on the plans or required by the specifications, in accordance with the provision of the general conditions. Similarly, they may be decreased to cover deletion of work so ordered.

The OWNER reserves the right to decrease the work under this contract. Payment to the CONTRACTOR for the contract items shall be made for the actual quantities of work performed and material furnished at the unit prices set forth in the contract, except as provided below.

In the event the twenty-five (25%) percent increase or decrease in quantity of work or material under any major bid item is exceeded, either party to the contract, upon demand, shall be entitled to negotiate for revised consideration of the exceeded portion.

Any revised consideration shall be paid for as is hereinafter provided under Section 9, Item 6.04 of the General Conditions of Agreement. The foregoing notwithstanding, the total original Contract amount shall not be increased more than twenty-five (25%) percent. The CONTRACTOR, by submission of a bid and execution of the Contract, is deemed to consent to the OWNER'S right to reduce the total by up to 25% of the original Contract. A final reconciliation accounting shall be performed to reflect the final quantities and total dollars for the subject project.

Accompanying this proposal is a bidder's bond on a form supplied by the OWNER, a certified check, or a cashier's check payable to the OWNER in the amount of (5% of amount of Bid dollars) (Written Amount) (\$ 5% GAB.). The bid security accompanying this proposal shall be returned to the bidder unless the bidder fails to execute the contract and obtain a Performance bond within fifteen (15) days of contract award by the OWNER. In such case, the bid security shall become the property of the OWNER and shall be considered as payment for damages due to delay and other inconveniences suffered by the OWNER on account of such failure by the bidder. It is understood that the OWNER reserves the right to reject any and all bids.

PREPARATION OF PROPOSAL: The bidder shall submit the proposal on forms furnished by the City. The bidder shall fill in the blanks for the "Unit Price" and the "Extended Price" written in ink or by computer printer in numerals. Such prices shall be distinctly legible and the "Unit Price" shall govern. The bidder shall state on the Proposal Summary; **Total and Grand Total** prices, written in ink both in numerals and words, for which he proposes to do the work contemplated or furnish the materials required. In case of discrepancies between prices written in words and numerical prices, **the numerical price shall govern.** If an individual submits the proposal, the individual or a duly authorized agent must sign the proposal. If a firm, association, or partnership submits the proposal, the name and address of each principal or member must be given. If a company or a corporation submits the proposal, the company or corporate name and business address must be given and the proposal signed by an official or duly authorized agent. Powers of Attorney authorizing agents or others to sign proposals must be properly certified and must be in writing and submitted with the proposal.

COMPUTER-GENERATED PROPOSAL USE: Computer-generated pages of the proposal may be used in lieu of the proposal form in this section. This option is provided for the convenience of the Bidder.

The computer-generated pages shall be on 8 ½ inches x 11 inches sheets as prescribed on the Excel format provided by the City of Celina. The form can be obtained from the City upon request. The computer generated proposal shall be in this format.

The use by the bidder of computer-generated proposal pages is an option for the convenience of the bidder, and shall not contain added wording intended to modify or amend the wording in the City's form bid proposal, or the provisions of the Contract Documents, including the Details, Specifications, or Special Provisions. All bid items, bid amounts (unit bids and extended totals), subtotals, total amounts for each schedule, and the bid schedule summary page (with the total amount for each schedule and for all schedules) must be submitted, and the risk of error, omission, or failure to include each in accordance with, and matching, the City's final published proposal form shall be borne solely by the bidder; and in the event of error, omission, or failure, the bid shall be declared non-responsive. Bidders are, therefore, strongly advised to check with the City of Celina, Engineering, to ascertain that the bidder has the correct and final published proposal form and all addenda affecting same. The prices in the proposal shall be full compensation for all materials, labor, equipment, testing, and incidental items required to complete the project ready for use. The costs of all material, labor, equipment, and incidental work required to complete the project ready for use must be included in the unit prices for the bid items provided in the proposal, and no direct compensation will be made for any other work.

The bidder shall provide the certification on the computer-generated proposal; otherwise, the bid will be considered non-responsive and rejected.

Bid Tabulation:

Bid tabulations will be disbursed to bidders via email addresses provided at the Bid Opening within 48 hours after the bid letting date.

Basis of Bid:

Bidder will complete the Work in accordance with the Contract Documents for the prices written in the following Bid Schedule. Bidder is responsible for completing all items in order for the bid to be considered responsive.

Bidder shall 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 added to 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 additive alternatives as selected by the Owner.

Discrepancies between words and figures will be resolved in favor of the figures.

CELINA PUMP STATIONS IMPROVEMENTS				
BASE BID SCHEDULE AND SUMMARY				
ITEM NO.	EST. QTY.	UNIT	ITEM DESCRIPTION AND UNIT PRICE (FILL IN SCRIPT)	TOTAL AMOUNT
BASE BID - 'B' ITEMS				
B.1	1	LS	CELINA ROAD PUMP STATION IMPROVEMENTS, in accordance with specifications and drawings, complete in place, the sum of, <u>ONE MILLION SEVEN HUNDRED FORTY NINE THOUSAND THREE HUNDRED FIFTY</u> Dollars and <u>NO</u> Cents per LUMP SUM	\$1,749,350 ⁻ LS \$1,749,350 ⁻
B.2	1	LS	DOWNTOWN PUMP STATION IMPROVEMENTS, in accordance with specifications and drawings, complete in place, the sum of, <u>TWO MILLION ELEVEN THOUSAND FIVE HUNDRED THIRTY ONE</u> Dollars and <u>NO</u> Cents per LUMP SUM	\$2,011,931 ⁻ / LS \$2,011,931 ⁻
GENERAL REQUIREMENTS - 'G' ITEMS				
G.1	1	LS	STORMWATER POLLUTION PREVENTION PLAN (SWPPP), in accordance with specifications and drawings, complete in place, the sum of, <u>THREE THOUSAND NINE HUNDRED SIXTY</u> Dollars and <u>NO</u> Cents per LUMP SUM	\$3,960 ⁻ / LS \$3,960 ⁻
G.2	1	LS	POWER COORDINATION STUDY, in accordance with specifications, the sum of, <u>TWENTY FOUR THOUSAND TWO HUNDRED NINETY</u> Dollars and <u>NO</u> Cents per LUMP SUM	\$24,209 ⁻ / LS \$24,209 ⁻
MISCELLANEOUS - 'M' ITEMS				
M.1	1	LS	INDEPENDENT TESTING ALLOWANCE complete in place, the sum of, <u>Twenty Thousand</u> Dollars and <u>Zero</u> Cents per LUMP SUM	\$ 20,000.00 / LS \$ 20,000.00
M.2	1	LS	WORK CHANGE DIRECTIVES ALLOWANCE complete in place, the sum of, <u>One Hundred Thousand</u> Dollars and <u>Zero</u> Cents per LUMP SUM	\$ 100,000.00 / LS \$ 100,000.00
TOTAL AMOUNT BASE BID			<u>THREE MILLION NINE HUNDRED NINE THOUSAND FOUR HUNDRED FIFTY</u> Dollars and <u>NO</u> Cents	\$3,909,450 ⁻
TOTAL BID AMOUNT				
BASE BID			<u>THREE MILLION NINE HUNDRED NINE THOUSAND FOUR HUNDRED FIFTY</u> Dollars and <u>NO</u> Cents	\$ 3,909,450 ⁻

ADDITIVE ALTERNATE - 'A' ITEMS					
A.1	1	LS	CELINA ROAD BACK-UP POWER complete in place, the sum of, FIVE HUNDRED EIGHTY <i>FIVE HUNDRED EIGHTY ONE THOUSAND</i> THREE HUNDRED EIGHTY EIGHT <i>THREE HUNDRED EIGHTY EIGHT</i> Dollars and <u>NO</u> Cents per LUMP SUM	\$ <i>381,388</i> / LS	\$ <i>581,388</i>
A.2	1	LS	DOWNTOWN BACK-UP POWER complete in place, the sum of, FOUR HUNDRED SIXTY FIVE THOUSAND <i>FOUR HUNDRED SIXTY FIVE THOUSAND</i> THREE HUNDRED EIGHTY EIGHT <i>THREE HUNDRED EIGHTY EIGHT</i> Dollars and <u>NO</u> Cents per LUMP SUM	\$ <i>465,388</i> / LS	\$ <i>465,388</i>
A.3	1	LS	PAVED DRIVEWAYS, at both Celina Road and Downtown locations, complete in place, the sum of, TWO HUNDRED THIRTY SEVEN THOUSAND TWENTY THREE <i>TWO HUNDRED THIRTY SEVEN THOUSAND TWENTY THREE</i> Dollars and <u>NO</u> Cents per LUMP SUM	\$ <i>237,123</i> / LS	\$ <i>237,123</i>

NOTES:

1. The successful Bidder will be required to hold his Bid Prices for a period of ninety (90) days. This Contract is issued by an organization, which qualifies for exemption pursuant to the provisions of Article 20.04 [F] of the Texas Limited Sales, Excise and Use Tax. All equipment and materials not consumed by or incorporated into the project construction are subject to State Sales Tax under House Bill 11, enacted on August 15, 1991. All such taxes shall be included in the various amounts on the proposal form. The Bidder shall submit a breakdown between labor and material costs, as set up in the Proposal [Section 3].

NOTE: The City qualifies for exemption from State and Local Sales Tax pursuant to the provisions of the Texas Limited Sales, Excise and Use Tax Act. The CONTRACTOR performing this contract may purchase, rent or lease all materials, supplies, equipment used or consumed in the performance of this contract by issuing to his suppliers an exemption certificate in lieu of the tax. Any such exemption certificate issued by the CONTRACTOR in lieu of the tax shall be subject to the provisions of the State Comptroller and any other applicable state regulation or laws.

2. Bidder is required to submit bids for all Sections of the Project for his/her bid to be considered.

The Bidder is cautioned that the State Law regarding tax exemption for Capital Improvement Projects has been revised. The CONTRACTOR shall be responsible for obtaining the latest information from the State Comptroller's Office and bid accordingly.

The CONTRACTOR shall agree to the number of calendar days specified, submit the Bidders Qualification Statement, a Bid Bond with the completed Bid Items, including all bids, and all addenda in the bid documents; otherwise the bid will be considered non-responsive and will be rejected. The CONTRACTOR shall supply the List of Manufacturers within one (1) hour of the bid opening. The CONTRACTOR shall provide the OWNER with a signed contract to include all the specified bonds and insurance, within ten (10) working days following the City Council award date.

If the CONTRACTOR is required to perform any additional work above the original approved contract, the CONTRACTOR may request, in writing, additional calendar days for the completion of the extra work. Hence, all additional calendar day requests shall be submitted in writing. Review of such request shall be provided under Section 9, Item 4.02 (Extension of Time). In the event of the award of the contract to the undersigned, the undersigned will furnish a performance bond for the full amount of contract to secure proper compliance with the terms and provisions of the contract and to insure and to guarantee the work until final completion and acceptance and to guarantee payment of all lawful claims for labor performed and materials furnished in the fulfillment of the contract. The proposed work shall be accepted when fully completed and finished in accordance with the plans and specifications to the satisfaction of the ENGINEER.

LIST OF MANUFACTURERS

Specification Section	Equipment	Base Bid Equipment Manufacturer (Circle One)
13 34 19	Metal Building Systems	1. Alliance Steel, Inc. 2. Butler Manufacturing Company; a BlueScope Steel company. 3. Ceco Building Systems; Division of NCI Building Systems, L.P. 4. Kirby Building Systems; Nucor Company. 5. Metallic Building Company; Division of NCI Building Systems, L.P. 6. Nucor Building Systems. 7. Pinnacle Structures, Inc. 8. VP Buildings; a Division of BlueScope Buildings. <u>9. OR Equal - NO spec vendors would quote</u>
23 74 13	Packaged Air Conditioning Units	<u>1.</u> Trane 2. Carrier 3. Daikin 4. York
23 81 27	Mini-Split-System Air-Conditioning Units	<u>1.</u> Mitsubishi 2. Sanyo 3. EMI 4. Daikin
26 22 00	Low Voltage Transformers	<u>1.</u> Eaton Electrical Inc.; Cutler-Hammer Products. 2. Siemens Energy & Automation, Inc. 3. Square D; Schneider Electric.
26 24 16	Panelboards	<u>1.</u> Eaton Electrical Inc.; Cutler-Hammer Products. 2. Siemens Energy & Automation, Inc. 3. Square D; Schneider Electric
26 24 19	Motor Control Centers	<u>1.</u> Square D; Schneider Electric
26 29 23	Variable Frequency Motor Controllers	1. Rockwell Automation – Allen Bradley; PowerFlex series 2. Schneider Electric – Square D <u>3.</u> Eaton; SPX series ABB 4. Or Approved Equal. Identify: _____
26 32 13	Engine Generators	1. Caterpillar: Engine Div. <u>2.</u> Onan/Cummins Power Generation; Industrial Business Group 3. Kohler Co.; Generator Division
26 90 10	Process and Analytical Instruments	<u>1.</u> HACH 2. Or Approved Equal. Identify: _____

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

Specification Section	Equipment	Base Bid Equipment Manufacturer (Circle One)
26 90 20	Programmable Logic Controllers	①. Allen-Bradley CompactLogix
44 42 56.19	Horizontal Split-Case Pumps	①. Paco 2. Or Approved Equal. Identify: _____
44 42 57.1	Vertical Split-Case Pumps	1. Paco 2. Peerless ③. Fairbanks Morse 4. Or Approved Equal. Identify: _____
44 44 16	FRP Shelter	1. MEKCO Manufacturing, Inc. 2. Plasti-Fab, Inc. ③. Warminster Fiberglass 4. Or Approved Equal. Identify: _____
44 44 16	Chlorinators	①. Wallance and Tiernan 2. Superior Chlorinators 3. Or Approved Equal. Identify: _____

The undersigned certifies that the bid prices contained in this proposal have been carefully checked and are submitted as correct and final.

Receipt is hereby acknowledged of the following addenda to the contract documents. Bid Item Changes in Addenda shall also be reflected in an updated Computer Generated Proposal available for Download with each Addendum issued.

Addendum No. 1 Dated 11/30/2017 Received 

Addendum No. 2 Dated _____ Received _____

Addendum No. 3 Dated _____ Received _____

Addendum No. 4 Dated _____ Received _____

Addendum No. 5 Dated _____ Received _____

Addendum No. 6 Dated _____ Received _____

Printed Name Matt Phillips

Signed 

By Vice President
Title

Address 1313 Walnut Parkway #320

City Camp Hill State PA Zip Code 17006

(469) 458-0011
Phone Number

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

SECTION 4

ALL BIDDERS ARE NOTIFIED THAT THE FOLLOWING QUALIFICATION STATEMENT MUST BE COMPLETED AND SUBMITTED WITH THE BID PROPOSAL

CONTRACTOR'S QUALIFICATIONS

The CONTRACTOR shall show that he has experience with similar projects that require working in confined areas in close proximity to many physical features (such as: fences, utility poles, guy lines, gas lines and meters, sewer manholes and cleanouts, etc.) which will require the CONTRACTOR to plan his work efforts and equipment needs with these limitations in mind. The CONTRACTOR shall submit a complete list of ALL Municipal and Similar Non-Municipal current and completed projects for the past three (3) years for review. This list shall include the names of supervisors and type of equipment used to perform this work.

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

BIDDERS QUALIFICATION STATEMENT

Project and W.O. #: CELINA PUMP STATIONS IMPROVEMENTS

CONTRACTOR: Felix Construction Company

Indicate One: Sole Proprietor Partnership Other

☒ Corporation ☐ Joint Venture

Name: Matthew Phillips Partner: _____

Title: Vice President Title:

Address: 1313 Valwood Parkway, 320 Address: _____

City: Carrollton City: _____

State & Zip: Texas 75006 State & Zip: _____

Phone: 469-458-0011 Phone:

State and Date of Incorporation, Partnership, Ownership, Etc. Arizona, Feb 1987

Location of Principal Office: 1326 W. Industrial Drive, Coolidge, AZ 85128

Contact and Phone at Principal Office: Joel Felix - 480-464-0011

Liability Insurance Provider and Limits of Coverage: Cincinnati 10 Million

Workers Compensation Insurance Provider: Cincinnati Insurance

Surety (Performance and Payment): Travelers Bonding

Address: 20860 N. Tatum Blvd., Suite 400, Phoenix, AZ 85050

Contact and Phone: Andy Farr - 480-968-0100

Superintendent and Backup Superintendent: (Work Resume - attach additional sheets.) (Safety Record – attached additional sheets; if needed show all verified safety violations.) The superintendent shall be able to communicate in English and not operate any equipment and have not had any verified job safety violations in the past five years. Any variations shall be reviewed by the OWNER for approval or denial. A job site shall be shut down if proper supervision is not provided.

Superintendent Name

Matt Phillips

Backup Superintendent Name

Owen Martin

Safety Record – List ALL Verified Violations for Superintendent and Backup Superintendent with explanation, date and action taken to correct future safety violations:

Superintendent

A small piece of concrete the size of a I-phone fell from the formwork onto the employee's finger on 11-14-17.

We had a safety meeting to discuss the accident and reminded all employees to clean off concrete splatter off formwork.

Backup Superintendent

Total Number of Employees to be Associated with this Job: 12

Managerial <u>2</u>	Administrative <u>1</u>	Professional _____
Skilled <u>4</u>	Semi-Skilled <u>5</u>	Other _____

Percentage of work anticipated to be done by Bidder's Employees
 (Based on Dollars Bid): 3%

Percentage of work anticipated to be done by Bidder's SUBCONTRACTORS
 (Based on Dollars Bid): 66%

Type(s) of work to be done by Bidder's Employees (examples: concrete paving, structural concrete, waterlines, sanitary sewer lines, storm pipe, storm inlets, excavation, lime, bridge fencing, etc.)
Concrete, piping, eq installation, demo

Access to Tools and Equipment:	Percent Owned <u>75%</u>	Percent Rented <u>25%</u>
--------------------------------	--------------------------	---------------------------

Number of Years in Business as a CONTRACTOR on Above Types of Works: 30 yrs

Type(s) of Work to be done by SUBCONTRACTORS

Include Name, Address, and Phone Number of SUBCONTRACTOR.

Use additional sheets if needed.

Note: CONTRACTOR shall provide references and similar work experience for each SUBCONTRACTOR.

Type of Work

SUBCONTRACTOR

Electrical -CF Electric - Marvin - 4901 Tim Donald Road, Justin, Texas 75160 - 214-693-6978

List Equipment to be used on this project (Make/Model/Age of Major Equipment) Any Equipment not listed shall be reviewed by the OWNER for approval or rejection prior to use of Equipment on this project. (Use additional sheets if necessary)

Type of Equipment	Make	Model	Age (years)
CAT 420 Backhoe	CAT	420	11years
Link Belt Excavator	Link Belt	135	6 years
Roller	Wacker	Walk Behind	6 years
L 90 Loader	Volvo	L 90	4 years
Air Compressor	IR	185 CFM	5 years

List of completed projects of similar type work for the past five (5) years. (Use additional sheets if necessary.)

1. Project: Pintail Pump Station

Any Litigation Issues: Yes or No (Circle One) If Yes, explain: NO

Any Verified Safety Violations: Yes or No (Circle One) If Yes, explain: NO

Project Description: Improvements to existing 400hp pumps and misc improvements to building

OWNER/Agency: Town of Flower Mound

Year Completed: 2/26/2017 Contract Price: \$1,009,348.00

Contact Person: Randy Williams Phone: 214-693-4834

2. Project: Dallas Fort Worth International Airport

Any Litigation Issues: Yes or No (Circle One) If Yes, explain: NO

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

Any Verified Safety Violations: Yes or No (Circle One) If Yes, explain:

NO

Project Description: Rehab of existing storm wtp, rehab of pumps, new electrical and controls

OWNER/Agency: DFW Airport

Year Completed: 6/10/2017 Contract Price: \$5,074,055.00

Contact Person: Stacie Ellis Phone: 972-973-1885

3. Project: Gerrish Road Pump Station Improvements

Any Litigation Issues: Yes or No (Circle One) If Yes, explain: NO

Any Verified Safety Violations: Yes or No (Circle One) If Yes, explain: NO

Project Description: Replacements of pumps, piping, and electrical at existing pump station

OWNER/Agency: City Of McKinney

Year Completed: 10/9/2016 Contract Price: \$666,720.00

Contact Person: Paul Tucker Phone: 972-547-7420

4. Project: Walsh Ranch Pump Station

Any Litigation Issues: Yes or No (Circle One) If Yes, explain: NO

Any Verified Safety Violations: Yes or No (Circle One) If Yes, explain: NO

Project Description: Construction of booster station including 30" & 36" piping, hydro tank, electrical/controls

OWNER/Agency: City Of Fort Worth

Year Completed: 11/15/2016 Contract Price: \$1,597,657.00

Contact Person: Chris Harder Phone: 817-392-8293

5. Project: _____

Any Litigation Issues: Yes or No (Circle One) If Yes, explain: NO

Any Verified Safety Violations: Yes or No (Circle One) If Yes, explain: NO

Project Description: Construction of booster pump station, 24" piping, steel tank, electrical/controls

OWNER/Agency: City Of Fort Worth

Year Completed: 3/30/2017 Contract Price: \$2,038,356.00

Contact Person: Chris Harder Phone: 817-392-8293

List active projects of similar type work:

1. Project: Rehab of 2.0 MG Ground Storage Tank and pipeline

Percent Complete: Zero

Any Litigation Issues: Yes or No (Circle One) If Yes, explain: NO

Any Verified Safety Violations: Yes or No (Circle One) If Yes, explain: NO

Project Description: Replacing 24" discharge piping, rehab of storage tank, electrical upgrades, site imprv

OWNER/Agency: City of Addison

Year Started: 1/2018 Contract Price: \$2.5 million

Contact Person: Nirav Patel Phone: 972-467-2799

2. Project: We have three active projects but are WWTP
 Percent C Little Elm - 9.6 Million
Sanger WWTP - 10.4
 Any Litig Denison WWTP - 1.8
References can be provided

Any Verified Safety Violations: Yes or No (Circle One) If Yes, explain:

Project Description:

OWNER/Agency:

Year Built:

 Contract Price:

Contact Person:

 Phone:

3. Project:

Percent Complete:

Any Litigation Issues: Yes or No (Circle One) If Yes, explain:

Any Verified Safety Violations: Yes or No (Circle One) If Yes, explain:

Project Description:

OWNER/Agency:

Year Started:

 Contract Price:

Contact Person:

 Phone:

4. Project: _____
 Percent Complete: _____
 Any Litigation Issues: Yes or No (Circle One) If Yes, explain: _____

 Any Verified Safety Violations: Yes or No (Circle One) If Yes, explain: _____

 Project Description: _____
 OWNER/Agency: _____
 Year started: _____ Contract Price: _____
 Contact Person: _____ Phone: _____
5. Project: _____
 Percent Complete: _____
 Any Litigation Issues: Yes or No (Circle One) If Yes, explain: _____

~~Any Verified Safety Violations: Yes or No (Circle One) If Yes, explain: _____~~

~~_____~~

~~_____~~

~~_____~~

Project Description: _____

OWNER/Agency: _____

Year Started: _____ Contract Price: Contact

Person: _____ Phone: _____

Trade references (List Company, Address, Contact Person, and Phone):

Ferguson Water Works - Keith Hill - 817-805-1172

Pump Solutions - Brett Rose-817-403-6638

Fortiline Water Works - Larry Lindsey - 936-591-7558

Bank References (List Institution, Address, Contact Person, and Phone)

Bank of America - 201 E. Washington Street, Phoenix, Arizona 85004 - Joe Turso - 602-523-4279

Municipal References (List Municipality, Address, Contact Person, and Phone)

Chris Harder - City of Fort Worth- 817-392-8293

Dennis Morris - City of Sherman - 903-892-7361

Bryant Caswell - SRA Design - 817-649-3216

Randy Walhood - City of Farmers Branch - 972-919-2597

Claims and Suits (if the answer to any of the following questions is yes, please attached details):

1. Has your organization ever failed to complete any work awarded to it? No
2. Are there any judgments, claims, arbitration proceedings, or suits pending or outstanding against your organization or officers? No
3. Has your organization filed any lawsuits or requested arbitration with regard to construction contracts within the last five years? No
4. Within the last five (5) years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? No

I, Matthew Phillips, being duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

Date this 5th day of December, 2017.

Name of Organization: Felix Construction Company

By: Matthew Phillips

Title: Vice President

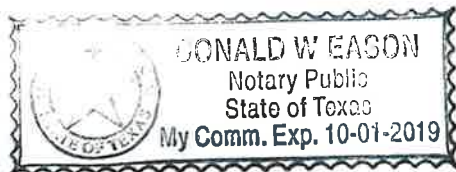
STATE OF TEXAS

COUNTY OF COLLIN

BEFORE ME the undersigned authority, on this day personally appeared _____

MATTHEW PHILLIPS, known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and considerations therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 5th day of DECEMBER, 2017.



Donald W. Eason
Notary Public in and for DALLAS County, Texas

Project owner	City of Flower Mound	Project name	Pintail Pump Station Capacity Improvements
General description of project: Improvements to existing 400HP Horizontal split case pump and misc improvements to the existing building			
Project cost	\$1,009,348	Date project completed	02/26/2017
Key project personnel	Project manager	Project superintendent	Safety manager
Name	Ryan Koontz	Chris Sonnenberg	BJ Felix
Reference contact information (listing names indicates approval to contacting the named individuals as a reference)			
	Name	Title/position	Organization
Owner	Randy Williams	Supervisor	Flower Mound
Designer	Kyle Sanderson	Project Manager	Kimley-Horn
Construction manager	Drew Zaeske	Project Manager	Kimley-Horn
Project owner	Dallas Fort Worth International Airport	Project name	Storm Water Treatment Plant Rehabilitation
General description of project: Rehab existing storm WTP, rehab pumps and clarifier, site work and electrical			
Project cost	\$5,074,055	Date project completed	6/10/2017
Key project personnel	Project manager	Project superintendent	Safety manager
Name	Paul Hejl	Chris Sonnenberg	BJ Felix
Reference contact information (listing names indicates approval to contacting the named individuals as a reference)			
	Name	Title/position	Organization
Owner	Stacie Ellis	Project Manager	DFW Airport
Designer	Erik Moorhead	Project Manager	HKS
Construction manager	Sandy Sider	Construction Manager	DFW Airport
Project owner	City of McKinney	Project name	Gerrish Pump Station Improvements
General description of project: Replacement of pumps, piping and electrical at existing Pump Station			
Project cost	\$666,720	Date project completed	10/09/2016
Key project personnel	Project manager	Project superintendent	Safety manager
Name	Paul Hejl	Joe Morin	BJ Felix
Reference contact information (listing names indicates approval to contacting the named individuals as a reference)			
	Name	Title/position	Organization
Owner	Paul Tucker	Project Manager	City of McKinney
Designer	Andrew Mata	Project Manager	BH&C
Construction manager	Andrew Mata	Project Manager	BH&C

Packet Pg. 194

Project owner	City Of Fort Worth	Project name	Walsh Ranch Pump Station
General description of project: Construction of booster pump station including 30" DIP suction, 36" discharge, hydro tank, and controls.			
Project cost \$1,597,657.85		Date project completed	11/15/2016
Key project personnel	Project manager	Project superintendent	Safety manager
Name	Ryan Koontz	Alex Levita	BJ Felix
Reference contact information (listing names indicates approval to contacting the names individuals as a reference)			
	Name	Title/ position	Organization
Owner	Chris Harder	Project Manager	City Of Fort Worth
Designer	Chris Harder	Project Manager	City Of Fort Worth
Construction manager	Chris Harder	Project Manager	City Of Fort Worth
Project owner	City Of Fort Worth	Project name	Ventana Pump Station
General description of project: Construction of Booster Pump Station Including 24" DIP Suction & Discharge, Hydro Tank, Bolted Steel Tank, and Controls			
Project cost	\$2,038,356.00	Date project completed	3/30/2017
Key project personnel	Project manager	Project superintendent	Safety manager
Name	Ryan Koontz	Alex Levita	BJ Felix
Reference contact information (listing names indicates approval to contacting the names individuals as a reference)			
	Name	Title/ position	Organization
Owner	Taylor Baird	Project Manager	PMB Investments
Designer	Lee Niles	SR. Project Engineer	Pape-Dawson Engineers, Inc.
Construction manager	Taylor Baird	Project Manager	PMB Investments

EXPERIENCE

19 yrs in the industry
 <1 yr at PepperLawson
 14-yr Superintendent

EDUCATION

High School Diploma

CERTIFICATIONS

30-Hr OSHA, Trench Safety,
 Confined Space

Proposed Project Superintendent**Owen Martin****Project Superintendent**

Owen is a highly respected 14-year Superintendent. The important Pumping Station project would be his third at the Wylie Plant. He was Superintendent for the Wylie Ozone Addition in 2012.

Owen and the proposed Project Manager Benjamin Andersen have been working together very successfully as leads on the Wylie Chemical Systems Improvements Phase II project. The transition to the pumping station project will be easy; they will make a dynamic team.

He will be assigned full time to this project to coordinate all day-to-day activities with the Project Manager. Owen will assist in the management and coordination of field operations for all subcontracted and self performed work, manpower, materials, and equipment; administration of project schedule and phasing of trades to maintain construction sequencing and start/completion target dates; administration of all general trades activities and field document control; and the on-site management of project quality control and safety.

Below is a partial listing of relevant recent projects.

*“A straight-shooter
 and a square dealer.”*

Terry Stratton
KIT Professionals

REFERENCES

Terry Stratton
 Construction Inspector
 Kit Professionals
 713-826-4248
 Tstratton50@yahoo.com

Joe Dean
 PCL
 480-290-0548
 jdean@pcl.com

Fain Butler
 Chief Construction Manager
 NTMWD
 214-596-8353

Steven W. Long
 Program Manager
 NTMWD
 214-546-1443



Owen Martin

Project Superintendent

Wylie Water Treatment Plant Campus Chemical Systems Improvements Ph 2

WYLIE, TEXAS

Project Superintendent on this \$10.9M improvements project. Involved WTPs III & IV improvements to chemical pipe trenches, drainage, chemical storage tank containment, ferric sulfate storage and transfer; new metering equipment, new sodium hydroxide and sodium chlorite storage facilities, storage tank emergency shut-off valves, lime system improvements; polymer system improvements; painting, electrical improvements, instrumentation improvements, and other items.

San Jacinto River Authority Water Treatment Plant CMAR

CONROE, TX *

Superintendent on a \$192M CMAR delivery project. Came into project at 60% and pushed the job to start up. Managed labor, equipment and material on a \$35M yard pipe pkg. ranging from 0.5 inch to 78-inches; managing 32 workers, 7 excavators, 4 front loaders, 2 dozers and various other pieces. Involved in startup and commissioning of plant.

Chandler Airport Water Reclamation Facility Expansion

CHANDLER, AZ*

\$135M. Managed construction of all trades and assisted in the startup process.

City of Las Vegas Water Pollution Control Facility

LAS VEGAS, NV*

A \$25M CMAR project to upgrade a water treatment plant. Managed project from construction start to start-up. Completed ahead of schedule and under budget by developing a great extended team and by innovative thinking.

Wylie Water Treatment Plant Ozone Addition

WYLIE, TX*

This was a \$180M improvements project. A Superintendent managing all yard pipe from 1/2-inch to 108-inch.

Fort Worth West Side WTP FORT WORTH, TX*

Superintendent assisting in completion, testing out and starting up of all equipment.

Oxnard Advanced Water Purification Facility

OXNARD, CA*

A \$145M new construction of a water processing facility. Superintendent managing all process pipe, under slab pipe, and equipment setting.

*At other firms



Safety is Owen's Priority

Owen's crews have worked eight years without a recordable incident.

WORK HISTORY

Hunter Contracting
(1996-1999)

Felix Construction Company
(1999-2006) Crane Operator /
Superintendent

Arizona Powerband Construction
(2006-2008) Owner and Operator

Riggs Companies
(2008-2008) Superintendent

Sundt Construction
(2008-2009) Foreman

CSW
(2009-2009) Motor Grader Operator

Dean Douglas
(2009-2010) Superintendent

McCarthy Building Companies, Inc.
(2010-2015) Superintendent

Rango Inc.
(2015-2015) Superintendent

Pepper Lawson Waterworks
(2016- Present) Project Superintendent

Mr. Phillips has experience in the construction industry since 1999 which includes supervision and management of the construction of wastewater, water treatment, underground utilities, site development, mechanical plants, and major street development. He is highly skilled with "hands-on" field work experience as well as operations management.



Relevant Experience

1. Kingman Downtown WWTP Expansion

Role: Superintendent

Matt served as the Superintendent on this CMAR project for the City of Kingman that involved demolition of a lagoon-style plant and construction of a new headworks, MBR plant, UV disinfection, and odor control structure, and Photovoltaic system on the same location as the old lagoon plant.

2. Mesa Southeast WRF Disinfection Improvements

Role: Superintendent

Matt served as the Superintendent for the construction of this Water Reclamation Facility improvements project. His scope included improvements to the chemical disinfection process, construction of a new concrete chlorine contact chamber, and improvement to the plant's electrical and communications systems. Matt worked closely with the Owner, plant staff and project's design engineer in order to ensure the plant remained fully operational during the entire construction phase

3. Gila River Indian Community RO Water Treatment Plant

Role: Superintendent

Matt served as the Superintendent on the construction of this 5 MGD Reverse Osmosis Water Plant for the Gila River Indian Community in Sacaton, AZ. His scope included a 0.5 MG steel raw water tank, 0.5 MG steel finish water tank, 3 onsite pump stations, onsite filtration, onsite chemical feed and storage, 3 RO unit trains, 1 onsite well, 2 offsite well modifications, 2 miles of 16" – 24" pipeline, sanitary sewer pump station, concentrate pump station, E/I&C, SCADA, administration building, and landscaping.

4. Section 10 WWTP Expansion

Role: Superintendent

Matt served as the Superintendent on this CMAR project to expand the Section 10 Wastewater Treatment Plant in Bullhead City, AZ. Matt managed our scope which included a new aerobic digester, aeration basin, secondary clarifier, filter structure, and modifications to existing splitter boxes, oxidation ditch, and the influent pump station.

Employment Experience

- 2004 – Present, Felix Construction Company, Principal/ Superintendent
- 1999 – 2004, CDM Construction, Foreman/Superintendent

Education/Training/Certifications

- 2010 – OSHA Construction Safety Training – 10 hour
- 2005 – Truck Safety Management
- 2004 – OSHA Competent Person
- 1999 – 2002, Scottsdale Community College

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.

Matthew Phillips

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

12/4/2017

Date

Adopted 06/29/2007

Company Represented

Felix Construction Company

CERTIFICATE OF INTERESTED PARTIES**FORM 1295**

1 of 1

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
CERTIFICATION OF FILING**

Certificate Number:
2017-290339

Date Filed:
12/05/2017

Date Acknowledged:

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

Felix Construction Company
Coolidge, AZ United States

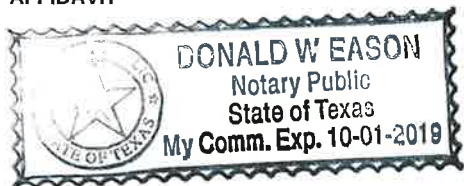
2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

City of Celina

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 services, goods, or other property to be provided under the contract.

17088075
Booster Station Improvements

4	Name of Interested Party	City, State, Country (place of business)	Nature of interest (check applicable)	
			Controlling	Intermediary
	Giannetto, David	Surprise, AZ United States	X	
	Felix, Kevin	Chandler, AZ United States	X	
	Felix, Joel	Chandler, AZ United States	X	
	Phillips, Matt	Forney, TX United States	X	

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]

 Signature of authorized agent of contracting business entity

AFFIX NOTARY STAMP / SEAL ABOVE

Sworn to and subscribed before me, by the said MATTHEW PHILLIPS, this the 5th day of DECEMBER, 20 17, to certify which, witness my hand and seal of office.

[Signature]

 Signature of officer administering oath

DONALD W. EASON

 Printed name of officer administering oath

NOTARY PUBLIC

 Title of officer administering oath

SECTION 5

BID BOND

KNOW ALL MEN BY THESE PRESENTS: That we, Principal, **Felix Construction Company**, and Surety, **Travelers Casualty and Surety Company of America**, are held and firmly bound unto **City of Celina, TX**, Oblige, in the sum of (Written Amount)

FIVE PERCENT GREATEST AMOUNT BID (G.A.B.) (\$ 5% G.A.B.)

FIVE PERCENT OF AMOUNT BID BY PRINCIPAL (\$ 5% G.A.B.) Dollars (5% of Bid) as a proper measure of liquidated damages for the payment of which we bind ourselves, our legal representatives, successors and assigns, jointly and severally, firmly by this Obligation

WHEREAS, Principal has submitted or is about to submit a proposal to Oblige on a contract for

CELINA PUMP STATIONS IMPROVEMENTS

NOW, THEREFORE, if the said contract be awarded to Principal and Principal shall, within such time as may be specified, enter into the contract in writing and give such bond or bonds as may be specified in the bidding or contract documents with surety acceptable to Oblige; or if Principal shall fail to do so, pay to Oblige the damages which Obligees may suffer by reason of such failure not exceeding the amount of this bond, then this obligation shall be void; otherwise to remain in full force and effect.

Signed, sealed and dated 5th day of December, 2017.

Felix Construction Company
By: [Signature] (Seal)
Principal Matt Phillips

Travelers Casualty and Surety Company of America
By: [Signature]
Attorney-in-Fact
Stephanie L. Bucholz

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)



POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 229283

Certificate No. 007388567

KNOW ALL MEN BY THESE PRESENTS: That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Barry R. Farr, Andrew Farr, Gregory P. Griffith, Debra K. Williams, and Stephanie L. Bucholz

of the City of Mesa, State of Arizona, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 21st day of September, 2017.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut
City of Hartford ss.

By: Robert L. Raney
Robert L. Raney, Senior Vice President

On this the 21st day of September, 2017, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2021.



Marie C. Tetreault
Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

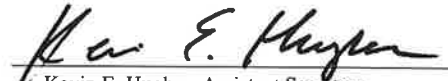
FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 5th day of December, 20 17.


Kevin E. Hughes, Assistant Secretary



To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.



535 E. McKellips Rd.
Suite 129
Mesa AZ, 85203

Phone: 480-968-0100

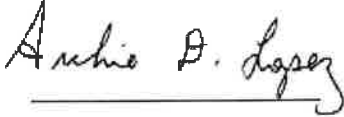
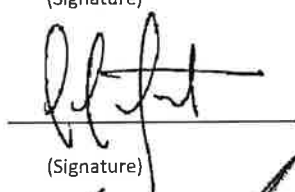
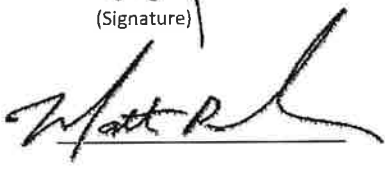
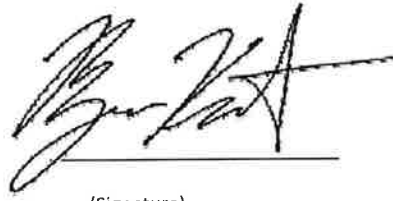
Fax: 480-968-4043

Website: www.cbibonding.com

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

CORPORATION EVIDENCE OF AUTHORITY

The following individual(s) are authorized to execute, sign and submit proposals, pay applications, contract amendments, contracts and contract bonds on behalf of the corporation, Felix Construction Company.

- | | | | |
|----|--|---|-----------------------------------|
| 1. | <u>Archie Lopez</u>
(Print Name) | <u></u>
(Signature) | <u>President</u>
(Title) |
| 2. | <u>David Giannetto</u>
(Print Name) | <u></u>
(Signature) | <u>Vice-President</u>
(Title) |
| 3. | <u>Matt Phillips</u>
(Print Name) | <u></u>
(Signature) | <u>Vice-President</u>
(Title) |
| 4. | <u>Kevin Felix</u>
(Print Name) | <u></u>
(Signature) | <u>Secretary</u>
(Title) |
| 5. | <u>Joel Felix</u>
(Print Name) | <u></u>
(Signature) | <u>Treasurer</u>
(Title) |
| 6. | <u>Ryan Koontz</u>
(Print Name) | <u></u>
(Signature) | <u>Project Manager</u>
(Title) |

SECTION 6

STANDARD FORM OF AGREEMENT

STATE OF TEXAS §

COUNTY OF COLLIN §

THIS AGREEMENT, made and entered into this day of _____, 20 by and between the City of Celina of the County of Collin and State of Texas, acting through the City Manager of the City of Celina thereunto duly authorized so to do, Party of the First Part, hereinafter termed OWNER, and of the City of _____ County of _____ and State of _____, Party of the Second Part, hereinafter termed CONTRACTOR.

WITNESSETH: That for and in consideration of _____ Dollars (\$ _____) and agreements hereinafter mentioned, to be made and performed by the Party of the First Part (OWNER), and under the conditions expressed in the bond bearing even date herewith, the said Party of the Second Part (CONTRACTOR), hereby agrees with the said Party of the First Part (OWNER) to commence and complete the construction of certain improvements described as follows:

CELINA PUMP STATIONS IMPROVEMENTS

and all extra work in connection therewith, under the terms as stated in the General Conditions of the Agreement and at his (or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said construction, in accordance with the conditions and prices stated in the Proposal attached hereto, and in accordance with the Notice to CONTRACTORS, General and Special Conditions of Agreement, Plans and other drawings and printed or written explanatory matter thereof, and the Specifications and addenda therefore, as prepared by the City ENGINEER herein entitled the ENGINEER, each of which has been identified by the CONTRACTOR and the ENGINEER, together with the CONTRACTOR'S written Proposal, the General Conditions of the Agreement, and the Performance and Payment Bonds hereto attached; all of which are made a part hereof and collectively evidence and constitute the entire contract.

The CONTRACTOR hereby agrees to commence work within ten (10) days after the date written notice to do so shall have been given to him, and to complete the same within 210 calendar days after the date of the written notice to commence work, subject to such extensions of time as are provided by the General and Special Conditions in Section 9 of this Bid Book. The CONTRACTOR agrees that installation of Pump 4 and associated electrical gear at Celina Road Pump Station shall have an early completion date of 135 calendar days from the earliest of ten (10) days from notice to proceed or the date the Contractor moves on the site to begin the work, to provide immediate increase in capacity for the existing pump station.

The OWNER agrees to pay the CONTRACTOR in current funds the price or prices shown in the proposal, which forms a part of this contract, such payments to be subject to the General and Special Conditions of the contract.

IN WITNESS WHEREOF, the parties to this instrument have executed this Agreement in the year and day first above written.

Party of the Second Part (CONTRACTOR)

By: _____

Title

Attest: _____

Approved as to form

(City Attorney)

The City of Celina

Party of the First Part (OWNER)

By: _____
(City Manager)

ATTEST: _____
(City Secretary)

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

SECTION 7

PERFORMANCE BOND

STATE OF TEXAS §

COUNTY OF COLLIN §

KNOW ALL MEN BY THESE PRESENTS That we, _____ of the City of _____, County of _____, and State of _____ as, Principal (CONTRACTOR), and authorized under the laws of the State of Texas to act as Surety on bonds for principals are held and firmly bound onto, the City of Celina (OWNER), in the sum of (Written Amount) _____ Dollars (\$ _____) as a proper measure of liquidated damages, for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these this obligation:

WHEREAS, the Principal has entered into a certain written contract with the OWNER, dated the day of, _____ 2017, to do:

CELINA PUMP STATIONS IMPROVEMENTS

which Contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform said Contract and shall in all respects duly and faithfully observe and perform all and singular the covenants, conditions and agreements in and by said contract agreed and covenanted by the Principal to be observed and performed and according to the true intent and meaning of said Contract and the Plans and Specifications hereto annexed, then this obligation shall be void; otherwise to remain in full force and effect:

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code (formerly Article 5160 of Vernon's Annotated Civil Statute) and this Bond and all of the provisions herein contained shall be solely for the protection of the named OWNER which has awarded the contract referred to.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract, or to the work performed thereunder, or the plans, specifications or drawings accompanying the same, shall in anywise affect its obligation on this bond and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have executed this instrument
this day of _____, 20____.

Principal

Surety

By: _____

Title: _____

Address: _____

THE PORTION BELOW MUST BE FILLED OUT.

The name and address of the Resident Agent of Surety is:

PHONE: (____) _____ - _____

PAYMENT BOND

STATE OF TEXAS §

COUNTY OF COLLIN §

KNOW ALL MEN BY THESE PRESENTS: That we, of the City of _____ County of _____, and State of _____, as, Principal (CONTRACTOR), and authorized under the laws of the State of Texas to act as Surety on bonds for principals are held and firmly bound unto, the City of Celina (OWNER), in the penal sum of (Written Amount) _____ Dollars (\$ _____) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, by this obligation:

WHEREAS, the Principal has entered into a certain written contract with the OWNER, dated the day of _____, 20____ to do:

CELINA PUMP STATIONS IMPROVEMENTS

which Contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall pay all claimants supplying labor and material to him or a SUBCONTRACTOR in the prosecution of the work provided for in said Contract, then, this obligation shall be void; otherwise to remain in full force and effect;

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code, as amended, and all liabilities on this bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract, or to the work performed thereunder, or the plans, specifications or drawings accompanying the same, shall in anywise affect its obligation on this bond and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have executed this instrument this _____ day of _____, 20_____.

Principal

Surety

By: _____

Title: _____

Address: _____

THE PORTION BELOW MUST BE FILLED OUT.

The name and address of the Resident Agent of Surety is:

PHONE #: () - _____

SECTION 8

MAINTENANCE BOND

THE STATE OF TEXAS §

COUNTY OF COLLIN §

KNOW ALL BY THESE PRESENTS

THAT _____ as Principal (CONTRACTOR), and _____, a corporation authorized to do business in the State of Texas, as Surety, do hereby acknowledge themselves to be held and bound to pay unto the City of Celina, a municipal corporation of the States its successors and assigns, at Celina, Collin County, Texas the sum of (Written Amount) Dollars (\$ _____), one hundred (100%) percent of the total amount of the contract for the payment of which sum said principal and surety do hereby bind themselves, their successors and assigns, jointly and severally.

WHEREAS, said (CONTRACTOR) has this day entered into a written contract with the said City of Celina to build CELINA PUMP STATIONS IMPROVEMENTS which contract and the plans and specifications therein mentioned, adopted by the City of Celina, are filed with the City Secretary of said City and are hereby expressly incorporated herein by reference and made a part hereof as though the same were written and set out in full herein, and

WHEREAS, under the said plans, specifications, and contract, it is provided that the CONTRACTOR will maintain and keep in good repair the work therein contracted to be done and performed for a period of two (2) years from the date of acceptance thereof and do all necessary backfilling that may become necessary in connection therewith and do and perform all necessary work toward the repair of any defective condition growing out of or arising from the improper construction of the improvements contemplated by the said CONTRACTOR on account of any breaking of such improvements, caused by the said CONTRACTOR on constructing the same or on account of improper excavation or backfilling, it being understood that the purpose of this section is to cover all defective conditions arising by reason of defective material, work or labor performed by said CONTRACTOR, and in case the said CONTRACTOR shall fail to repair, reconstruct or maintain said improvements it is agreed that the City may do said work in accordance with said contract and supply such materials and charge the same against the said CONTRACTOR and its surety on this obligation, and said CONTRACTOR and surety shall be subject to the damages in said contract for each day's failure on the part of said CONTRACTOR to comply with the terms and provisions of said contract and this bond.

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

NOW, THEREFORE, if the said CONTRACTOR shall perform its agreement to maintain said construction and keep same in repair for the maintenance period of two (2) years as herein and in said contract provided, then this obligation shall be null and void and have no further effect; otherwise, to remain in full force and effect.

It is further agreed that this obligation shall be a continuing one against the Principal and Surety and that successive recoveries may be had hereon for successive breaches of the conditions herein provided until the full amount of this bond shall have been exhausted, and it is further understood that the obligation to maintain said work shall continue throughout said maintenance period, and the same shall not be changed, diminished, or any matter affected from any cause during said time.

IN WITNESS WHEREOF the said as CONTRACTOR and Principal, has caused this instrument to be executed by (CONTRACTOR) _____ and the said _____ as Surety, has caused this instrument to be executed by its Attorney-in-fact _____ and the said Attorney-in-Fact has hereunto set his hand this the _____ day of _____, 20____ .

SURETY:

PRINCIPAL:

By : _____
Attorney-in-fact

By : _____

Phone: () - _____

Phone: () - _____

SECTION 9

GENERAL CONDITIONS OF AGREEMENT TABLE OF CONTENTS

9-1 Definition of Terms

9-1.01	OWNER, CONTRACTOR and ENGINEER	9.3
9-1.02	Contract Documents and Standard Specifications.....	9.3
9-1.03	Sub-CONTRACTOR.....	9.4
9-1.04	Written Notice	9.4
9-1.05	Work.....	9.4
9-1.06	Extra Work.....	9.4
9-1.07	Working Day	9.4
9-1.07a	Engineering Construction Inspection Overtime.....	9.4
9-1.08	Calendar Day	9.6
9-1.09	Substantially Completed.....	9.6
9-1.10	Inspection	9.6

9-2 Responsibilities of the ENGINEER and the CONTRACTOR

9-2.01	OWNER-ENGINEER Relationship.....	9.7
9-2.02	Professional Inspection by ENGINEER.....	9.7
9-2.03	Payments for Work	9.7
9-2.04	Initial Determinations.....	9.7
9-2.05	Lines and Grades	9.7
9-2.06	CONTRACTOR's Duty and Superintendent	9.8
9-2.07	CONTRACTOR's Understanding.....	9.9
9-2.08	Character of Workers	9.9
9-2.09	Field Offices	9.9
9-2.10	Sanitation	9.9
9-2.11	Shop Drawings	9.9
9-2.12	Preliminary Approval	9.10
9-2.13	Defects and Their Remedies.....	9.10
9-2.14	Changes and Alterations	9.10

9-3 General Obligations and Responsibilities

9-3.01	Keeping of Plans, Specifications and As Builts Accessible.....	9.12
9-3.02	OWNERship of Drawings	9.12
9-3.03	Adequacy of Design	9.13
9-3.04	Right of Entry	9.13
9-3.05	Collateral Contracts	9.13
9-3.06	Discrepancies and Omissions	9.13
9-3.07	Equipment, Materials and Construction Area.....	9.13
9-3.08	Damages.....	9.14
9-3.09	Protection Against Accident to Employees and the Public	9.14
9-3.10	Performance and Payment Bonds	9.14

SECTION 9

GENERAL CONDITIONS OF AGREEMENT TABLE OF CONTENTS

(continued)

9-3.11	Losses from Causes	9.15
9-3.12	Protection of Adjoining Property	9.15
9-3.13	Protections Against Claims of Sub-CONTRACTORS, Etc	9.15
9-3.14	Protection Against Royalties or Patented Invention	9.15
9-3.15	Laws and Ordinances	9.16
9-3.16	Assignment and Subletting	9.16
9-3.17	Indemnification.....	9.16
9-3.18	CONTRACTOR's Liability Insurance	9.17
9-3.19	Workers' Compensation Insurance	9.17
9-3.20	Certificate of Insurance	9.20

9-4 Procession and Progress

9-4.01	Time and Order of Completion	9.21
9-4.02	Extension of Time	9.21
9-4.03	Hindrances and Delays	9.21

9-5 Measurement and Payment

9-5.01	Quantities and Measurements	9.22
9-5.02	Estimated Quantities.....	9.22
9-5.03	Price of Work.....	9.22
9-5.04	Partial Payment.....	9.23
9-5.05	Use of Completed Portions	9.24
9-5.06	Final Completion and Acceptance.....	9.24
9-5.07	Final Payment.....	9.24
9-5.08	Payments Withheld	9.25
9-5.09	Delayed Payments	9.25
9-5.10	Materials on Hand	9.25

9-6 Extra Work and Claims

9-6.01	Change Orders.....	9.26
9-6.02	Minor Changes	9.26
9-6.03	Variance from Specific Compliance	9.26
9-6.04	Extra work	9.27
9-6.05	Arbitration.....	9.28
9-6.06	Time of Filing Claims	9.28

9-7 Abandonment of Contract

9-7.01	Abandonment by CONTRACTOR.....	9.29
9-7.02	Abandonment by OWNER.....	9.31
9-7.03	Waiver of Attorney's Fees.....	9.31
Project No. 17088075		Section 09
Celina Pump Stations Improvements		General Conditions

9-1 DEFINITIONS OF TERMS

9-1.01 OWNER, CONTRACTOR AND ENGINEER:

The OWNER, the CONTRACTOR and the ENGINEER are those persons or organizations identified as such in the Agreement and are referred to throughout the Contract Documents as if singular in number and masculine in gender. The term "ENGINEER" in these specifications shall be understood as referring to the City ENGINEER of Celina, Texas or other such ENGINEER, Superintendent, or Inspector as authorized by said OWNER to act in any particular position. The ENGINEER shall also be understood to be the ENGINEER of the OWNER, and nothing contained in the Contract Documents shall create any contractual or agency relationship between the ENGINEER and the CONTRACTOR.

9-1.02 CONTRACT DOCUMENTS AND STANDARD SPECIFICATIONS:

The Contract Documents shall consist of the Notice to Bidders, Prevailing Wage Rates for Municipal Construction, Proposal, Bid Bond, Standard Form of Agreement, Performance Bond and Payment Bond, Maintenance Bond, General Conditions of Agreement, Special Conditions of Agreement, Traffic Control Guidelines, Drug-Free Jobsite on City Construction Projects, CONTRACTOR's Affidavit of Final Payment and Release, Capital Improvement Project Sign Detail, Construction Plans and Details, Technical Specifications, North Central Texas Standard Specifications for Public Works Construction Latest Edition (N.C.T.C.O.G.), Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges, Latest English System Edition, and Special Bonds (when required).

The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all. In case of conflict between any of the Contract documents, priority of control shall be in the following order; Notice to Bidder, Special Conditions of Agreement, Construction Plans and Details, Technical Specifications, Standard Form of Agreement, Performance and Payment Bonds, Special Bonds (if any), Proposal, General Conditions of Agreement, North Central Texas Standard Specifications for Public Works Construction latest Edition (N.C.T.C.O.G.), and Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges, Latest English System Edition.

It will be the CONTRACTOR'S responsibility to keep a copy of the City, Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges, and N.C.T.C.O.G. specifications with the latest revision. Copies of the N.C.T.C.O.G. specification can be obtained from - NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, PO DRAWER COG, ARLINGTON, TEXAS 76005-5888 (817) 461-3300.

Interpretation - No provision of this contract shall be construed against or interpreted to the disadvantage of any party by any arbitrator or any court or other governmental or judicial authority by reason of such party having or being deemed to have drafted, prepared, structured or dictated such provisions. The OWNER, ENGINEER, and CONTRACTOR are of equal bargaining position and have executed this contract of their own free wills after consulting with competent legal counsel, and both parties are fully informed of and familiar with its terms.

9-1.03 SUB-CONTRACTOR:

The term Sub-CONTRACTOR, as employed herein, includes only those having a direct contact with the CONTRACTOR and it includes one who furnishes material worked to a special design according to the plans or specifications of this work, but does not include one who merely furnishes material not so worked.

9-1.04 WRITTEN NOTICE:

Written notice shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered mail to the last business address known to him who gives the notice.

9-1.05 WORK:

The CONTRACTOR shall provide and pay for all materials, supplies, machinery, equipment, tools, superintendence, labor, services, insurance, and all water; light, power, fuel, transportation and other facilities necessary for the execution and completion of the work covered by the contract documents. Unless otherwise specified, all materials shall be new and both workmanship and materials shall be of a good quality.

The CONTRACTOR shall, if required furnish satisfactory evidence as to the kind and quality of materials. Materials or work described in words, which so applied, have a well-known technical or trade meaning shall be held to refer to such recognized standards.

9-1.06 EXTRA WORK:

The term "Extra Work" as used in this contract shall be understood to mean and include all work that may be required by the ENGINEER or OWNER to be done by the CONTRACTOR to accomplish any change, alteration or addition to the work shown upon the plans, or reasonably implied by the specifications, and not covered by the CONTRACTOR'S Proposal, except as provided under "Changes and Alterations", Item 9-2.14 contained herein.

9-1.07 WORKING DAY: A "Working Day" is defined as any day not including Saturdays, Sundays, or any legal holidays, in which weather or other conditions, not under the control of the CONTRACTOR, will permit construction of the principal units of the work for a period of not less than seven (7) hours between 7:00 a.m. and 6:00 p.m.

9-1.07a ENGINEERING CONSTRUCTION INSPECTION OVERTIME: The City of Celina will not provide the services of its Engineering Inspectors on weekends or City Holidays free of charge.

Any CONTRACTOR requiring the services of an Engineering Inspector on weekends or City of Celina holidays will be charged a rate of \$50.00 per hour (minimum of 4 hours) for engineering inspection services. The CONTRACTOR will be required to notify the City by Fax at (972) 382- 2682 and email the project inspector and the Chief Engineering Inspector before 12:00 PM on the Wednesday before such work is anticipated to be performed with the information contained in the attached "Request for Engineering Construction Inspection Overtime" form. The CONTRACTOR shall deliver the amount made as a check to the "City of Celina" along with the completed attached "Request for Engineering Construction Inspection Overtime" form to the Contract Administrator, Engineering Administrative Manager's Office located at 107 E. Elm Street, Celina, Texas 75009 by 1:00 pm, the working day prior to the Saturday or Holiday that is to be worked. No money will be exchanged in the field.

Following the performance of inspection services, an invoice will be prepared and mailed to the CONTRACTOR via the U.S. Postal Service for any amount over the minimum 4 hours. Please note that the minimum amount will be deducted from the total invoice amount. All invoices must be paid in order for the CONTRACTOR to receive the retained funds at the termination of a project, and/or to receive a final project acceptance.

The CONTRACTOR will be charged only for the hours worked over the minimum amount. If the CONTRACTOR works less than the minimum 4 hours, no invoice will be generated. If an Inspector watches several projects and the remitted deposits equal or surpass the amount needed to pay for the hours, no invoices will be delivered.

If the CONTRACTOR is unable to work for any reason, including weather, the assigned Inspector is to be notified two hours prior to the anticipated work time. If the CONTRACTOR fails to notify the inspector that the work has been canceled, the fee will not be refunded. The CONTRACTOR must make contact with the inspector by phone so he is aware the work has been canceled.

The Chief Engineering Inspector will determine the appropriate number of Inspectors necessary and which Inspectors will work on each Saturday or Holiday.

SUMMARY OF NEW PROCESS

The CONTRACTOR will be required to notify the City by Fax and email before 12:00 PM on the Wednesday before such work is anticipated to be performed with the information contained in the attached "Request for Engineering Inspection Overtime" form.

CONTRACTOR delivers the amount (minimum 4 hours Fee (\$200.00)) as a check made to the "City of Celina" and the completed attached "Request for Engineering Construction Inspection Overtime" form to the Contract Administrator, Engineering Administrative Manager's Office before 1:00 pm, the working day prior to the Saturday or Holiday that is to be worked. No money will be exchanged in the field.

CONTRACTOR works desired number of hours and is invoiced at \$50.00 per hour for the number of hours worked by the Inspector minus the previously remitted \$200.00 fee.

CONTRACTOR pays invoice sent by mail.

Overtime during the work week is not subject to any of the requirements listed above unless it falls on a Holiday. Night time tie-ins are also exempt from these rules when they are done in an effort to reduce the impact of water outages to our customers.

WORK PERFORMED WITHOUT BENEFIT OF INSPECTION

If the check and request form is not delivered by 1:00 pm one workday prior to the Saturday or Holiday that is to be worked, the CONTRACTOR will not be able to work on the Holiday or Saturday. The consequences of work being performed without the benefit of inspection on Saturdays or Holidays will be the removal of all work performed without the appropriate inspection, as determined by the Chief Engineering Inspector. If there is ever any question as to what requires inspection, please check with the assigned Inspector or Chief Engineering Inspector. We will be glad to provide direction.

HOLIDAY SCHEDULE

The Holiday provisions of this process apply to the following City of Celina holidays:

Martin Luther King Day (third Monday in January)
 Thanksgiving Friday (Friday after Thanksgiving Day)
 Christmas Eve (December 24)

The Holiday provisions of this new process do not apply to the Holidays listed below. These Holidays will be observed and no work will be permitted except in the most extreme circumstances and with prior approval from the Chief Engineering Inspector.

New Year's Day (January 1)
 Memorial Day (Last Monday in May)
 Independence Day (July 4)
 Labor Day (First Monday in September)
 Thanksgiving Day (Fourth Thursday in November)
 Christmas Day (December 25)

Please note that any holidays falling on Saturday will be observed on the preceding Friday. Any holidays that fall on Sunday will be observed on the following Monday.

9-1.08 CALENDAR DAY: "Calendar Day" is any day of the week or month, no days being excepted.

9-1.09 SUBSTANTIALLY COMPLETED: By the term "substantially completed" is meant that the structure has been made suitable for use or occupancy or the facility is in condition to serve its intended purpose, but still may require minor miscellaneous work and adjustment, as determined by the ENGINEER.

9-1.10 INSPECTION: The City Engineering Division will inspect the work. Work not completed in accordance with the Plans and Specifications shall be corrected at the CONTRACTOR'S expense.

9-2 RESPONSIBILITIES OF THE ENGINEER AND THE CONTRACTOR

9-2.01 OWNER-ENGINEER RELATIONSHIP:

The ENGINEER will be the OWNER'S representative during construction. The duties, responsibilities and limitations of authority of the ENGINEER as the OWNER'S representative during construction are as set forth in the Contract Documents and shall not be extended or limited without written consent of the OWNER, and ENGINEER. The ENGINEER will advise and consult with the OWNER, and all of OWNER'S instructions to the CONTRACTOR shall be issued through the ENGINEER.

9-2.02 PROFESSIONAL INSPECTION BY ENGINEER:

The ENGINEER shall make periodic visits to the site to familiarize himself generally with the progress of the executed work and to determine if such work generally meets the essential performance and design features and the technical and functional engineering requirements of the Contract Documents; provided and except, however, that the ENGINEER shall not be responsible for making any detailed, exhaustive, comprehensive or continuous on-site inspection of the quality or quantity of the work or be in any way responsible, directly or indirectly, for the construction means, methods, techniques, sequences, quality, procedures, programs, safety precautions or lack of same incident therein or in connection therewith. Notwithstanding any other provision of this agreement or any other Contract Document, the ENGINEER shall not be in any way responsible or liable for any acts, errors, omissions or negligence of the CONTRACTOR, any SUBCONTRACTOR or any of the CONTRACTOR'S or SUBCONTRACTOR's agents, servants or employees or any other person, firm or corporation performing or attempting to perform any of the work.

9-2.03 PAYMENTS FOR WORK:

The ENGINEER shall review CONTRACTOR'S applications for payment and supporting data, determine the amount owed to the CONTRACTOR and approve, in writing, payment to CONTRACTOR in such amounts; such approval of payment to CONTRACTOR constitutes a representation to the OWNER of ENGINEER'S professional judgment that the work has progressed to the point indicated to the best of his knowledge, information and belief, but such approval of an application of payment to CONTRACTOR shall not be deemed as a representation by ENGINEER that ENGINEER has made any examination to determine how or for what purpose CONTRACTOR has used the moneys paid on account of the Contract price.

9-2.04 INITIAL DETERMINATIONS:

The ENGINEER initially shall determine all claims, disputes and other matters in question between the CONTRACTOR and the OWNER relating to the execution or progress of the work or the interpretation of the Contract Documents and the ENGINEER'S decision shall be rendered in writing within thirty (30) days of the CONTRACTOR'S written objection to the decision.

9-2.05 LINES AND GRADES:

Unless otherwise specified, all lines and grades shall be furnished by the CONTRACTOR. Whenever necessary, construction work shall be suspended to permit performance of this work, but such suspension will be as brief as practicable. All stakes, marks, etc., shall be carefully preserved by the CONTRACTOR, and in case of careless destruction or removal shall be replaced at no additional expense.

9-2.06 CONTRACTOR'S DUTY AND SUPERINTENDENT:

The CONTRACTOR shall give adequate attention to the faithful prosecution and completion of this contract and shall keep a full time competent superintendent (with five (5) years minimum supervisory experience & work resume), back up superintendent (with five (5) years minimum supervisory experience & work resume), and any other assistants on the project during its progress. The superintendent shall represent the CONTRACTOR in his absence and all directions given to him shall be as binding as if given to the CONTRACTOR.

The CONTRACTOR is and at all times shall remain an independent CONTRACTOR, solely responsible for the manner and method of completing this work under this contract, with full power and authority to select the means, method and manner of performing such work, so long as such methods do not adversely affect the completed improvements, the OWNER and ENGINEER being interested only in the result obtained and conformity of such completed improvements to the plans, specifications and contract.

Likewise, the CONTRACTOR shall be solely responsible for the safety of himself, his employees and other persons, as well as for the protection of the safety of the improvements being erected and the property of himself or any other person, as a result of his operations hereunder. Engineering construction drawings and specifications as well as any additional information concerning the work to be performed passing from or through the ENGINEER, shall not be interpreted as requiring or allowing CONTRACTOR to deviate from the plans and specifications, the intent of such drawings, specifications and any other such instructions being to define with particularity the agreement of the parties as to the work the CONTRACTOR is to perform. CONTRACTOR shall be fully and completely liable, at his own expense, for design, construction, installation and use, or non-use, of all items and methods incident to performance of the contract, and for all loss, damage or injury incident thereto, either to person or property, including, without limitation, the adequacy of all temporary supports, shoring, bracing, scaffolding, machinery or equipment, safety precautions or devices, and similar items or devices used by him during construction.

Any review of work in process, or any visit or observation during construction, or any clarification of plans and specifications, by the ENGINEER, or any agent, employee, or representative of either of them, whether through personal observation on the project site or by means of approval of shop drawings for temporary construction or construction processes, or by other means or method, is agreed by the CONTRACTOR to be for the purpose of observing the extent and nature of work completed or being performed, as measured against the drawings and specifications constituting the contract, or for the purpose of enabling CONTRACTOR to more fully understand the plans and specifications so that the completed construction work will conform thereto, and shall in no way relieve the CONTRACTOR from full and complete responsibility for the proper performance of his work on the project, including but without limitation the propriety of means and methods of the CONTRACTOR in performing said contract, and the adequacy of any designs, plans or other facilities for accomplishing such performance.

Deviation by the CONTRACTOR from plans and specifications that may have been in evidence during any such visitation or observation by the ENGINEER, or any of his representatives, whether called to the CONTRACTOR'S attention or not shall in no way relieve CONTRACTOR from responsibility to complete all work in accordance with said plans and specifications.

9-2.07 CONTRACTOR'S UNDERSTANDING:

It is understood and agreed that the CONTRACTOR, by careful examination, is satisfied as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the character of equipment and facilities needed preliminary to and during the prosecution of the work, the general and local conditions, and all other matters which can in any way affect the work under this contract. No verbal agreement or conversation with any officer, agent or employee of the OWNER or ENGINEER either before or after the execution of this contract, shall affect or modify any of the terms or obligations herein contained.

9-2.08 CHARACTER OF WORKERS:

The CONTRACTOR agrees to employ only orderly and competent workers, skillful in the performance of the type of work required under this contract, to do the work; and agrees that whenever the ENGINEER shall inform in writing that any worker(s) on the project are, in his opinion, incompetent, unfaithful or disorderly, such worker(s) shall be discharged from the project and shall not again be employed for this project without the ENGINEER'S written consent.

9-2.09 FIELD OFFICES:

The installation of field offices shall be permitted only at such places as approved by the ENGINEER. In addition, all sanitary conditions of the grounds in or about such structures shall at all times be maintained in a manner satisfactory to the ENGINEER. The CONTRACTOR shall be responsible for obtaining and paying for all necessary Permits.

The CONTRACTOR shall not be required to provide a field office for the OWNER's Field Representative; however, the CONTRACTOR'S Superintendent shall be available on the job site at all times when portions of the work are in progress.

9-2.10 SANITATION:

Necessary sanitary conveniences for use by workers on the project shall be properly secluded from public observation and shall be constructed and maintained by the CONTRACTOR in such manner and at such points as approved by the ENGINEER. Onsite sanitary convenience facilities and their use shall be strictly enforced.

9-2.11 SHOP DRAWINGS:

The CONTRACTOR shall submit to the ENGINEER, with such promptness as to cause no delay in work or in that of any other CONTRACTOR, shop and/or setting drawings and schedules required for the work of the various trades, and the ENGINEER shall review them with reasonable promptness, making desired comments. The CONTRACTOR shall make any revisions required by the ENGINEER. The ENGINEER'S review of such drawings or schedules shall not relieve the CONTRACTOR from responsibility for deviations from drawings or specifications, unless the CONTRACTOR has, in writing, called the ENGINEER'S attention to such deviations at the time of submission, nor shall it relieve the CONTRACTOR from responsibility for errors of any sort in shop drawings or schedules. It shall be the CONTRACTOR'S responsibility to fully and completely review all shop drawings to ascertain their effect on the CONTRACTOR'S ability to perform the required contract work in accordance with the plans and specifications and within the contract time.

Such review by the ENGINEER shall be for the sole purpose of determining the sufficiency of said drawings or schedules to result in finished improvements in conformity with the plans and specifications, and shall not relieve the CONTRACTOR of his duty as an independent CONTRACTOR as previously set forth, it being expressly understood and agreed that the ENGINEER does not assume any duty to pass upon the propriety or adequacy of such drawings or schedules, or any means or methods reflected thereby, in relation to the safety of either person or property during CONTRACTOR'S performance hereunder.

9-2.12 PRELIMINARY APPROVAL:

The ENGINEER shall not have the power to waive the obligations of this contract for the furnishing by the CONTRACTOR of good new material, and of his performing good work as herein described, and in full accordance with the plans and specifications. No failure or omission of the ENGINEER to discover, object to or condemn any defective work or material shall release the CONTRACTOR from the obligations to fully and properly perform the contract, including without limitations, the obligation to at once tear out, remove and properly replace the same at any time prior to final acceptance upon the discovery of said defective work or material; provided, however, that the ENGINEER shall, upon request of the CONTRACTOR, inspect and accept or reject any material furnished, and in event the material has been once accepted by the ENGINEER, such acceptance shall be binding on the OWNER unless it can be clearly shown that such material furnished does not meet the specifications for this work.

Any questioned work may be ordered taken up or removed for re-examination, by the ENGINEER, prior to final acceptance, and if found not in accordance with the specifications for said work, all expense of removing, re-examination and replacement shall be borne by the CONTRACTOR, otherwise the expense thus incurred shall be allowed as EXTRA WORK, and shall be paid for by the OWNER; provided that, where inspection or approval is specifically required by the specifications prior to performance of certain work, should the CONTRACTOR proceed with such work without requesting prior inspection or approval the CONTRACTOR shall bear all expense of taking up, removing, and replacing this work if so directed by the ENGINEER.

9-2.13 DEFECTS AND THEIR REMEDIES:

It is further agreed that if the work or any part thereof, or any material brought on the site of the work for use in the work or selected for the same, shall be deemed by the ENGINEER as unsuitable or not in conformity with the specifications, the CONTRACTOR shall, after receipt of written notice thereof from the ENGINEER, forthwith remove such material and rebuild or otherwise remedy such work so that it shall be in full accordance with this contract.

9-2.14 CHANGES AND ALTERATIONS:

The CONTRACTOR further agrees that the OWNER may make such changes and alterations as the OWNER may see fit, in the line, grade, form, dimensions, plans or materials for the work herein contemplated, or any part thereof, either before or after the beginning of the construction, without affecting the validity of this contract and the accompanying Performance and Payment Bonds.

If such changes or alterations diminish the quantity of the work to be done, they shall not constitute the basis for a claim for damages, or anticipated profits on the work that may be dispensed with, except as provided for unit price items under Section 9, Item 5 "Measurement and Payment." If the amount of work is increased, and the work can fairly be classified under the specifications, such increase shall be paid for according to the quantity actually done and at the unit price, if any, established for such work under this contract, except as provided for unit price items under Section 9, Item 5 "Measurement and Payment;" otherwise, such additional work shall be paid for as provided under Extra Work. In case the OWNER shall make such changes or alterations as shall make useless any work already done or material already furnished or used in said work, then the OWNER shall compensate the CONTRACTOR for any material or labor so used, and for any actual loss occasioned by such changes due to actual expenses incurred in preparation for the work as originally planned.

9-3 GENERAL OBLIGATIONS AND RESPONSIBILITIES

9-3.01 KEEPING OF PLANS, SPECIFICATIONS AND RECORD DRAWINGS ACCESSIBLE:

The ENGINEER shall furnish the CONTRACTOR with three (3) sets of plans, profiles and specifications, if required, at no expense to the CONTRACTOR. Additional sets of plans may be purchased from the ENGINEER.

The CONTRACTOR shall maintain, at the Job Site, one copy of all Drawings, Specifications, Addenda, approved Shop Drawings, and Change Orders, in good order and marked to record all changes made during construction, and updated daily. These shall be referred to as record drawings, and shall be available to the OWNER and ENGINEER, upon request with the latest revisions noted thereon. The As-Built drawings, marked to record all changes made during construction, shall be delivered to the ENGINEER upon completion of the Project, with a letter signed by the CONTRACTOR stating that the record plans submitted show all changes made during construction.

The CONTRACTOR shall review the updated record drawings with the ENGINEER, at the time of the monthly partial payment submittal. Failure of the CONTRACTOR to maintain the record drawings shall be grounds for the withholding of that month's partial payment submittal, until the record drawings are properly updated and reviewed.

The CONTRACTOR shall have a Registered Professional Land Surveyor (RPLS) tie "as-built" locations of all valves, blow offs, manholes, inlets, bends, tees, crosses, P.C.'s, P.T.'s, and at every five hundred (500) feet along straight lines and curves on proposed mains. Horizontal and vertical data must be collected for each tie. Ties shall be made at the top of pipe and all control points and bench marks used in the survey shall be consistent with the plans and reported. Such work will be performed prior to backfill and the results furnished to the City. The points shall be recorded and reviewed monthly on the "as-built" drawings. The CONTRACTOR shall also provide an ASCII file containing point number, northing coordinate, easting coordinate, elevation, and point description for each tie and control point used in the survey. The ASCII file shall be submitted with the monthly invoice on Digital Video Disc (DVD) and at the end of the project with the "as-built" drawings in electronic format on a DVD accompanied with a hard copy print of the file. Construction As Built Surveying shall only be performed if called out as a bid item or listed as subsidiary to another bid item.

9-3.02 OWNERSHIP OF DRAWINGS:

All drawings, specifications and copies thereof furnished by the ENGINEER shall not be reused on other work and, with the exception of the signed contract sets, are to be returned to the ENGINEER on request, at the completion of the work. All models (if any) are the property of the OWNER.

9-3.03 ADEQUACY OF DESIGN/CONSTRUCTION:

It is understood that the OWNER believes it has employed competent engineers and designers. It is, therefore, agreed that the ENGINEER shall be responsible for the adequacy of the design, sufficiency of the Contract documents, the safety of the completed structure and the practicability of the operations of the completed project; provided the CONTRACTOR has complied with the requirements of the said Contract Documents, all approved modifications thereof, and additions and alterations thereto approved in writing by the OWNER. The CONTRACTOR is bound to perform his services to the standards of the industry. If the CONTRACTOR determines the design to be inadequate, he shall notify the OWNER and ENGINEER prior to construction the items he feels are

inadequate. The CONTRACTOR shall comply with the requirements of the Contract Documents, all approved modifications thereof, and additions and alterations thereto approved in writing by the OWNER. The burden of proof of such compliance shall be upon the CONTRACTOR to show compliance with said requirements of the Contract Documents, approved modifications thereof and all approved additions and alterations thereto.

9-3.04 RIGHT OF ENTRY:

The OWNER reserves the right to enter the property or location on which the works herein contracted for are to be constructed or installed, by such agent or agents as he may elect, for the purpose of inspecting the work, or for the purpose of constructing or installing such collateral work as said OWNER may desire.

9-3.05 COLLATERAL CONTRACTS:

The OWNER agrees to provide by separate contract or otherwise, all labor and material essential to the completion of the work specifically excluded from this contract, in such manner as not to delay the progress of the work or damage said CONTRACTOR, except where such delays are specifically mentioned elsewhere in the Contract Documents.

9-3.06 DISCREPANCIES AND OMISSIONS:

It is further agreed that it is the intent of this contract that all work must be done and all material must be furnished in accordance with the generally accepted practice, and in the event of any discrepancies between the separate contract documents, the priority of interpretation defined under "Contract Documents", Item 9-1.02, shall govern. In the event that there is still any doubt as to the meaning and intent of any portion of the contract, specifications or drawings, the ENGINEER shall define which is intended to apply to the work.

9-3.07 EQUIPMENT, MATERIALS AND CONSTRUCTION AREA:

The CONTRACTOR shall be responsible for the care, preservation, conservation, and protection of all materials, supplies, machinery, equipment, tools, apparatus, accessories, facilities, all means of construction, and any and all part of the work, whether the CONTRACTOR has been paid, partially paid, or not paid for such work, until the entire work is completed and accepted.

9-3.08 DAMAGES:

In the event the CONTRACTOR is damaged in the course of the completion of the work by the act, neglect, omission, mistake or default of the OWNER, or of the ENGINEER, or of any other CONTRACTOR employed by the OWNER upon the work, thereby causing loss to the CONTRACTOR, the OWNER agrees that he will reimburse the CONTRACTOR for such loss. In the event the OWNER is damaged in the course of the work by the act, negligence, omission, mistake or default of the CONTRACTOR, or should the CONTRACTOR unreasonably delay the progress of the work being done by others on the job so as to cause loss for which the OWNER becomes liable, then the CONTRACTOR shall reimburse the OWNER for such loss.

9-3.09 PROTECTION AGAINST ACCIDENT TO EMPLOYEES AND THE PUBLIC:

The CONTRACTOR shall at all times exercise reasonable precautions for the safety of employees and others on or near the work and shall comply with all applicable provisions of Federal, State, and Municipal safety laws and building and construction codes. All machinery and equipment and other physical hazards shall be guarded in accordance with the "Manual of Accident Prevention in Construction", Latest Edition of the Associated General Contractors of America except where

incompatible with Federal, State, or Municipal laws or regulations. The CONTRACTOR shall provide such machinery guards, safe walkways, ladders, bridges, gangplanks, and other safety devices. The safety precautions actually taken and their adequacy shall be the sole responsibility of the CONTRACTOR, acting at his discretion as an independent CONTRACTOR.

9-3.10 PERFORMANCE AND PAYMENT BONDS:

Unless otherwise specified, it is further agreed by the parties to this Contract that the CONTRACTOR will execute separate performance and payment bonds, each in the sum of one hundred (100) percent of the total contract price, in standard forms for this purpose, guaranteeing faithful performance of the work and the fulfillment of any guarantees required, and further guaranteeing payment to all persons supplying labor and materials or furnishing him any equipment in the execution of the Contract, and it is agreed that this Contract shall not be in effect until such performance and payment bonds are furnished to and approved by the OWNER.

Unless otherwise approved in writing by the OWNER, the Surety Company underwriting the bonds shall be acceptable according to the latest list of companies holding certificates of authority from the Secretary of the Treasury of the United States. Unless otherwise specified, the cost of the premium for the performance and payment bonds shall be included in the CONTRACTOR'S proposal.

The Government Code of Texas in Section 2253.021 requires the prime CONTRACTOR, before beginning work, to execute a performance bond if the contract is in excess of \$100,000, and a payment bond if the contract is in excess of \$25,000. The performance bond is solely for the protection of the governmental agency awarding the public works contract, in the amount of the contract, and conditioned upon the faithful performance of the work in accordance with the plans, specifications, and contract documents. The payment bond is solely for the protection and use of payment bond beneficiaries who have a direct contractual relationship with the prime CONTRACTOR or a SUBCONTRACTOR to supply public work labor or material, and in the amount of the contract.

9-3.11 LOSSES FROM CAUSES:

Unless otherwise specified, all loss or damage to the CONTRACTOR arising out of the nature of the work to be done, or from the action of the elements, or from any unforeseen circumstance in the prosecution of the same, or from unusual obstructions or difficulties which may be encountered in the prosecution of the work, shall be sustained and borne by the CONTRACTOR at his own cost and expense.

9-3.12 PROTECTION OF ADJOINING PROPERTY:

The said CONTRACTOR shall take proper means to protect the adjacent or adjoining property or properties in any way encountered, which might be injured or seriously affected by any process of construction to be undertaken under this Agreement, from any damage or injury by reason of said process of construction; and he shall be liable for any and all claims for such damage on account of his failure to fully protect all adjoining property. The CONTRACTOR agrees to indemnify, save and hold harmless the OWNER and ENGINEER against any claim or claims for damages due to any injury to any adjacent or adjoining property, arising or growing out of the performance of the contract; but any such indemnity shall not apply to any claim or any kind arising out of the existence or character of work.

9-3.13 PROTECTION AGAINST CLAIMS OF SUB-CONTRACTORS, WORKERS, MATERIAL MEN AND FURNISHERS OF MACHINERY, EQUIPMENT AND SUPPLIES:

The CONTRACTOR agrees that he will indemnify and save the OWNER and ENGINEER harmless from all claims growing out of the lawful demands of sub-CONTRACTORS, laborers, workmen, mechanics, material men and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. When so desired by the OWNER, the CONTRACTOR shall furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged or waived. If the CONTRACTOR fails so to do, then the OWNER may, at the option of the CONTRACTOR, either pay directly any unpaid bills, of which the OWNER has written notice, or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to liquidate any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payments to the CONTRACTOR shall be resumed in full, in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligation upon the OWNER by either the CONTRACTOR or his Surety.

9-3.14 PROTECTION AGAINST ROYALTIES OR PATENTED INVENTION:

The CONTRACTOR shall pay all royalties and license fees, and shall provide for the use of any design, device, material or process covered by letters patent or copyright by suitable legal agreement with the patentee or OWNER. The CONTRACTOR shall defend all suits or claims for infringement of any patent or copyright rights and shall indemnify and save the OWNER, and ENGINEER harmless from any loss on account thereof, except that the OWNER shall defend all such suits and claims and shall be responsible for all such loss when a particular design, device, material or process or the product of a particular manufacturer or manufacturers is specified or required by the OWNER: provided, however, if choice of alternate design, device, material or process is allowed to the CONTRACTOR, then CONTRACTOR shall indemnify and save OWNER harmless from any loss on account thereof. If the material or process specified or required by the OWNER is an infringement, the CONTRACTOR shall be responsible for such loss unless he promptly gives such information to the OWNER.

9-3.15 LAWS AND ORDINANCES:

The CONTRACTOR shall at all times observe and comply with all Federal, State and local laws, ordinances and regulations, which in any manner affect the contract or the work, and with the execution of this contract shall indemnify and save harmless the OWNER and ENGINEER against any claim arising from the violation of any such laws, ordinances, and regulations whether by the CONTRACTOR or his employees, except where such violations are called for by the provisions of the Contract Documents. If the CONTRACTOR observes that the plans and specifications are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in the contract for changes in the work. If the CONTRACTOR performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the ENGINEER, he shall bear all costs arising therefrom. In case the OWNER is a body politic and corporate, the law from which it derives its powers, insofar as the same regulates the objects for which, or the manner in which, or the conditions under which the OWNER may enter into contract, shall be controlling, and shall be considered as part of this contract, to the same effect as though embodied herein.

9-3.16 ASSIGNMENT AND SUBLETTING:

The CONTRACTOR further agrees that he will retain personal control and will give his personal attention to the fulfillment of this contract and that he will not assign by Power of Attorney, or otherwise, or sublet said contract without the written consent of the ENGINEER, and that no part or feature of the work will be sublet to anyone objectionable to the ENGINEER or the OWNER. The

CONTRACTOR further agrees that the subletting of any portion or feature of the work, or materials required in the performance of this contract, shall not relieve the CONTRACTOR from his full obligations to the OWNER as provided by this Agreement.

9-3.17 INDEMNIFICATION:

The CONTRACTOR with the execution of this contract shall defend, indemnify and hold harmless the OWNER and the ENGINEER and their respective officers, agents and employees, from and against all damages, claims, losses, demands, suits, judgments and costs, including reasonable attorneys' fees and expenses, rising out of or resulting from the performance of the work, provided that any such damages, claim, loss, demand, suit, judgment, cost or expense:

- A. 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; and
- B. Is caused in whole or in part by any negligent act or omission of the CONTRACTOR, any SUBCONTRACTOR, anyone directly or indirectly employed by any one of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

The obligation of the CONTRACTOR under this Paragraph shall not extend to the liability of the ENGINEER, his agents or employees arising out of the preparation or approval of maps, drawings, reports, surveys, Change Orders, designs or specifications, or the giving of or the failure to give directions or instructions by the ENGINEER, his agents or employees, provided such giving or failure to give is the primary cause of the injury or damage.

In the performance of this contract, CONTRACTOR agrees to assume liability for doing or failing to do anything that may result in the death of or bodily injury to any person and loss of or damage to any property. CONTRACTOR agrees to provide all necessary safeguards and to take all proper precautions against the occurrence of accidents, injuries or damages to any persons or property and to be responsible for and to indemnify and save harmless the OWNER and ENGINEER from all loss or damage to any or all claims rising by reason of accidents, injuries or damage to any persons, including the employees and agents of the CONTRACTOR, and sub-CONTRACTOR, or the OWNER or any property in connection with work pursuant to this contract, regardless of the degree of supervisory capacity any agent employee of the OWNER might have, and from all fines, penalties or loss incurred by reason of the violation of any law, regulation or ordinance. CONTRACTOR further agrees to defend, at CONTRACTOR'S expense, any and all suits or actions, civil or criminal arising out of such claims or matters.

9-3.18 CONTRACTOR'S LIABILITY INSURANCE:

The CONTRACTOR, at his own expense shall purchase, maintain and keep in force such insurance as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR'S operations under the Contract, whether such operations by himself or by any SUBCONTRACTOR or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Such insurance types and policies are described in Section 10-3 Paragraph B. of this contract, and are generally described as comprehensive and liability insurance, and automobile insurance.

9-3.19 WORKERS' COMPENSATION INSURANCE:

- A. In accordance with Texas Workers' Compensation Commission New Rule 28 TAC *110.110, the following language is required:

1. Definitions:

Certificate of coverage ("certificate")-A copy of insurance, a certificate of authority to self-insure issued by the commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

Duration of the project - Includes the time from the beginning of the work on the project until the CONTRACTOR'S/person's work on the project has been completed and accepted by the governmental entity.

Persons providing services on the project ("SUBCONTRACTOR" in Section 406.096 of the Texas Labor Code) -includes all persons or entities performing all or part of the services the CONTRACTOR has undertaken to perform on the project, regardless of whether that person contracted directly with the CONTRACTOR and regardless of whether that person has employees. This includes, without limitation, independent CONTRACTORS, SUBCONTRACTORS, leasing companies, motor carriers, OWNER-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation or other service related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

2. The CONTRACTOR shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreement, which meets the necessary requirements of Texas Labor Code, Section 401.011(44) for all employees of the CONTRACTOR providing services on the project, for the duration of the project
3. The CONTRACTOR must provide a certificate of coverage to the governmental entity prior to being awarded the contract.
4. If the coverage period shown on the CONTRACTOR'S current certificate of coverage end during the duration of the project, the CONTRACTOR must, prior to the end of the coverage period, file a new certificate of coverage with the governmental entity showing that coverage has been extended.
5. The CONTRACTOR shall obtain from each person providing services on a project, and provide to the governmental entity.
 - (a) A certificate of coverage, prior to that person beginning work on the

project, so the governmental entity will have on file certificate of coverage showing coverage for all persons providing services on the project; and

- (b) No later than seven days after receipt by the CONTRACTOR, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.
6. The CONTRACTOR shall retain all required certificates of coverage for the duration of the project and for one year thereafter.
 7. The CONTRACTOR shall notify the governmental entity in writing by certified mail or personal delivery, within ten (10) days after the CONTRACTOR knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.
 8. The CONTRACTOR shall post on each project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.
 9. The CONTRACTOR shall contractually require each person with whom it contracts to provide services on a project, to:
 - (a) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreement, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the project, for the duration of the project;
 - (b) provide to the CONTRACTOR, prior to the person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;
 - (c) provide the CONTRACTOR, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage. If the coverage period shown on the current certificate of coverage ends during the duration of the project.
 - (d) Obtain from each other person with whom it contracts, and provide to the CONTRACTOR
 - (1) a certificate of coverage, prior to the other person beginning work on the project
 - (2) a new certificate of coverage showing extension of coverage, prior to the end of the coverage period. If the coverage period shown on the current certificate of coverage ends during the duration of the project;

- (e) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;
 - (f) notify the governmental entity in writing by certified mail or personal delivery, within ten (10) days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and
 - (g) contractually require each person with whom it contracts, to perform as required by paragraphs (a) - (g), with the certificates of coverage to be provided to the person for whom they are providing services.
10. By signing this contract or providing or causing to be provided a certificate of coverage, the CONTRACTOR representing to the governmental entity that all employees of the CONTRACTOR who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier, or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the CONTRACTOR to administrative penalties, criminal penalties, civil penalties, or other civil actions.
 11. The CONTRACTOR'S failure to comply with any of these provisions is a breach of contract by the CONTRACTOR which entitles the governmental entity to declare the contract void if the CONTRACTOR does not remedy the breach within ten (10) days after receipt of notice of breach from the governmental entity.
 12. The required notice at the project shall be in text of at least a nineteen (19) point type, with a title in at least thirty (30) point type, and shall contain the following text, in English and Spanish:

REQUIRED WORKERS' COMPENSATION COVERAGE

The law requires that each person working on this site or providing services related to this construction project must be covered by workers' compensation insurance. This includes persons providing, hauling, or delivering equipment or materials, or providing labor or transportation or other service related to the project, regardless of the identity of their employer or status as an employee.

Call the Texas Workers' Compensation Commission at 512-440-3789 to receive information on the legal requirements for coverage, to verify whether your employer has provided the required coverage, or to report an employer's failure to provide coverage.

9-3.20 CERTIFICATE OF INSURANCE:

Before commencing any work, CONTRACTOR shall file with OWNER valid Certificates of Insurance, from an Insurance Company with a rating of A or higher in the current Best's Key Rating Guide and acceptable to the OWNER and the ENGINEER.

9-4 PROCESSION AND PROGRESS

9-4.01 TIME AND ORDER OF COMPLETION:

It is the meaning and intent of this contract, unless otherwise herein specifically provided, that the CONTRACTOR shall be allowed to prosecute his work at such time and seasons, in such order of precedence, and in such manner as shall be most conducive to economy of construction: provided, however, that the order and the time of prosecution shall be such that the work shall be completed as a whole and in part, in accordance with this contract, the plans and specifications, and within the time of completion designated in the Proposal; provided, also, that when the OWNER is having other work done, either by contract or his own force, the ENGINEER may direct the time and manner of constructing the work done under this contract, so that conflicts will be avoided and the construction of the various works being done for the OWNER shall be harmonized.

The CONTRACTOR shall submit, at such times as may reasonably be requested by the ENGINEER, schedules which shall show the order in which the CONTRACTOR proposes to carry on the work, with dates at which the CONTRACTOR will start the several parts of the work, and estimated dates of completion of the several parts.

9-4.02 EXTENSION OF TIME:

Should the CONTRACTOR be delayed in the completion of the work by any act or neglect of the OWNER or ENGINEER, or of any employee of either, or by other CONTRACTORS employed by the OWNER or by changes ordered in the work, or by strikes, lockouts, fires and unusual delays by common carriers, or unavoidable causes beyond the CONTRACTOR'S control, or by any cause which the ENGINEER shall decide justifies the delay, then an extension of time shall be allowed for completing the work, sufficient to compensate for the delay, the amount of the extension, to be determined by the ENGINEER, provided however, that the CONTRACTOR shall give the ENGINEER notice in writing of the cause of such delay within thirty (30) days of the event. The OWNER shall have thirty (30) days from the time the CONTRACTOR submits his request for the extension of time to respond in writing as to the approval or denial.

If the extension is denied, the requirement for Failure to Complete Work on Time will be enforced as specified in the contract. Refer to Section 10 Item 6 for outline of Project Construction Schedule and Section 10 Item 23 for Failure to Complete Work on Time.

9-4.03 HINDRANCES AND DELAYS:

The CONTRACTOR shall make no claims for damages resulting from hindrances or delays from any cause (except where the work is stopped by order of the OWNER) during the progress of any portion of the work embraced in this contract. In case said work shall be stopped by the act of the OWNER, then such expense as in the judgment of the ENGINEER is caused by the OWNER; the OWNER shall pay such stoppage of said work to CONTRACTOR.

9-5 MEASUREMENT AND PAYMENT

9-5.01 QUANTITIES AND MEASUREMENTS:

No extra or customary measurements of any kind will be allowed, but the actual measured and/or computed length, area, solid contents, number and weight only shall be considered, unless otherwise specifically provided.

9-5.02 ESTIMATED QUANTITIES:

This agreement, including the specifications, plans and estimate, is intended to show clearly all work to be done and material to be furnished hereunder. Where the estimated quantities are shown for the various classes of work to be done and material to be furnished under this contract, they are approximate and are to be used only as a basis for estimating the probable cost of the work and for comparing the proposals offered for the work. It is understood and agreed that the actual amount of work to be done and material to be furnished under this contract may differ somewhat from these estimates, and that where the basis for payment under this contract is the unit price method, payment shall be for the actual amount of such work done and the material furnished.

Where payment is based on the unit price method, the CONTRACTOR, agrees that he will make no claim for damages, anticipated profits or otherwise on account of any differences which may be found between the quantities of work actually done, the material actually furnished under this contract and the estimated quantities contemplated and contained in the proposal; provided, however, that in case the actual quantity of any major item should become as much as twenty-five (25%) percent more than or twenty-five (25%) percent less than the estimated or contemplated quantity for such items, then either party to this Agreement upon demand, shall be entitled to a revised consideration upon the portion of the work above or below twenty-five (25%) percent of the estimated quantity.

A "Major Item" shall be construed to be any individual bid item included in the proposal that has a total cost equal to or greater than five (5) percent of the NOT TO EXCEED TOTAL AMOUNT OF BID or any item that exceeds twenty-five thousand dollars (\$25,000).

Any revised consideration is to be determined by agreement between the parties, otherwise by the terms of this Agreement, as provided under "Extra Work."

9-5.03 PRICE OF WORK:

In consideration of the furnishing of all the necessary labor, equipment and material, and the completion of all work by the CONTRACTOR, and on the completion of all work and of the delivery of all material embraced in this Contract in full conformity with the specifications and stipulations herein contained, the OWNER agrees to pay the CONTRACTOR the prices set forth in the Proposal hereto attached, which has been made a part of this contract. The CONTRACTOR hereby agrees to receive such prices in full for furnishing all material and all labor required for the aforesaid work, also for well and truly performing the same and the whole thereof in the manner and according to this Agreement.

9-5.04 PARTIAL PAYMENTS:

Except as otherwise provided by the Contract, between the 25th day and the last day of each month the CONTRACTOR shall make an estimate of the value of the work done during the month under the specifications. The CONTRACTOR shall prepare the estimate on a form approved by the ENGINEER. The CONTRACTOR shall forward the estimate required above to the OWNER or ENGINEER by not later than the last day of the month. The monthly estimate may include acceptable nonperishable materials delivered to and stored at the work site or a storage facility accessible to the OWNER; payment for such stored materials shall be allowed on the same percentage basis of the value as provided hereinafter. The monthly estimate shall also provide such supporting documentation as the ENGINEER or the other applicable provisions of the specifications may require. The OWNER shall verify that the CONTRACTOR'S estimate matches the total value of work done and acceptable non-perishable materials delivered to the work site or storage facility, based upon the bid proposal prices and quantities measured or verified by OWNER. In the event of a discrepancy between quantities of work as shown in the CONTRACTOR'S estimate and measured quantities as shown in the OWNER'S verification, the OWNER'S determination or measurement shall be final, and the CONTRACTOR'S estimate shall be adjusted to reflect the quantities of work as shown by the OWNER'S verification. Payment shall be made by OWNER about thirty (30) days after receipt of the estimate from CONTRACTOR. The payment shall be for the total amount of the approved estimate, less a retainage of ten (10) percent of the completed work for contracts under four hundred thousand (\$400,000) dollars or 5% for contracts over four hundred thousand (\$400,000) dollars. It is understood, however, that in case the whole work be near to completion and some unexpected and unusual delay occurs due to no fault and neglect on the part of the CONTRACTOR and OWNER, then the OWNER may - upon written recommendation of the ENGINEER - pay a reasonable and equitable portion of the retained percentage to the CONTRACTOR, or the CONTRACTOR at the OWNER'S option, may be relieved of the obligation to fully complete the work and, thereupon, the CONTRACTOR shall receive payment of the balance due him under the contract subject only to the conditions stated under "Final Payment." OWNER shall not be liable for interest on any late or delayed payment caused by any claim or dispute, any discrepancy in quantities as described above, any failure to provide supporting documentation or other information required with the estimate or as a precondition to payment under the Contract, or due to any payment the OWNER has a right to withhold under the Contract.

No pay estimate requests shall be considered unless submitted with the following items as a one complete package:

- **Updated Construction Schedule**
- **SWPPP Reports (Storm Water Pollution Prevention Program) if required**
- **Passing test reports**
- **Updated As-built drawing reviewed by City Inspector**

Note: A check list of these items shall be accompanied by a given pay estimate and shall be initialed by the City Inspector prior to processing. (Please see Attachment 1 of these bid documents).

The CONTRACTOR shall submit to the Engineer a Schedule of Values for each Lump Sum item of work for review and approval 20 days before the work is scheduled to be performed. The CONTRACTOR shall itemize in the Schedule of Values the actual costs to the CONTRACTOR to perform the various parts of the Lump Sum item work which shall include a reasonable overhead and profit cost item. Partial payment for Lump Sum items shall be made based on the value and percentage of the work in the bid item completed, as approved by the OWNER and as reflected in the Schedule of Values.

The CONTRACTOR shall furnish to the OWNER such detailed information as OWNER may request to assist in the review of monthly estimates. It is understood that the monthly estimates shall be approximate only, and all monthly estimates and partial payments shall be subject to correction in the estimate rendered following the discovery of an error in any previous estimate, and such estimate shall not in any respect be taken as an admission of the OWNER of the amount of work done or of its quality or sufficiency nor as an acceptance of the work or the release of the CONTRACTOR of any of its responsibility under the Contract.

Items not included in Section 3 of the General Conditions of the Bid Book shall be subsidiary to those items provided under Section 3.

9-5.05 USE OF COMPLETED PORTIONS:

The OWNER shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding the fact that the time for completing the entire project or such portions may not have expired, such taking possession and use shall not be deemed as acceptance of any work completed in accordance with the Contract documents. If such prior use increases the cost of or delays the project, the CONTRACTOR shall be entitled to such extra compensation, or extension of time, or both, as the ENGINEER may determine.

The CONTRACTOR shall notify the ENGINEER when, in the CONTRACTOR'S opinion, the contract is "substantially completed" and when so notifying the ENGINEER, the CONTRACTOR shall furnish to the ENGINEER in writing a detailed list of unfinished work. The ENGINEER will review the CONTRACTOR'S list of unfinished work and will add thereto such items as the CONTRACTOR has failed to include. The "substantial completion" of the structure or facility shall not excuse the CONTRACTOR from performing all of the work undertaken, whether of a minor or major nature, and thereby completing the structure or facility in accordance with the Contract Documents.

9-5.06 FINAL COMPLETION AND ACCEPTANCE:

After the CONTRACTOR has given the ENGINEER written notice that the work has been completed, the ENGINEER and the OWNER shall inspect such work; if the work is found to be satisfactorily completed in accordance with the Contract Documents, the ENGINEER shall notify the OWNER to start processing project final reconciliation documents. After these documents have been executed by all parties, it shall be the duty of the OWNER to issue a letter of acceptance within 10 days from the date when final reconciliation documents have been executed or advise the CONTRACTOR in writing of the reason for non-acceptance.

9-5.07 FINAL PAYMENT:

Upon notification by the CONTRACTOR of the completion of the project, the ENGINEER shall proceed to make final measurements and prepare a final statement of the value of all work performed and materials furnished under the terms of this agreement and certify the same to the OWNER with the "CONTRACTOR'S Affidavit of Final Payment and Release" as in Appendix "B". The balance due the CONTRACTOR, under terms of this Agreement, provided the CONTRACTOR has fully performed contractual obligations under the terms of this contract; and said payment shall become due in any event upon said performance by the CONTRACTOR. Neither the Letter of Acceptance nor the final payment nor any provision in the Contract Documents, shall relieve the CONTRACTOR of the obligation for fulfillment of any warranty, which may be required.

9-5.08 PAYMENT WITHHELD:

The OWNER may, on account of subsequently discovered evidence, withhold or nullify the whole or part of any certificate to such extent as may be necessary to protect himself from loss on account of:

- A. Defective work not remedied.
- B. Claims filed or reasonable evidence indicating probably filing of claims.
- C. Failure of the CONTRACTOR to make payment properly to sub-CONTRACTORS or for material or labor.
- D. Damage to another CONTRACTOR.
- E. Reasonable doubt that the work can be completed for the unpaid balance of the contract amount.
- F. Reasonable indication that the work will not be completed within the contract time.

When the above grounds are removed or the CONTRACTOR provides a Surety Bond satisfactory to the OWNER, which will protect the OWNER in the amount withheld, payment shall be made for amounts withheld because of them.

9-5.09 DELAYED PAYMENTS:

Should the OWNER fail to make payment to the CONTRACTOR of the sum named in any partial or final statement, when payment is due, the OWNER shall be re-notified in writing to pay the CONTRACTOR with copy of the invoice. In the event payment not be promptly made, as provided under "Partial Payments," to the CONTRACTOR at any time thereafter the CONTRACTOR may treat the contract as abandoned by the OWNER and recover compensation, as provided under "Abandonment of Contract," unless such payments are withheld in accordance with the provisions of "Payment Withheld."

9-5.10 MATERIALS ON HAND:

The OWNER shall determine and specify in the bid documents which items (if any) warrant materials on-hand consideration. Only Approved Materials purchased and stored more than thirty days before use may be considered for materials on hand. Prior to the reimbursement of Materials On-Hand, the CONTRACTOR shall furnish the OWNER with PAID INVOICES for such materials including other supporting documents the OWNER may deem necessary. Upon receipt of such invoices, the OWNER will revise the corresponding pay items to reflect a line item for labor and another for material. The total price of these two line items shall equal the total price of the whole item. The maximum material unit cost shall not exceed 60% of the total unit price of labor and material.

The CONTRACTOR shall have complete fiscal responsibility as to the safety of the materials on-hand including storage costs and shall protect such materials against theft and other calamities. CONTRACTOR shall make arrangements for the storage of the materials on-hand with installation made in a timely manner. Legitimate Citizens' Complaints shall be accommodated by the CONTRACTOR.

Measurement and Payment for labor costs of such materials shall be made as materials are consumed. Measurement and payment for both material and labor Cost shall be made according to section 9-2.03 (Payment for Work) and section 9-5 (Measurement and Payment) of the bid documents.

9-6 EXTRA WORK AND CLAIMS

9-6.01 CHANGE ORDERS:

Without invalidating this Agreement, the OWNER may, at any time, order additions, deletions or revisions to the work; such changes will be authorized by Change Order to be prepared by the ENGINEER for execution by the OWNER and the CONTRACTOR. The Change Order shall set forth the basis for any change in contract price, as hereinafter set forth for "Extra Work", Item 9-6.04, and any change in contract time, which may result from the change.

In the event the CONTRACTOR shall refuse to execute a Change Order which has been prepared by the ENGINEER and executed by the OWNER, the ENGINEER may, in writing, instruct the CONTRACTOR to proceed with the work as set forth in the Change Order and the CONTRACTOR may make claim against the OWNER for "Extra Work", Item 9-6.04, involved therein, as hereinafter provided.

9-6.02 MINOR CHANGES:

The ENGINEER may authorize minor changes in the work by field order not inconsistent with the overall intent of the Contract documents and not involving an increase in Contract price. If the CONTRACTOR believes that any minor change or alteration authorized by the ENGINEER involves Extra Work and entitles him to an increase in the Contract Price, the CONTRACTOR shall make written request to the ENGINEER for a written Change Order.

In such case, the CONTRACTOR, by copy of his communication to the ENGINEER or otherwise in writing shall advise the OWNER of his request to the ENGINEER for a written Change Order and that the work involved may result in an increase in the Contract Price.

Any request by the CONTRACTOR for a change in Contract price shall be made prior to beginning the work covered by the proposed change.

9-6.03 VARIANCE FROM SPECIFIC COMPLIANCE:

The CONTRACTOR may seek a change order allowing variance from specific requirements of the contract documents in situations where portions of the project are already on hand, constructed or installed and found to be at variance with specific contract requirements and where destructive removal or similar radical measures are the only way to obtain specific compliance. In such event, the CONTRACTOR shall, at his own expense, secure services of a Texas Licensed Professional Engineer other than the "ENGINEER" to analyze, test, study and otherwise evaluate the circumstances and to summarize his findings, recommendations and conclusions in writing under his professional engineer's seal. CONTRACTOR shall submit such summary to ENGINEER, along with his request either for: (1) Full acceptance of the variance "as is", if it is conclusive in the opinion of the OWNER and ENGINEER that the finished product fully meets the intended purpose and use and is not generally diminished in quality, or; (2) Proposed modifications to render the item acceptable, or; (3) Proposed price credit to be allowed provided the item is acceptable for its intended use, even though of measurably diminished quality, (or combinations thereof). ENGINEER shall review such information and submit to OWNER with comments, and a change order shall be executed if both CONTRACTOR and OWNER mutually agree upon the matter.

All minimum specifications in terms of specified concrete strength and depth SHALL be met. No variances shall be allowed. Any deficiency shall be proved, removed and replaced.

9-6.04 EXTRA WORK:

It is agreed that the basis of compensation to the CONTRACTOR for work either added or deleted by a Change Order or for which a claim for Extra Work is made shall be determined by one or more of the following methods:

Method (A)-By agreed unit prices; or

Method (B)-By agreed lump sum; or

Method (C)-If neither Method (A) nor Method (B) will be agreed upon before the Extra work is commenced, the CONTRACTOR shall be paid the "actual field cost" of the work, plus fifteen (15) percent.

In the event said Extra Work be performed and paid for under Method (C), then the provisions of this paragraph shall apply and the "actual field cost" is hereby defined to include the cost to the CONTRACTOR of all workmen, such as foreman, timekeepers, mechanics and laborers, and materials, supplies, teams, trucks, rentals or machinery and equipment, for the time actually employed or used on such Extra Work, plus actual transportation charges necessarily incurred, together with all power, fuel, lubricants, water and similar operating expenses, also all necessary incidental expenses incurred directly on account of such Extra Work, including Social Security, Old Age Benefits and other payroll taxes, and, a rateable proportion of premiums on Performance and Payment Bonds and Maintenance Bonds, Public Liability and Property Damage and Workmen's Compensation, and all other insurance as may be required by any law or ordinance, or directed by the OWNER, or by them agreed to. "Actual Field Cost" shall not include any "Idle" or "Stand-By" times for equipment or personnel that is not engaged in, and/or standing by to do additional work on the specific extra work items. The ENGINEER may direct the form in which accounts of the "actual field cost" shall be kept and the records of these accounts shall be made available to the ENGINEER. The ENGINEER or OWNER may also specify in writing, before the work commences the method of doing the work and the type and kind of machinery and equipment to be used; otherwise these matters shall be determined by the CONTRACTOR. Unless otherwise agreed upon, the prices for the use of machinery and equipment shall be determined by using 100 percent, unless otherwise specified, of the latest schedule of Equipment OWNERSHIP Expense adopted by the Associated General CONTRACTORS of America. Where practicable, the terms and prices for the use of machinery and equipment shall be incorporated in the Written Extra Work Order. The fifteen (15%) percent of the "actual field cost" to be paid the CONTRACTOR shall cover and compensate him for his profit, overhead, general superintendence and field office expense, and all other elements of cost and expense not embraced within the "actual field cost" as herein defined, save that where the CONTRACTOR'S Camp or Field Office must be maintained primarily on account of such Extra Work; then the cost to maintain and operate the same shall be included in the "actual field cost."

No claim for Extra Work of any kind will be allowed unless ordered in writing by the ENGINEER. In case any orders or instructions, either oral or written, appear to the CONTRACTOR to involve Extra Work for which he should receive compensation or an adjustment in the construction time, he shall make written request to the ENGINEER for written order authorizing such Extra work.

Should a difference of opinion arise as to what does or does not constitute Extra Work, or as to the payment therefore, and the ENGINEER insists upon its performance, the CONTRACTOR shall proceed with the work after making written request for written order and shall keep an accurate account of the "actual field cost" thereof, as provided under Method (C).

It is further provided hereby that when "Method (C) is applicable, regardless of what form of accounting is used to record "Actual Field Costs", they shall be kept current on a day to day basis and available for daily inspection or copying by the OWNER or ENGINEER. Unnecessary delays in recording cost items shall be cause for disallowing them for payment.

9-6.05 ARBITRATION:

There are no provisions for "Arbitration" in this contract.

9-6.06 TIME OF FILING CLAIMS:

It is further agreed by both parties hereto that all questions of dispute or adjustment presented by the CONTRACTOR shall be in writing and filed with the ENGINEER within thirty (30) days after the ENGINEER has given any directions, order, instruction or any event to which the CONTRACTOR desires to take exception. The ENGINEER shall reply within thirty (30) days to such written exceptions by the CONTRACTOR and render his final decision in writing. It is further agreed that final acceptance of the final payment shall be a bar to any claims by either party, except where noted otherwise in the Contract documents.

9-7 ABANDONMENT OF CONTRACT

9-7.01 ABANDONMENT BY CONTRACTOR:

The work or any portion of the work under contract shall be suspended immediately on written order of the OWNER declaring the CONTRACTOR to be in default. A copy of such notice shall be served on the CONTRACTOR'S Surety. The contract may be terminated by the OWNER for any good cause or causes, among others of which special reference is made to the following:

- A. Failure of the CONTRACTOR to start the work within ten (10) days from date specified in the written work order issued by the OWNER to begin the work;
- B. Substantial evidence that the progress of the work being made by the CONTRACTOR is insufficient to complete the work within the specified working time;
- C. Failure of the CONTRACTOR to provide sufficient and proper equipment, materials or construction forces for properly executing the work;
- D. Substantial evidence or notification that the CONTRACTOR has abandoned the work or discontinuance of the performance of the work or any part thereof and failure to resume performance within a reasonable time after notice to do so;
- E. Substantial evidence that the CONTRACTOR has become insolvent or bankrupt, or otherwise financially unable to carry on the work;
- F. Deliberate failure on the part of the CONTRACTOR to observe any requirements of these specifications or to comply with any orders given by the ENGINEER as provided for in these specifications;
- G. Failure of the CONTRACTOR to promptly make good any defects in materials or workmanship, or any defects of any nature, the correction of which has been directed in writing by the OWNER;
- H. Substantial evidence of collusion for the purpose of illegally procuring a contract or perpetrating fraud on the OWNER in the construction of work under contract;
- I. Repeated and flagrant violations of safe working procedures;
- J. The filing by the CONTRACTOR of litigation against the OWNER prior to final completion of the work.
- K. Failure of the CONTRACTOR to maintain proper financial responsibility and to maintain the required bonding, insurance or payments to suppliers and SUBCONTRACTORS.
- L. Failure of the CONTRACTOR to provide a Full Time Superintendent and Backup Superintendent.

When the work is suspended for any of the causes itemized above, or for any other cause or causes, the CONTRACTOR shall discontinue the work or such part thereof as the OWNER shall designate, whereupon the Surety may either at its option assume the contract or that portion thereof which the OWNER has ordered the CONTRACTOR to discontinue and perform the same or, with the written consent of the OWNER, sublet the same, provided, however, that the surety shall exercise its option within two weeks after the written notice to discontinue the work has been served upon the CONTRACTOR and upon the Surety or its authorized agents. The Surety in such event shall assume the CONTRACTOR'S place in all respects and shall be paid by the OWNER for all work performed by it in accordance with the terms of the contract, but in no event shall such payments exceed the contract amount, regardless of the cost to the Surety to complete the work.

All monies remaining due the CONTRACTOR at the time of their default shall thereupon become due and payable to the Surety as the work progresses, subject to all terms of the contract. In case the Surety does not, within the hereinabove specified time, exercise its obligation to assume the contract or that portion thereof which the OWNER has ordered the CONTRACTOR to discontinue, then the OWNER shall have the power to complete by contract or otherwise, as it may determine, the work herein described or such part thereof as it may deem necessary; and the CONTRACTOR hereto agrees that the OWNER shall have the right to take possession of or use any or all of the materials, plant, tools, equipment, supplies and property of every kind provided by the CONTRACTOR for the purpose of their work and to procure other tools, equipment and materials for the completion of the same and to charge to the account of the CONTRACTOR the expense of said contract for labor, materials, tools, equipment and expenses incident thereto. The expense so charged shall be deducted by the OWNER out of such monies as may be due or may at any time thereafter become due the CONTRACTOR under and by virtue of the contract or any part thereof.

The OWNER shall not be required to obtain the lowest bid for the work of completing the contract, but the expenses to be deducted shall be the actual cost of such work. In case such expense is less than the sum which would have been payable under the contract if the same had been completed by the CONTRACTOR, then in such case the OWNER may pay the CONTRACTOR the difference in the cost, provided that the CONTRACTOR shall not be entitled to any claim for damages or for loss of anticipated profits.

In case such expense shall exceed the amount which would have been payable under the contract if the same had been completed by the CONTRACTOR, the CONTRACTOR and their Surety shall pay the amount of the excess to the OWNER on notice from the OWNER for excess due including any costs incurred by the OWNER, such as inspection, legal fees and liquidated damages. When any particular part of the work is being carried on by the OWNER by contract or otherwise under the provisions of this section, the CONTRACTOR shall continue the remainder of the work in conformity with the terms of the contract and in such manner as not to hinder or interfere with the performance of workmen employed as above provided by the OWNER or Surety.

9-7.02 ABANDONMENT BY OWNER:

In case the OWNER shall fail to comply with the terms of this contract, and should fail or refuse to comply with said terms within ten (10) days after written notification by the CONTRACTOR, then the CONTRACTOR may suspend or wholly abandon the work, and may remove therefrom all machinery, tools and equipment, and all materials on the site of work that would have not been included in payments to the CONTRACTOR and have not been wrought into the work. And thereupon the ENGINEER shall make an estimate of the total amount earned by the CONTRACTOR, which estimate shall include the value of all work actually completed by said CONTRACTOR, (at the prices stated in the attached proposal where unit prices are used), the value of all partially completed work at a fair and equitable price, and the amount of all extra work performed at the prices

agreed upon, or provided for by the terms of this contract, and a reasonable sum to cover the cost of any provisions made by the CONTRACTOR to carry the whole work to completion and which cannot be utilized. The ENGINEER shall then make a final statement of the balance due the CONTRACTOR by deducting from the above estimate all previous payments by the OWNER and all other sums that may be retained by the OWNER under the terms of this Agreement and shall certify same to the OWNER who shall pay to the CONTRACTOR on or before thirty (30) days after the date of the notification by the CONTRACTOR the balance shown by said final statement as due the CONTRACTOR, under the terms of this Agreement.

9-7.03 WAIVER OF ATTORNEY'S FEES:

CONTRACTOR and the OWNER expressly covenant and agree that in the event of any litigation arising between the parties to this contract, each party shall be solely responsible for payment of its attorneys and that in no event shall either party be responsible for the other party's attorney's fees, regardless of the outcome of the litigation.

Section 10**Special Provisions/Specifications**

TABLE OF CONTENTS

SC.1	GENERAL
SC.2	LOCATION OF PROJECT
SC.3	SCOPE OF WORK
SC.4	TIME ALLOTTED FOR COMPLETION
SC.5	ADDITIONAL INSURANCE
SC.6	MINIMUM WAGES
SC.7	REFERENCE SPECIFICATIONS
SC.8	SALES TAX
SC.9	USE OF EXPLOSIVES
SC.10	LINES AND GRADES
SC.11	SEQUENCE OF CONSTRUCTION
SC.12	TEMPORARY FIELD OFFICE
SC.13	MAINTENANCE BOND
SC.14	PREVAILING WAGE DETERMINATION

SC.1 GENERAL

The provisions of this section of the Specifications shall govern in the event of any conflict between them and the "General Conditions".

SC.2 LOCATION OF PROJECT

This project is located in Collin and Denton Counties, Celina, TX. A map showing the general location is included in the Plans.

SC.3 SCOPE OF WORK

In general, the complete Work will provide the OWNER with removal and replacement of existing pumps, associated electrical equipment, and piping at the existing Celina Road and Downtown Pump Stations. 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. Horizontal split-case centrifugal pump
 - c. Valves and fittings
 - d. Interconnecting piping
 - e. Temporary pumping to maintain pump station operation during construction, if needed
 - f. Pre-engineered metal building
 - g. Electrical instrumentation
 - h. Installation of new Variable Frequency Drives
 - i. Installation of new soft starter
 - j. Installation of new electrical control panels
 - k. Chemical feed system improvements
 - l. Backup power (additive alternate)
3. Downtown 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. Chemical feed system improvements
 - i. Demolition of clearwell, water wells, and shed
 - j. Backup power (additive alternate)
4. Roadway improvements at both locations (additive alternate)
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.

SC.4 TIME ALLOTTED FOR COMPLETION

After award of the Contract is made and the Contract Documents are completed, the Engineer shall issue a Work Order or Notice to Proceed, notifying the Contractor to proceed with the construction of the project, subject to the provisions of this paragraph. The time allotted for completion of the work shall be 210 consecutive calendar days, which time shall begin within ten (10) days of the work order or notice to proceed, or upon the date the Contractor moves on the site to begin the work, whichever is the earliest date. Installation of Pump 4 and associated electrical gear shall have an early completion date of 135 calendar days from the earliest of ten (10) days from notice to proceed or the date the Contractor moves on the site to begin the work, to provide immediate increase in capacity for the existing Celina Road Pump Station.

It is understood and agreed that time is of the essence in this Contract and that for each calendar day of delay beyond the Contract Time for early completion of Pump 4 installation, the Owner may permanently withhold from the Contractor's compensation the sum of \$1,000 per calendar day and for each calendar day of delay beyond the Contract Time for Final Acceptance, but having completed Substantial Completion, the Owner may permanently withhold from the Contractor's compensation the sum of \$1,000 per calendar day. In the event the Contractor fails to achieve Substantial Completion and Final Acceptance simultaneously within the Contract Time for Final Acceptance the Owner may permanently withhold from Contractor's compensation the sum of \$1,000 per calendar day.

Contractor acknowledges and hereby agrees that the actual damages likely to result from delays in completion are difficult to estimate on the date of this agreement. The parties intend that the foregoing liquidated damages would serve to compensate Owner for any breach by Contractor of the Contract Time limits, and they do not intend for it to serve any punitive purpose.

SC.5 ADDITIONAL INSURANCE

Contractor shall obtain insurance of the types and in the amounts described below. The insurance shall be written by insurance companies and on forms acceptable to Owner.

Owner and Garver, LLC shall be included as an 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.

5.1 Commercial General and Umbrella Liability Insurance

Contractor shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella insurance, with a limit of not less than \$5,000,000 each occurrence. If such CGL insurance contains a general aggregate limit, it shall apply separately to the Project.

CGL insurance shall be written on ISO occurrence form CG 20 10 (11-85) (or a substitute combination of the following forms CG 20 10 (10-01) and CG 20 37 (10-01) providing equivalent coverage) and shall cover liability arising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury and liability assumed under an insured contract.

There shall be no endorsement or modification of the CGL limiting the scope of coverage for liability

arising from pollution, explosion, collapse, underground property damage, or amending the contractual coverage in the ISO occurrence form.

5.2 Continuing CGL Coverage

Contractor shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella liability insurance, with a limit of not less than \$5,000,000 each occurrence for at least 3 years following substantial completion of the Work.

Continuing commercial umbrella coverage, if any, shall include liability coverage for damage to the insured's completed Work equivalent to that provided under ISO form CG 00 01.

5.3 Owner's and Contractor's Protective Liability Insurance.

Contractor shall maintain Owner's and Contractor's Protective Liability (OCP) insurance on behalf of Owner and Garver, LLC, as named insured, with a limit of \$1,000,000.

5.4 Railroad Protective Liability Insurance

Not Applicable

5.5 Commercial Auto and Umbrella Liability Insurance

Contractor shall maintain business auto liability and, if necessary, commercial umbrella liability insurance with a limit of not less than \$1,000,000 each accident.

Such insurance shall cover liability arising out of any auto (including owned, hired and non-owned autos).

Commercial auto coverage shall be written on ISO form CA 00 01, CA 00 05, CA 00 12, CA 00 20, or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage equivalent to that provided in the 1990 and later editions of CA 00 01.

If the Contract Documents require Contractor to remove and haul hazardous waste from the Project site, or if the Project involves such similar environmental exposure, pollution liability coverage equivalent to that provided under the ISO Pollution Liability-Broadened Coverage for Covered Autos Endorsement (CA 99 48) shall be provided, and the Motor Carrier Act Endorsement (MCS 90) shall be attached.

5.6 Workers' Compensation Insurance

Contractor shall maintain workers' compensation and employer's liability insurance.

The employer's liability, and if necessary commercial umbrella, limits shall not be less than \$500,000 each accident for bodily injury by accident or \$500,000 each employee for bodily injury by disease. 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.

Where applicable, U.S. Longshore and Harborworkers Compensation Act Endorsement shall be attached to the policy.

Where applicable, Nonappropriated Fund Instrumentalities Act (NFIA) shall be attached to the policy. NFIA extends the coverage of the Longshore and Harbor Workers' Compensation Act to civilian employees working on United States military bases throughout the world who are not paid with funds appropriated by Congress. These employees, working in facilities operated for the comfort, contentment, and improvement of armed forces personnel, are instead compensated with funds generated from earnings of their facility.

Where applicable, Outer Continental Shelf Lands Act Endorsement shall be attached to the policy.

Where applicable, the Maritime Coverage Endorsement shall be attached to the policy.

If project is located in a state where workers compensation is secured via monopolistic state funds, include evidence of the "Stop Gap" endorsement to the general liability policy.

5.7 Property Insurance

Contractor shall purchase and maintain property insurance for the Work. Such insurance shall be written in an amount at least equal to the initial contract sum as well as subsequent modifications of that sum. The insurance shall apply on a replacement cost basis. If the insurance obtained in compliance with this paragraph is builders risk insurance, coverage shall be written on a completed value form.

The property insurance as required above shall name as insureds the Owner, Contractor, and all subcontractors and sub-subcontractors on the Project.

5.8 Primary and Non-contributory

Contractor agrees that the insurance listed above, 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.

5.9 Waiver of Subrogation

Contractor waives all rights against the Owner and Garver, LLC and its agents, officers, directors and employees for recovery of damages to the extent these damages are covered by the commercial general liability, commercial umbrella liability insurance, automobile liability insurance and workers compensation insurance maintained pursuant to paragraph GC.8 of this agreement.

5.10 No Implied Waiver

Contractor shall furnish certifications matching the coverage requirements. Failure of Owner or Engineer to demand such certificate or other evidence of full compliance with these insurance requirements or failure of Owner or Engineer to identify a deficiency from evidence that is provided shall not be construed as a waiver of the contractors obligations to furnish and maintain such insurance, or as a waiver to the enforcement of any of the provisions at a later date.

Any waiver of the contractor's obligation to furnish such certificate or maintain such evidence must be by written change order and signed by a Managing Member (Officer) of the Engineer and the Owner.

5.11 Cancellation, Non-Renewal, and/or Impairment Notification

The Contractor shall not cause any insurance policy to be cancelled or permit it to lapse and all insurance

policies shall include an endorsement to the effect that the insurance policy or certificate shall not be subject to cancellation or to a reduction in the required limits of liability or amounts of insurance until notice has been mailed to the Owner and Engineer, stating the date when such cancellation or reduction shall be effective, which date shall not be less than (60) days after such notice.

Notice shall be sent via email and regular mail to the following persons and addresses:

Owner:

Attention: Alan Fourmentin
City of Celina
10165 CR 106
Celina, Texas 75009
AFourmentin@celina-tx.gov

Garver:

Attention: Lance Klement
3010 Gaylord Parkway
Suite 190
Frisco, TX 75034
LPKlement@GarverUSA.com

5.12 SAMPLE CERTIFICATE OF LIABILITY INSURANCE



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):
INSURED Named Insured on the policies	E-MAIL ADDRESS: Agency contact email address
	INSURER(S) AFFORDING COVERAGE
	Carrier Name (AM Best Rating)
	INSURER A:
	INSURER B:
	INSURER C:
	INSURER D:
	INSURER E:
	INSURER F:

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	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/POP AGG \$ 5,000,000
	☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PROJECT ☐ LOC						
	AUTOMOBILE LIABILITY	X	X	XXXXXXXXXX			COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$ \$
	☒ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☒ HIRED AUTOS ☒ NON-OWNED AUTOS						
	☒ UMBRELLA LIAB ☒ EXCESS LIAB ☐ DED ☐ RETENTION \$ XXXXX ☐ OCCUR ☐ CLAIMS-MADE	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	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	CANCELLATION
Owner and Garver LLC	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)

© 1988-2010 ACORD CORPORATION. All rights reserved.

ACORD 25 (2010/05)

The ACORD name and logo are registered marks of ACORD

CERT NO.: 15475674 Kathy Jones 2/11/2013 10:58:41 AM Page 1 of 1

SC.6 MINIMUM WAGES

The Contractor shall comply with the provisions of the Federal and State's prevailing wage laws, and the administrative regulations promulgated thereunder, as they apply under this Contract.

It shall be the responsibility of each Bidder to determine the consequences of the applicable provisions of the Federal and State's prevailing wage laws, and include in his bid any costs made necessary because of them. No additional payment will be made, and no extension of Contract time will be allowed because of the provisions of the laws.

The Contractor shall comply with all applicable provisions of the Federal and State's prevailing wage laws, including the following:

- (1) Pay wage rates not less than the prevailing hourly wage for each craft or type of workman needed to execute the Contract, as determined by the Department of Labor, such determination covering rates for regular hours, and rates for holidays and overtime work.
- (2) Post on the site of the work, in a conspicuous and accessible place, a copy of the prevailing wage rates as determined.
- (3) Keep an accurate record of workman employed by him, and by each subcontractor, if any, including the wage payments made. Such record, or records, shall be available for inspection by the Federal, the State, and the Owner's representatives, during reasonable hours.
- (4) The Contractor's bond shall guarantee the payment of wages as herein specified.

Wage rates, as established by the State and Federal entities, are the minimum for wage payments under this Contract.

There is no assurance on the part of the OWNER that mechanics and laborers can be obtained for the rates herein bound. Each Bidder shall determine for himself the availability of laborers and mechanics, and the rates he must pay to obtain employees. Such rates of pay may be greater than, but cannot be less than, the wage rates bound herein, at the end of this section.

SC.7 REFERENCE SPECIFICATIONS

Where reference is made in these Specifications to specifications compiled by other agencies, organizations or departments, such reference is made for expediency and standardization, and such specifications (latest edition thereof) referred to are hereby made a part of these Specifications.

More specifically, if any items or materials required for completion of the work required for this project are not specified in these Contract Documents, such items or materials and requirements for installation shall conform to the standards or preferences of TCEQ.

SC.8 SALES TAX

The project is tax exempt for the purchase of materials permanently incorporated into the project, except for concrete forms or other tools.

SC.9 USE OF EXPLOSIVES

The use of explosives will not be permitted.

SC.10 LINES AND GRADES

Not Used.

SC.11 SEQUENCE OF CONSTRUCTION

Sequence of all phases of work shall be such as to provide for the least possible inconvenience to the Owner. Scheduling of work which would interfere with normal traffic operation shall be coordinated with the Owner. Material and equipment received on the project prior to time of installation shall be stored at such locations designated by the Owner.

Work shall proceed concurrently at both locations: the Celina Road Pump Station and the Downtown Pump Station.

The anticipated sequence of events at the Celina Road Pump Station is as follows:

1. Installation of pump 4 and associated electrical gear to provide immediate increase in capacity for the existing pump station
2. Construction and installation of the new electrical building and power supply
3. Installation of pump 5 and pump 6 and associated electrical gear
4. Installation of the chemical feed equipment
5. Installation of the generator (additive alternate)

The anticipated sequence of events at the Downtown Pump Station is as follows:

1. Installation of the new pumps, associated electrical gear, the electrical room and power supply, the associated building mechanical improvements, and chemical feed improvements can all occur concurrently.
2. Installation of the associated piping and connection to the storage tank to place the new pump station in operation.
3. The demolition of the clear wells, storage shed, and surge tank may take place at any time.

Before any of the facilities are taken out of service to accomplish the various items of work, the Contractor shall demonstrate to the Owner and Engineer's satisfaction that all equipment and materials required to complete that particular item of work are on hand. As much preliminary work as is possible shall be accomplished prior to taking any unit out of service.

SC.12 TEMPORARY FIELD OFFICE

Not used.

SC.13 MAINTENANCE BOND

The Contractor shall execute the attached Maintenance Bond guaranteeing the work included in the Contract against faulty materials and/or poor workmanship for one year after completion of the Contract. The date of the Maintenance Bond shall be that agreed to for the final acceptance of the project with the Owner. The Maintenance Bond shall be for 100% of the final contract amount.

At the end of the applicable maintenance period, the Owner and/or the Engineer, with the Contractor, shall make an inspection of the work. The Contractor immediately shall repair and correct any and all defects which have resulted from faulty workmanship, equipment, or materials, following which repair and correction the Owner will accept full maintenance of the work.

PART 2 ATTACHMENTS

**APPENDIX “A”
DRUG-FREE JOBSITE ON CITY CONSTRUCTION PROJECTS**

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

Project No. 17088075
Celina Pump Stations
Improvements

Appendix A

App.A-1

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.

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: Felix Construction Contract Documents (Pump Stations Improvement Project)

CONTRACTOR'S AFFIDAVIT OF FINAL PAYMENT AND RELEASE**FOR: CELINA PUMP STATIONS 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 PUMP STATIONS 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: Felix Construction Contract Documents (Pump Stations Improvement Project)

Attachment "1"**City of Celina**

Check List for Partial & Final Pay Estimates

Project Title: CELINA PUMP STATIONS 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: Felix Construction Contract Documents (Pump Stations Improvement Project)

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: Felix Construction Contract Documents (Pump Stations Improvement Project)

ATTACHMENT “4”



Project Title and W.O

Request for information Form (RFI)

Date:		Project Name location:	
RFI No:			
To:	Design Engineer (engineer of records)	Consulting firm or	(Phone Number)
	Project manager, Chief	City G.P	
cc:	inspector, project	City of	(Phone Number)
	inspector	Celina	
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:

Agree with solution. We will prepare a change order

By: _____

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. Horizontal split-case centrifugal pump
 - c. Valves and fittings
 - d. Interconnecting piping
 - e. Temporary pumping to maintain pump station operation during construction, if needed
 - f. Pre-engineered metal building
 - g. Electrical instrumentation
 - h. Installation of new Variable Frequency Drives
 - i. Installation of new soft starter
 - j. Installation of new electrical control panels
 - k. Chemical feed system improvements
 - l. Backup power (additive alternate)
 3. Downtown 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. Chemical feed system improvements
 - i. Demolition of clearwell, water wells, and shed
 - j. Backup power (additive alternate)
 4. Roadway improvements (additive alternate)
 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: Felix Construction Contract Documents (Pump Stations Improvement Project)

SECTION 01 11 20 – ADDITIVE BID ALTERNATES COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Identification and description of coordination work of the Additive 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 Backup Power defined by DT-E drawings.
 - 3. The Additive Bid Alternative A.3 Paved Driveway as defined by CR-C and DT-C drawings.
- B. In addition to the Base Bid Project, the Owner may elect to construct a combination of any of the following Additive Bid Alternates as detailed within the following table:

Additive 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 Backup Power as outlined by the DT-E drawings.
Alternate A.3	Alternate A.3: Paved Driveways at the Celina Road and Downtown pump stations as outlined by the CR-C and DT-C 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 Additive 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. There is a requirement for early completion of a certain element of the work. This early completion requirement shall be integrated into the schedule and work sequence. 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 both locations: the Celina Road Pump Station and the Downtown Pump Station.
 1. The anticipated sequence of events at the Celina Road Pump Station is as follows:
 - a. Installation of Pump 4 and associated electrical gear to provide immediate increase in capacity for the existing pump station (**early completion item**)
 - 1) Installation of Pump 4 and associated electrical gear shall have an early completion date of 135 calendar days from the earliest of ten (10) days from notice to proceed or the date the Contractor moves on the site to begin the work, to provide immediate increase in capacity for the existing Celina Road Pump Station.
 - b. Construction and installation of the new electrical building and power supply
 - c. Installation of Pump 5 and Pump 6 and associated electrical gear
 - d. Installation of the chemical feed equipment
 - e. Installation of the generator (additive alternate)
 - f. Roadway improvements (additive alternate)
 2. The anticipated sequence of events at the Downtown Pump Station is as follows:
 - a. Installation of the new pumps, associated electrical gear, the electrical room and power supply, the associated building mechanical improvements, and chemical feed improvements can all occur concurrently
 - b. Installation of the associated piping and connection to the storage tank to place the new pump station in operation

- c. The demolition of the clear wells, storage shed, and surge tank may take place at any time
- d. Installation of the generator (additive alternate)
- e. Roadway improvements (additive alternate)

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

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

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

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 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

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 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. 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. Contractor 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. Temporary utilities.
 - 11. Safety and first aid procedures.
 - 12. Security procedures.
 - 13. Housekeeping procedures.
- H. 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

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 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. 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 Owner's Field 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 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

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

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 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 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

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

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 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.

1.13 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.

1.14 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.
 - 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 1.13.
- 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. Finished Construction: Protect finished floors and concrete floors exposed as well as those covered with composition tile or other applied surfacing.
- F. Waterways: Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.
- G. 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

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: Felix Construction Contract Documents (Pump Stations Improvement Project)

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.

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.
- 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

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 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

MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

OWNER: City of Celina EQUIP. SERIAL NO: _____

EQUIP. TAG NO: _____ EQUIP. SYSTEM: _____

PROJECT NO: 17088075 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 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: Felix Construction Contract Documents (Pump Stations Improvement Project)

FACILITY PERFORMANCE DEMONSTRATION/CERTIFICATION FORMOWNER: City of Celina PROJECT: Celina Pump Stations 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: Felix Construction Contract Documents (Pump Stations Improvement Project)

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: Felix Construction Contract Documents (Pump Stations Improvement Project)

SPARE PART RECEIVER
City of Celina
Celina Pump Stations Improvements

Project No. 17088075

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: Felix Construction Contract Documents (Pump Stations Improvement Project)

BIN NUMBER:

AIMS NUMBER:

LOCATION IN STORES:

RECEIVED BY:

END OF SECTION

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

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: Felix Construction Contract Documents (Pump Stations Improvement Project)

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

DIVISION 2

EXISTING CONDITIONS

SECTION 02 41 00 - DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 1. 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. 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.

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 Concreactive 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

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 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 Cure 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

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

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.

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; Eucopoly 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

DIVISION 5 METALS

SECTION 05 31 10 - LONG SPAN METAL DECK

PART 1 - GENERAL

1.1 SUMMARY

- A. The requirements of this specification section include all materials, equipment, and labor necessary to furnish and install a Composite Floor Deck System.
- B. Related work: The following related work is not part of this section:
 - DIVISION 03 1. Cast in place concrete: Concrete fill, reinforcing steel, and temporary shoring.
 - DIVISION 05 2. Structural steel: Supplementary framing, deck supports, and edge angle.
 - DIVISION 09 3. Finishes: Preparation for and application of field finishes.

1.2 SUBMITTALS

- A. Product data: Submit manufacturer's specifications, section properties, load tables, diaphragm shear tables, dimensions, finishes, and fire resistance ratings.
- B. Shop drawings: Submit panel placement drawings showing profiles, material thicknesses, finishes, layout, anchorage, shoring requirements, and openings as dimensioned on the structural drawings, if required.
- C. Samples: Submit full width sample if requested to verify compliance with the specifications and the level of quality.

1.3 QUALITY ASSURANCE

- A. Deck manufacturer shall have been regularly engaged in the production of dovetail rib profiles for a period of ten years.
- B. Composite floor deck panels shall be cold-formed by the continuous roll-forming process to assure quality and uniformity of profile.
- C. Section properties: Shall be computed in accordance with the American Iron and Steel Institute (AISI) Cold Formed Steel Design Manual.
- D. Materials: Shall be in accordance with the American Society for Testing and Materials (ASTM).
- E. Welding: Shall comply with applicable provisions of the American Welding Society (AWS) D1.3 Structural Welding Code—Sheet Steel.
- F. Superimposed load and diaphragm shear capacities: Loads and capacities shall be computed in accordance with the requirements of the manufacturer's design manual and the Steel Deck Institute (SDI). Superimposed load capacity shall be verified by full scale tests.
- G. Fire resistance: Composite floor deck panels shall be listed in the Underwriters Laboratories (U.L.) Fire Resistance Directory. All panels shall bear the appropriate U.L. classification marking.
- H. Deck installer shall have installed products similar in material, design, and extent to that specified for this project and whose work has resulted in construction with a record of successful in-service performance for a period of at least 5 years.

- I. Cast in place concrete: Shoring and reinforcing shall be in accordance with the applicable section of the ACI 318 Building Code Requirements for Reinforced Concrete. Minimum compressive strength shall be 4000 psi. Admixtures containing chloride salts shall not be used. Additionally, all concrete constituents including but not limited to aggregates, sand, and water shall be closely monitored to assure that chlorides do not exceed the limits proscribed in ACI 318.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Composite floor deck panels shall be protected from damage during delivery, storage, and handling.
- B. Composite floor deck panels shall be elevated above the ground, sloped to provide drainage, and if required, protected from weather with a ventilated covering.

1.5 COORDINATION

- A. Coordinate concrete type, strength, slump, shoring, and reinforcing to achieve composite slab performance and U.L. fire ratings.
- B. Coordinate field cleaning and finishes to achieve proper adhesion to the composite floor deck panels.
- C. Protection: When the composite floor slab is used in an exterior application (such as a balcony), the steel deck panels shall be adequately protected by field priming and painting with a rust inhibitive paint or by stuccoing the deck. The surface of the concrete shall also be adequately sealed. The composite deck provides positive reinforcement for the slab; therefore, the finish on the steel deck must be specified by the architect and engineer for the environment it will be used in to protect the steel deck for the life of the structure.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. In accordance with the requirements of this specification section, provide products manufactured by EPIC Metals Corporation, Rankin, Pennsylvania.
- B. The composite floor deck panels, design thickness, section properties, and composite slab capacities shall be as shown on the structural design drawings. These panels shall be capable of supporting a minimum design Live Load of 100 PSF or loads as shown on the plans.

2.2 MATERIALS

- A. The composite floor deck panels shall be cold-formed from steel coils conforming to ASTM A653, Structural Quality, Grade 50 with a minimum yield strength of 50 ksi.
- B. Before forming, the steel coils shall have received a hot-dip protective coating of zinc conforming to ASTM A924, Class G60 or G90 as defined in ASTM A653.
- C. The minimum uncoated thickness of materials furnished shall not be less than 95% of the design thickness.

2.3 FABRICATION

- A. The composite floor deck panels shall be cold-formed by the continuous roll forming process.

1. The composite floor deck panels shall have continuous dovetail shaped ribs spaced at 8" on center and formed to the following nominal dimensions: 2" depth, 1 1/8" minimum rib width at top, and 1/8" maximum rib opening at bottom.
2. Alternating ribs shall have integral embossed locking lugs to enhance shear bond.
3. The composite floor deck panels shall have full depth positive registering sidelaps that can be fastened by welds or screws. (OMIT THE FOLLOWING PARAGRAPH IF PRIME PAINTING IS NOT REQUIRED.)
4. Prime paint option—Prior to forming, galvanized steel shall be chemically cleaned and pre-treated followed by an oven-cured epoxy primer and a second coat of oven-cured polyester prime paint in the manufacturer's standard color of off-white. Compatibility of field applied finish paint with factory applied prime paint shall be the responsibility of the painting contractor.

2.4 ACCESSORIES

- A. Manufacturer's standard column closures and side closures shall be provided as indicated on the structural drawings.
- B. Openings and reinforcement for openings noted specifically "by the deck manufacturer" on the structural drawings shall be provided.
- C. Slab edge forms of 10 gage or less material thickness shall be provided as indicated on the structural drawings.

PART 3 - EXECUTION

3.1 GENERAL

The Composite Floor Deck System shall be installed in strict accordance with the manufacturer's instructions, approved erection drawings (if required), and all applicable safety regulations.

3.2 EXAMINATION

- A. The supporting frame or other related work shall be inspected and accepted by the erector of the Composite Floor Deck System before start of installation.
- B. The need for temporary shoring shall be investigated. Shoring tables furnished by the manufacturer and shown on the approved erection drawings (if required) shall be consulted. Allowable unshored spans shall be reduced if greater construction loads are anticipated or if less deflection is allowable.
- C. The determination of the time for removal of supporting shores may be controlled by the presence of construction loads or deflection limitations. The removal of shores may have to occur after the concrete has reached its full compressive strength f'_c , modulus E_c and stiffness, particularly in those instances where the construction loads may be as high as the specified live load. If shoring is removed too early, more significant deflection may occur and may even result in permanent damage. The strength and stiffness of the concrete during the various stages of construction should be substantiated by job-constructed and job-cured test specimens (cylinders). See ACI 318-99 for more information.

3.3 PREPARATION

- A. Bundles of material shall be located on the supporting frame in such a manner that overloading of any of the individual framing members does not occur. Composite floor deck panels shall not be placed on concrete supports until supports have adequately cured or properly designed formwork is in place.

3.4 INSTALLATION

- A. The composite floor deck panels and related accessories shall be installed in accordance with manufacturer's approved erection drawings, SDI Publication No. ANSI/SDI Standard for Composite Steel Floor Deck Slabs, SDI Manual of Construction with Steel Deck, and all federal and state safety regulations.
- B. Before being permanently fastened, the composite floor deck panels shall be placed on the supporting frame and adjusted to final position with ends adequately bearing on the supporting frame. A minimum bearing of 1 1/2" shall be maintained. Consistent coverage shall be maintained.
- C. Cutting of the panels to suit job site conditions shall be performed in a neat and professional manner. Only those openings indicated on the structural drawings shall be cut. Other openings shall be cut and reinforced by those requiring the opening as approved by the structural engineer.
- D. The composite floor deck panels shall be fastened to all supporting members with fasteners as specified at 8" on center or as indicated on the erection drawings. Fasten to formwork and masonry supports as required for safety.
 - 5. The sides of the panels located at the perimeter of the building shall be fastened to supporting members at a maximum spacing of 36" on center or less as indicated on the manufacturer's erection drawings.
- E. The side-laps of the panels shall be fastened together by 1"-long fillet welds or #10 screws, (1 1/2"-long fillet welds or #12 screws if a shear diaphragm is required) at a maximum spacing of 36" on center or less as indicated on the erection drawings.
- F. Construction loads shall not be applied to the panels until after the panels are permanently fastened to supporting members and sidelaps have been attached, and shall not exceed the load-carrying capacity of the panels.

3.5 COMPOSITE SLAB BEAMS

- A. Composite slab beams shall be designed in strict accordance with accepted engineering practices. Slab beams shall be formed and shored in accordance with the ACI Code and with local code provisions. The formwork shall provide a level and continuous support for the adjacent composite floor deck panels. After form removal, the exposed beam shall provide a surface level with the panels and acceptable for directly applied ceiling materials.

END OF SECTION

DIVISION 6

WOOD AND PLASTICS

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. Miscellaneous wood items.
2. Plywood backing panels.

1.3 DEFINITIONS

- A. Exposed Framing: Framing not concealed by other construction.
- B. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- C. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 1. NeLMA: Northeastern Lumber Manufacturers' Association.
 2. NLGA: National Lumber Grades Authority.
 3. SPIB: The Southern Pine Inspection Bureau.

1.4 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

- 1. Factory mark each piece of lumber with grade stamp of grading agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWPA C2, except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).

- 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

- D. Application: Treat all rough carpentry, unless otherwise indicated and the following:

- 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
- 2. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.
- 3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
- 4. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
- 5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 DIMENSION LUMBER FRAMING

- A. Maximum Moisture Content: 19 percent.
- B. Miscellaneous framing: Construction, Stud, or No. 3 grade of any species.

2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber as required and lumber for support or attachment of other construction.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 19 percent maximum moisture content of any species.

- C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.5 PLYWOOD BACKING PANELS

- A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness.

2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

2.7 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch nominal thickness, compressible to 1/32 inch; selected from manufacturer's standard widths to suit width of sill members indicated.
- B. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.
- C. Adhesives for Gluing to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Do not splice structural members between supports, unless otherwise indicated.
- D. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- E. Comply with AWPAC M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- F. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

3.2 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION

SECTION 06 22 00 - CABINETWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes all cabinetwork and shelving shown on the drawings.

1.2 STANDARDS

- A. Cabinetwork shall conform to one of the following in all respects:
 1. For millwork (cabinet shop) type cabinetwork: AWI Section 400.
 2. For casework (manufacturing plant) type casework: AWI Section 1600.

1.3 SUBMITTALS (FOR ENGINEER'S APPROVAL BEFORE FABRICATION).

- A. Cabinetwork Shop Drawings. (Include all materials and dimensions showing plans, elevations and sections all cabinet types per contract documents).
- B. Samples of cabinet hardware.
- C. Samples of paints and stains as shown on contract documents.

PART 2 - PRODUCTS

2.1 PHENOLIC COUNTER TOP:

- A. Phenolic solid resin material composed of laminates of high-pressure thermoset plastic. The finished top is 1 inch (25 mm) thick. Nosing to be 1" phenolic solid resin material with eased edges top and bottom. Backsplash to be 4" phenolic solid resin material with one eased edge at top and front of backsplash. Countertop to overhang cabinet frame 1" typical.
 1. Color: To be selected by Engineer.

2.2 CABINET HARDWARE

- A. Wood Cabinets for Paint Finish:
 1. Type of Cabinet Construction: Flush
 2. Construction Style: Style A Frameless
 3. Construction Type: Type I, multiple self-supporting units rigidly joined together
 4. Door and Drawer Front Style: Flush
 5. Grain Direction: Vertically for drawer fronts, doors, and fixed panels
 6. Species for Exposed Lumber Surfaces: Any closed-grain hardwood.
 7. Semi-exposed Surfaces Other Than Drawer Bodies: Match materials indicated for exposed surfaces
 8. Drawer Sides and Backs: Solid-hardwood lumber, Natural Finish
 9. Drawer Bottoms: Hardwood plywood – Natural Finish
 10. Hinges: European 3 knuckle, 170 degree
 11. Drawer glides shall be bottom mount, 100 lb., epoxy coated.
 12. Shelf standards to be 32mm hole system with double pin self locking shelf clips.
 13. Door and drawer pulls to be equal to Stanley 4484, aluminum.
 14. Accessories:
 - a. Keyboard Drawer: Kensington Model 38411 Articulating Keyboard Platform
 - b. Grommet: Round Wire Management Grommet 3" w/ Cover

2.3 CONSTRUCTION

- A. Cabinets shall be constructed in accordance with typical details shown on the drawings, using the cabinet hardware specified.
- B. Colors will be selected by Engineer from manufacturer's available colors. Allow for the selection of eight (8) different colors. Generally, case will be one color and doors/drawer fronts a different color, within the same room (Except stainless steel cabinets).

2.4 MANUFACTURER

- A. All cabinets shall be plant assembled. The manufacturer may be a millwork shop or a casework manufacturing facility.
- B. Approved casework manufacturers:
 - 1. LSI Corporation of America
 - 2. TMI Systems Design Corp.
 - 3. Stevens Industries, Inc.
 - 4. Pre-approved Equal.

PART 3 - EXECUTION

- A. Construct to details and dimensions shown, of materials as previously specified, and in accordance with best practices of the trade, including mortise and tendon joints where possible, fixed shelves and dividers let into dados, etc., all in accordance with details on the contract drawings and approved shop drawings.
- B. All applications shall result in hairline joints and flush surfaces.
- C. Attach solid phenolic countertops in accordance with manufacturer's recommendations and directions.
- D. Erect cabinetwork and shelving level, plumb and straight securing to walls and floors. Provide necessary grounds and anchors for securing in place.

END OF SECTION

DIVISION 7

THERMAL AND MOISTURE PROTECTION

SECTION 07 21 01 - METAL BUILDING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Glass-fiber blanket insulation.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.
- C. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

1.4 DESIGN CRITERIA

- A. Provide all wall and roof insulation in accordance with the 2009 International Energy Code.
 - 1. Minimum R-Values shall be as follows, unless noted otherwise:
 - a. For walls, R-19 minimum continuous.
 - b. For roofs, R-30 minimum continuous with two layers laid perpendicular.

PART 2 - PRODUCTS

2.1 GLASS-FIBER BLANKET INSULATION

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. CertainTeed Corporation.
 - 2. Guardian Building Products, Inc.
 - 3. Johns Manville.
 - 4. Knauf Insulation.
 - 5. Owens Corning.
 - 6. Or Approved Equal.
- B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

2.2 INSULATION FASTENERS

- A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. AGM Industries, Inc.; Series T TACTOO Insul-Hangers.
 - b. Gemco; Spindle Type.
 - c. Or Approved Equal.
 2. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
 3. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch in diameter; length to suit depth of insulation indicated.
- B. Adhesively Attached, Angle-Shaped, Spindle-Type Anchors: Angle welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Gemco; 90-Degree Insulation Hangers.
 - b. Or Approved Equal.
 2. Angle: Formed from 0.030-inch thick, perforated, galvanized carbon-steel sheet with each leg 2 inches square.
 3. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch in diameter; length to suit depth of insulation indicated.
- C. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches square or in diameter.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. AGM Industries, Inc.; RC150 or SC150.
 - b. Gemco; Dome-Cap, R-150, or S-150.
 - c. Or Approved Equal.
 2. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap.
- D. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. AGM Industries, Inc.; TACTOO Adhesive.
 - b. Gemco; Tuff Bond Hanger Adhesive.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of substances that are harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

- C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.3 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Glass-Fiber or Mineral-Wool Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
 - 4. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
- C. Loose-Fill Insulation: Apply according to ASTM C 1015 and manufacturer's written instructions. Level horizontal applications to uniform thickness as indicated, lightly settle to uniform density, but do not compact excessively.
- D. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation.

3.4 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION

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

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

DIVISION 8 OPENINGS

SECTION 08 11 13 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 1. Standard hollow metal doors and frames.
 2. Hinged Transom and frames.
- B. Related sections:
 1. Section 08 71 00 – Door Hardware, for door hardware for hollow metal doors.
 2. Section 09 90 00 – Painting and Protective Coatings, for field painting hollow metal doors and frames.

1.2 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings.
- B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, and finishes.
- B. Shop Drawings: Include the following:
 1. Elevations of each door design.
 2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 4. Locations of reinforcement and preparations for hardware.
 5. Details of each different wall opening condition.
 6. Details of anchorages, joints, field splices, and connections.
 7. Details of accessories.
 8. Details of moldings, removable stops, and glazing.
 9. Details of conduit and preparations for power, signal, and control systems.
 10. Details of transom.
 11. Details of glazing, glazing frames and stops showing glazing.
- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Samples for Verification:
 1. For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches.
 2. For the following items, prepared on Samples about 12 by 12 inches to demonstrate compliance with requirements for quality of materials and construction:
 - a. Doors: Show vertical-edge, top, and bottom construction; core construction; and hinge and other applied hardware reinforcement. Include separate section showing glazing if applicable.
 - b. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow metal panels and glazing if applicable.
- E. Other Action Submittals:

1. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.
- B. Pre-installation Conference: Conduct conference at Project site.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use non vented plastic.
 1. Provide additional protection to prevent damage to finish of factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch- high wood blocking. Do not store in a manner that traps excess humidity.
 1. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Amweld Building Products, LLC.
 2. Benchmark; a division of Therma-Tru Corporation.
 3. Ceco Door Products; an Assa Abloy Group company.
 4. Curries Company; an Assa Abloy Group company.
 5. Deansteel Manufacturing Company, Inc.
 6. Firedoor Corporation.
 7. Fleming Door Products Ltd.; an Assa Abloy Group company.
 8. Habersham Metal Products Company.
 9. Karpen Steel Custom Doors & Frames.
 10. Kewanee Corporation (The).
 11. Mesker Door Inc.
 12. Pioneer Industries, Inc.
 13. Security Metal Products Corp.
 14. Steelcraft; an Ingersoll-Rand company.

15. Windsor Republic Doors.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 or A60 metallic coating.
- D. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z coating designation; mill phosphatized.
 - 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- F. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow metal frames of type indicated.
- G. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.
- H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool with 6- to 12-lb/cu. ft. density; with maximum flame-spread and smoke-development indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
- I. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
- J. Glazing:
 - 1. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacturer, fabrication or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
 - 2. Delegated Design: Design glass, including comprehensive engineering analysis according to ICC's 2006 International Building Code by a qualified professional engineer.
 - 3. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
 - a. Temperature Change: 120 deg F (67 deg C), ambient; material surfaces.
 - 4. Sealants and accessories shall be manufacturers standards.

2.3 STANDARD HOLLOW METAL DOORS AND HINGED TRANSOM

- A. General: Provide doors and hinged transom of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8.
 - 1. Design: Flush panel.

2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core.
 - a. Thermal-Rated (Insulated) Doors: Where indicated, provide doors fabricated with thermal-resistance value (R-value) of not less than 12.3 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.
 - 1). Locations: All doors.
 3. Vertical Edges for Single-Acting Doors: Beveled edge.
 - a. Beveled Edge: 1/8 inch in 2 inches.
 4. Vertical Edges for Double-Acting Doors: Round vertical edges with 2-1/8-inch radius.
 5. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- thick, end closures or channels of same material as face sheets.
 6. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
- B. All Doors and hinged transom: Face sheets fabricated from metallic-coated steel sheet. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
- C. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- D. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.
- 2.4 STANDARD HOLLOW METAL FRAMES
- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. All Frames: Fabricated from metallic-coated steel sheet.
 1. Fabricate frames with mitered or coped corners.
 2. Frames for Level 3 Steel Doors: 0.053-inch- thick steel sheet.
- C. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.
- 2.5 FRAME ANCHORS
- A. Jamb Anchors:
 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
 2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
 3. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
- B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:
 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
 2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.
- 2.6 HOLLOW METAL PANELS
- A. Provide hollow metal panels of same materials, construction, and finish as specified for adjoining hollow metal work.

2.7 STOPS AND MOLDINGS

- A. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch high unless otherwise indicated.

2.8 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 117.
- C. Hollow Metal Doors and hinged transom:
 - 1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
 - 2. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
- D. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 - 1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 - 4. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 - 5. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Two anchors per jamb up to 60 inches high.
 - 2) Three anchors per jamb from 60 to 90 inches high.
 - 3) Four anchors per jamb from 90 to 120 inches high.
 - b. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high.
 - 2) Four anchors per jamb from 60 to 90 inches high.
 - 3) Five anchors per jamb from 90 to 96 inches high.
 - c. Compression Type: Not less than two anchors in each jamb.
 - d. Post-installed Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
- E. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.
- F. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Section 08 71 00.

1. Reinforce doors, hinged transom and frames to receive non-templated, mortised and surface-mounted door hardware.
 2. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
- G. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
1. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 2. Provide loose stops and moldings on inside of hollow metal work.
 3. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

2.9 STEEL FINISHES

- A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pre-treating.
1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.
- B. Factory-Applied Paint Finish: Manufacturer's standard, complying with ANSI/SDI A 250.3 for performance and acceptance criteria.
1. Color and Gloss: As selected by Owner or Engineer from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:
1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.
- C. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A 250.11.
 1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - b. Install door silencers in frames before grouting.
 - c. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - d. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - e. Field apply bituminous coating to backs of frames that are filled with grout containing anti-freezing agents.
 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on Shop Drawings.
 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
 5. In-Place Concrete or Masonry Construction: Secure frames in place with post-installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 6. Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural supports or substrates above frame unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.
 7. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow Metal Doors and Hinged Transom: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
 1. Non-Fire-Rated Standard Steel Doors:
 - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.

- c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
- d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- D. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

3.5 SCHEDULE

- A. The door schedule for steel doors follows.
 - 1. Overhead coiling doors are specified and scheduled in Section 08 33 23 OVERHEAD COILING DOORS, if applicable.
- B. DOOR SCHEDULE – As shown below or on the Drawings.

# – FACILITY – DOOR SCHEDULE							
Door Mark	Nominal Size	Door Description					
		Thickness	Material	Finish	Glazing	Type	Remarks

NOTES:

- Hardware specified in Section 08 71 00 Door Hardware.
- Finish to be selected by Owner.

END OF SECTION

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Commercial door hardware for the following:
 - a. Swinging doors.
 - b. Hinged transom.
- B. Related Sections:
 - 1. Section 08 16 13 – Fiberglass Reinforced Plastic Doors and Frames.
 - 2. Section 08 33 23 – Overhead Coiling Doors.
- C. Products furnished, but not installed, under this Section include the following. Coordinating, purchasing, delivering, and scheduling remain requirements of this Section.
 - 1. Thresholds and weather stripping for locks specified in other Sections.

1.2 SUBMITTALS

- A. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Samples for Initial Selection: For each finish, color, and texture required for each type of door hardware indicated.
- C. Samples for Verification: Submit minimum 2-by-4-inch plate Samples of each type of finish required, except primed finish.
- D. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.
- E. Warranty: Special warranty specified in this Section.
- F. Other Action Submittals:
 - 1. Door Hardware Sets: Prepared by or under the supervision of Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - a. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
 - b. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
 - c. Content: Include the following information:
 - 1) Identification number, location, hand, fire rating and material of each door and frame.
 - 2) Type, style, function, size, quantity, and finish of each door hardware item. Include description and function of each lockset and exit device.
 - 3) Complete designations of every item required for each door or opening including name and manufacturer.
 - 4) Fastenings and other pertinent information.
 - 5) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.

- 6) Explanation of abbreviations, symbols, and codes contained in schedule.
- 7) Mounting locations for door hardware.
- 8) Door and frame sizes and materials.
- 9) List of related door devices specified in other Sections for each door and frame.
- d. Submittal Sequence: Submit the final door hardware sets at earliest possible date, particularly where approval of the door hardware sets must precede fabrication of other work that is critical in Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the door hardware sets.
- 2. Keying Schedule: Prepared by or under the supervision of Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by lock manufacturer.
 - 1. Installer's responsibilities include supplying and installing door hardware and providing a qualified Architectural Hardware Consultant available during the course of the Work to consult with Contractor, Engineer, and Owner about door hardware and keying.
 - 2. Installer shall have warehousing facilities in Project's vicinity.
 - 3. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- B. Architectural Hardware Consultant Qualifications: A person who is currently certified by DHI as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.
- C. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.
- D. Pre-installation Conference: Conduct conference at Project site.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.5 COORDINATION

- A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware don't that fails in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Structural failures including excessive deflection, cracking, or breakage.
 - b. Faulty operation of operators and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
2. Warranty Period: Three years from date of Substantial Completion, except as follows:
 - a. Exit Devices: Two years from date of Substantial Completion.
 - b. Manual Closers: 10 years from date of Substantial Completion.

1.7 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in this Section and door hardware sets indicated in Part 3 "Door Hardware Sets" Article.
 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products equivalent in function and comparable in quality to named products.
 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Sets" Article. Products are identified by using door hardware designations, as follows:
 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Sets" Article.
- C. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 1. 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 unless noted otherwise in the hardware schedules.

2.2 HINGES, GENERAL

- A. Quantity: Provide the following, unless otherwise indicated:
 1. Two Hinges: For doors with heights up to 60 inches.
 2. Three Hinges: For doors with heights 61 to 90 inches.
 3. Four Hinges: For doors with heights 91 to 120 inches.
 4. For doors with heights more than 120 inches provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
- B. Template Requirements: Provide only template-produced units.
- C. Hinge Weight: Unless otherwise indicated, provide the following:
 1. Exterior Doors and interior metal or FRP doors: Heavy-weight hinges.
 2. Interior Wood Doors: Standard-weight hinges.
 3. Doors with Closers and/or exit devices: Antifriction-bearing hinges – ball bearing.

- D. Hinge Base Metal: Unless otherwise indicated, provide the following:
 - 1. Exterior Hinges: Stainless steel, with stainless-steel pin (630/US32D).
 - 2. Interior Hinges: Stainless steel, with stainless-steel pin (630/US32D).
 - 3. Hinges for Fire-Rated Assemblies: Stainless steel, with stainless-steel pin.
- E. Hinge Size: 4-1/2-inch x 4-1/2-inch, unless otherwise noted.
 - 1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for outswinging exterior doors.
 - 2. Corners: Square.
- F. Fasteners: Comply with the following:
 - 1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
 - 2. Wood Screws: For wood doors.
 - 3. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
 - 4. Screws: Phillips flat-head. Finish screw heads to match surface of hinges.
 - a. Fasteners for FRP doors and frame hardware are specified in Division 8, "FRP Doors and Frames."

2.3 HINGES

- A. Butts and Hinges: BHMA A156.1. Listed under Category A in BHMA's "Certified Product Directory."
- B. Template Hinge Dimensions: BHMA A156.7.
- C. Available Manufacturers:
 - 1. Hager Companies (HAG).
 - 2. Lawrence Brothers, Inc. (LB).
 - 3. Stanley Commercial Hardware; Div. of The Stanley Works (STH).

2.4 PIVOTS AND PIVOT HINGES

- A. Pivots: BHMA A156.4. Listed under Category C in BHMA's "Certified Product Directory.:
- B. Available Manufacturers:
 - 1. DORMA Architectural Hardware; Member of The DORMA Group North America.
 - 2. IVES Hardware; an Ingersoll-Rand Company.
 - 3. Rixson Specialty Door Controls; an ASSA ABLOY Group company.

2.5 LOCKS AND LATCHES, GENERAL

- A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)" and ANSI A117.1.
 - 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).
- B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.
- C. Lock Trim
 - 1. Levers: Cast.
 - 2. Escutcheons: Forged or Cast.

3. Dummy Trim: Match lever lock trim and escutcheons.
 4. Lockset Designs: Provide lockset design(s) indicated by hardware sets or, if locksets are provided by another manufacturer, provide designs that match those designated.
- D. Lock Throw: Comply with testing requirements for lengths of bolts required for labeled fire doors, and as follows:
1. Mortise Locks: Minimum 3/4-inch latchbolt throw.
 2. Deadbolts: Minimum 1-inch bolt throw.
 - a. Bored Locks: Minimum 1/2-inch latchbolt throw.
- E. Backset: 2-3/4 inches, unless otherwise indicated.
- F. Strikes: Manufacturer's standard strike with strike box for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, and as follows:

2.6 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: Function numbers and descriptions indicated in door hardware sets comply with the following:
1. Mortise Locks: BHMA A156.13.
 2. Bored (Cylindrical) Locks: BHMA A156.2.
- B. Mortise Locks: Stamped steel case with steel parts; BHMA A156.13, Grade 1; Series 1000.
1. Available Manufacturers:
 - a. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group Company (CR).
 - b. Sargent Manufacturing Company; an ASSA ABLOY Group company.
 - c. Yale Commercial Locks and Hardware: an ASSA ABLOY Group Company.
 2. Product Reference Standard: CR ML2000 Series with Citation CSB (630) Trim.
- C. Bored (Cylindrical) Locks: BHMA A156.2, Grade 1, Series 4000.
1. Available Manufacturers:
 - a. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group Company (CR).
 - b. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
 - c. Yale Commercial Locks and Hardware: an ASSA ABLOY Group Company.
 2. Product Reference Standard: CR CL3100 Series with Armstrong (626) Trim.

2.7 AUXILIARY LOCKS AND LATCHES

- A. Auxiliary Locks: BHMA A156.5, Grade 1.
1. Available Manufacturers:
 - a. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.
 - b. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
 - c. Yale Commercial Locks and Hardware: an ASSA ABLOY Group Company.
 2. Finish: 626/US26D

2.8 DOOR BOLTS

- A. Bolt Throws: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
1. Mortise Flush Bolts: Minimum 3/4-inch (19 mm) throw.
 2. Surface Bolts: Minimum 7/8-inch (22 mm) throw.
 3. Fire-Rated Surface Bolts: Minimum 1-inch (25 mm) throw.
- B. Dustproof Strikes: BHMA A156.16, Grade 1.

- C. Surface Bolts: BHMA A156.16, Grade 1.
 - 1. Flush Bolt Heads: Minimum of 1/2-inch (13 mm) diameter rods of stainless steel with minimum 12-inch heads (305 mm) long rods for doors up to 84 inches (2134 mm) in height. Provide longer rods as necessary for doors exceeding 84 inches (2134 mm).
 - 2. Available Manufacturers:
 - a. Ives Hardware, an Ingersoll-Rand Company.
 - b. Other approved equal.
- D. Manual Flush Bolts: BHMA A156.16, Grade 1, designed for mortising into door edge.
 - 1. Available Manufacturers:
 - a. Ives Hardware; an Ingersoll-Rand Company.
 - b. Stanley Commercial Hardware; Div. of The Stanley Works.
 - c. Trimco.
 - 2. Product Reference Standard: Ives No. 457-1/2 x 12 inches with top and bottom plates for rod retention.

2.9 EXIT DEVICES

- A. Exit Devices: BHMA A156.3, Grade 1.
- B. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)" and ANSI A117.1.
 - 1. Provide operating devices that do not require tight grasping, pinching or twisting of the wrist and that operate with a force of not more than 5 lbf.
- C. Exit Devices for Means of Egress Doors: Comply with NFPA 101. Exit devices shall not require more than 15 lbf to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.
- D. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.
- E. Fire Exit Devices: Devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.
- F. Exit Device Design: Push Bar type equal to Corbin Russwin ED 5000 Series.
 - 1. Panic-Listed Mortise Exit Devices: Corbin Russwin ED 5600L Series, with Citation C9M lever trim. Function as indicated on the door and/or hardware schedules.
 - 2. Rim Exit Devices: Corbin Russwin ED 5200 Series with Citation C9 lever trim. Function as indicated on the door and/or hardware schedules.
- G. Outside Trim: Lever with Mortise cylinder and Exit device; material and finish to match locksets, unless otherwise indicated.
- H. Dogging: One point dogging with 1/4-turn maximum to activate.

2.10 LOCK CYLINDERS

- A. Standard Lock Cylinders: BHMA A156.5, Grade 1.
 - 1. Key Control Level: Category A.
 - 2. Destructive Test Level: Category A.
 - 3. Surreptitious Entry Resistance Level: Category A.

4. Finish: 626/US26D
- B. Cylinders: Manufacturer's standard tumbler type, constructed from stainless steel, or nickel silver, and complying with the following:
 1. Number of Pins: Six.
 2. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
 3. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 4. Bored-Lock Type: Cylinders with tailpieces to suit locks.
 - C. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
 1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.
 - D. Construction Keying: Comply with the following:
 1. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.
 - a. Replace construction cores with permanent cores upon completion of construction.
 - E. Manufacturer: Same manufacturer as for locks and latches.
 - F. Available Manufacturers
 1. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group Company.
 2. Or Approved Equal.
- 2.11 CLOSERS
- A. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)" and ANSI A117.1.
 1. Comply with the following maximum opening-force requirements:
 - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
 - b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - B. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.
 - C. Overhead Closers: Closers shall have high-strength cast-iron body with rectangular covers, adjustable spring power and back-check, and full rack and pinion action. All closers shall have adjustable back-check intensity valves and separate adjustment screws for closing and latching speeds.
 1. Closers for doors over 7-feet in height, or more than 3-feet wide, shall have heavy duty arms.
 2. Closers at exterior doors shall include hold open arms unless otherwise indicated.
 3. Door closer covers and arms shall be primed and painted to match door hardware.
 4. Closers shall be provided with sex bolts for fastening through doors, frames and transoms.
 - D. Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

- E. Surface Closers: BHMA A156.4, Grade 1. Listed under Category C in BHMA's "Certified Product Directory." Provide type of arm required for closer to be located on non-public side of door, unless otherwise indicated.
- F. Closer Design/Type: Closer type as follows:
1. Regular Arm: Corbin Russwin DC3200 Series
 2. Parallel Arm: Corbin Russwin DC3210 Series
 3. Parallel Arm with Hold Open: Corbin Russwin DC3210

2.12 PROTECTIVE DOOR PLATES

- A. Size: 1-1/2 inches (38 mm) less than door width on push side and 1/2 inch (13 mm) less than door width on pull side, by height specified below.
- B. Fasteners: Manufacturer's standard machine or self-tapping screws.
- C. Metal Protective Kick Plates: BHMA A156.6; beveled top and 2 sides; fabricated from the following material:
1. Material: 0.050-inch- (1.3 mm) thick stainless steel.
 2. Product References Standard: Rockwood No. 1050; 16 inches high.
- D. Metal Protective Armor Plates: Beveled top and two sides.
1. Material: 0.062 inch thick stainless steel.
 2. Product Reference Standard: Rockwood No. 1050; 30 inches high.

2.13 STOPS AND HOLDERS

- A. Stops and Bumpers: General: BHMA A156.16, Grade 1.
1. Provide wall stops for doors unless other type stops are scheduled or indicated. Do not mount floor stops where they will impede pedestrian or vehicular traffic. Where floor or wall stops are not appropriate, provide overhead holders.
- B. Door Stops: Door stops shall be of the type specified in the hardware sets or in this schedule, and shall be provided with the proper fasteners.
1. Door Stop Schedule

	Floor Stop w/ Keeper	Floor Stop	Wall Stop w/ Keeper	Wall Stop	Kick Stop (4" Arm)
Rockwood	472	471	476	406	461L
 2. Fasteners/Anchors: Stops shall be provided with machine screws and anchors at concrete and masonry conditions, and toggle bolts at plaster, gypsum board, and wood conditions.
- C. Overhead Holders: Overhead type door holders shall be concealed type of correct size for door, 90 degrees openable, unless 120 degree opening shown, and allowing for checkmating. Interior doors shall be provided with overhead stops if wall type stops cannot be used and floor stops create a tripping hazard. Finish shall be chrome plated bronze with satin finish, US 26D, unless otherwise specified.
1. Holders Design: Door holders shall be Russwin Corbin, DH 5000 Series, Holder No. DH5400, or equal.
- D. Silencers for Metal Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame.

2.14 THRESHOLDS

- A. Standard: BHMA A156.21. Listed under Category J in BHMA's "Certified Product Directory."

- B. Accessibility Requirements: Where thresholds are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)" and ANSI A117.1.
 - 1. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2-inch.
- C. Thresholds for Means of Egress Doors: Comply with NFPA 101. Maximum 1/2-inch (13 mm) high.
- D. Threshold Design: All exterior doors shall receive a panic style (offset) aluminum threshold unless otherwise indicated:
 - 1. Accessible Entry: National Guard No. 896N (neoprene gasket).
 - 2. Non-Accessible Entry: National Guard No. 884N (neoprene gasket).
 - 3. Receiving Entry: National Guard No. 513, Saddle/flat style threshold.

2.15 MISCELLANEOUS DOOR HARDWARE/ACCESSORIES

- A. Push Plates and Pulls: 4-inch by 16-inch by 0.050 thick, stainless steel: Rockwood #70 or equal. Pulls shall be 3/4" diameter thru-bolted with 4-inch x 16-inch stainless steel plate, Rockwood No. 105 x 70 with 630 finish, or equal.
- B. Astragal: "T" Astragal No. 158NA, National Guard Products or FRP astragal by door manufacturer; furnish with neoprene weatherstrip seal.
- C. Coordinator: Frame mounted, non-handed coordinator and filler piece; Rockwood No. 1600 Series with 630 finish.
Provide Rockwood No. 1100 carry bars at openings with astragals.
- D. Drip Strip: National Guard No. 16A x door width plus 2 inches. Mount head to door frame.
- E. Bottom Sweep: National Guard No. 201NA x door width.
- F. Weatherstrip: National Guard No. 135N; install at each jamb and at head.
- G. Door Bolts: As specified in Section 2.8.
- H. Closers: As specified in Section 2.11.
- I. Kick/Armor Plates: As specified in Section 2.12.
- J. Threshold: As specified in Section 2.14.
- K. Panic Exit Devices: Devices complying with NFPA 80 and as further specified in Section 2.9.

2.16 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A.
 - 1. Existing System: Master key locks to Owner's existing system.
- B. Keys: Nickel silver.
 - 1. Quantity: In addition to one extra key blank for each lock, provide the following:
 - a. Master Keys: Five.

2.17 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location.
 - 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.
- C. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.
 - 1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
 - 2. Steel Machine or Wood Screws: For the following fire-rated applications:
 - a. Mortise hinges to doors.
 - b. Strike plates to frames.
 - c. Closers to doors and frames.
 - 3. Steel Through Bolts: For the following fire-rated applications unless door blocking is provided:
 - a. Surface hinges to doors.
 - b. Closers to doors and frames.
 - c. Surface-mounted exit devices.
 - 4. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
 - 5. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."

2.18 FINISHES

- A. Standard: BHMA A156.18, as indicated in door hardware sets.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable temporary protective cover before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.19 MANUFACTURERS

- A. Product numbers listed in the following specifications are taken from catalogs of manufacturers listed as follows:
 - 1. ST Stanley Hardware
 - 2. S Sargent & Company
 - 3. NG National Guard Products

4. R Russwin
5. Mc McKinney
6. N Norton
7. H Hager
8. RO Rockwood Mfg.
9. I Ives
10. GJ Glynn Johnson
11. Sch Schlage
12. VD Von Duprin
13. C Cal Royal
14. D Dorma
15. DE Detex
16. Y Yale

- B. Products of the following manufacturers will be considered acceptable provided products are of equivalent weight, function, materials and design:
1. Hinges: Hager, Mc Kinney
 2. Locks: Russwin, Sargent, Schlage
 3. Closers: Russwin, Norton, Sargent
 4. Holders and Stops: Sargent
 5. Door Trim: Glynn Johnson, Ives
 6. Thresholds & Weather stripping National Guard, Hager

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, wall and floor construction, and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Steel Doors and Frames: Comply with DHI A115 Series.
1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI A250.6.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.
1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 2. Custom Steel Doors and Frames: DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.

2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

- C. Thresholds: Set thresholds for exterior doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 1. Door Closers: Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

3.5 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DOOR HARDWARE SETS

- A. In addition to miscellaneous hardware per Section 2.15 provide:

HARDWARE SET 1 (HW-1)		
Each to Have		
Mfr.	Description	Model Number
H	Butt Hinges	(3) BB1191 4.5 x 4.5 x US32D
H	Flush Bolts	(2) 282D x 12" x US26D (Face Mount) Transom
Y	Exit Device	7100 x AU626F x US32D
Y	Exit Device	7100 x US32D (Exit Only)
Sch	Cylinder Locks	(2) As Required
DE	Removable Keyed Mullion	KR90 x DH
D	Closer	(2) 8916 RWPA x SNB x Transom Brackets as Required
H	Kickplates	(2) 194S x 10" x 2" LDW x 0.05" US32D
H	Threshold	412 x DW x AL
H	Door Sweeps	(2) 770SV x DW x AL
H	Interlock Seals	(2) 718S x DW x AL

H	Brush Seals	(4) 801S x DH x AL

HARDWARE SET 2 (HW-2)		
Each to Have		
Mfr.	Description	Model Number
H	Butt Hinges	(3) BB1191 4.5 x 4.5 x US32D
Sch	Office Lock	ND50PD RHO x US26D
H	Wall Stop	236W x US32D
H	Silencers	(3) 307D
H	Kickplate	194S x 10" x 2" LDW x 0.05" US32D

HARDWARE SET 8 (HW-3)		
Each to Have		
Mfr.	Description	Model Number
H	Butt Hinges	(3) BB1191 4.5 x 4.5 x US32D
Sch	Occupancy Indicator Lock	B571 x US26D
Sch	Passage	ND10S RHO x US26D
H	Wall Stop	236W x US32D
H	Silencers	(3) 307D
H	Kickplate	194S x 10" x 2" LDW x 0.05" US32D
D	Closer	8916 RWPA x SNB x 689

HARDWARE SET 4 (HW-4)		
Each to Have		
Mfr.	Description	Model Number
H	Butt Hinges	(3) BB1191 4.5 x 4.5 x US32D
Y	Exit Device	7100 x AU626F x US32D
Sch	Cylinder Lock	As Required
D	Closer	8916 RWPA x SNB x 689
H	Kickplate	194S x 10" x 2" LDW x 0.05" US32D
H	Threshold	412 x DW x AL
H	Door Sweep	770SV x DW x AL
H	Seals	726S x Size Required

H	Drip Cap	810S x DW + 4" x AL

END OF SECTION

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 RESTRICTTIONS.

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., Somerset, 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
--	-----------------------------	----------------

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

DIVISION 10 SPECIALTIES

SECTION 10 21 13 - TOILET PARTITIONS AND SCREENS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section covers toilet partitions, screens and associated hardware including all materials, labor, equipment, and services necessary to complete this work.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For toilet compartments. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for each exposed product and for each color and texture specified.

1.3 APPROVALS

- A. Products of other manufacturers proposed as equivalent quality must be submitted for written approval of the architect five (5) days prior to the bid date.
- B. Supporting technical data, samples, published specifications and the like must be submitted for comparison.
- C. Contractor will warrant that proposed substitutions, if accepted, will provide performance equivalent to the materials specified herein.
- D. If approved, substitution products will be set forth by Addenda; otherwise, products specified shall be provided.

1.4 GUARANTEE

- A. Toilet partitions and screens shall be guaranteed to be free from defects in workmanship and materials for a period of one (1) year from date of acceptance.

1.5 COORDINATION

- A. Work of this section shall be coordinated with other trades to insure proper location of backup and anchorage grounds in stud partitions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide toilet partitions and screens as manufactured by one of the following:
 1. American Sanitary Partition Corporation
 2. General Partition Mfg. Co.
 3. Metpar Corp.
 4. Sanymetal
 5. Ampco Products
 6. Bobrick

7. Accurate Partition Corp.

2.2 TOILET COMPARTMENT PARTITIONS AND URINAL SCREENS

- A. Toilet compartment partitions and urinal screens shall be floor mounted, overhead braced, laminated plastic to the sizes and configurations indicated on the drawings.

2.3 DOORS AND PANELS

- A. Shall be 1" thick with faces and edging 1/16" general purpose laminated plastic bonded under pressure to a solid 45 lb. density particle board core, one (1) piece full height and width without splices or joints. Laminate colors as selected by Architect.

2.4 PILASTERS

- A. Shall be 1-1/4" thick with same construction as panels. Pilasters are to be securely anchored to the floor and headrail braced with anti-grip rail.

2.5 HARDWARE

- A. Provide all manufacturers' standard hardware, except provide heavy duty full length brackets and full length spring loaded hinges with covers for concealed fasteners.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Installation shall be made in compliance with manufacturer's instructions and approved shop drawings.

3.2 WORKMANSHIP

- A. Erect compartments and accessories in a rigid, substantial manner, straight and plumb, and with horizontal lines level.
- B. Evidence of drilling, cutting and fitting to room finish shall be concealed and undetectable in finished work.
- C. Clearance at vertical edges of doors shall be uniform from top to bottom and shall not exceed 3/16". Doors shall be free of warp or bind.

3.3 TOUCH-UP, AND ADJUSTING

- A. Adjust all hardware and leave in perfect working order.
- B. Remove protective masking from panels and hardware.
- C. Field touch-up of scratches or defaced laminated plastic will be permitted only as approved by Architect. If such touch up is not done to the satisfaction of the Architect, it will be declared "defective-material". Defective materials shall be replaced with new material.

3.4 CLEAN-UP

- A. Clean toilet partitions with clean, damp cloth and mild detergent. Remove all cleaning agent film and residue.

- B. Remove all excess materials and debris from site.

END OF SECTION

SECTION 10 28 00 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes toilet and bath accessory items as listed herein, and the complete installation in conformance with the manufacturer's instructions.
- B. Toilet compartments and related accessories are specified in Division 10.
- C. Unframed mirrors are specified in Section 08 80 00, "Glazing."

1.2 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specifications Sections.
- B. Product data for each toilet accessory item specified, including construction details relative to materials, dimensions gages, profiles, mounting method, specified options, and finishes.
- C. Setting drawings where cutouts are required in other work, including templates, substrate preparation instructions, and directions for preparing cutouts and installing anchorage devices, and blocking where required.

1.3 PROJECT CONDITIONS

- A. Coordination: Coordinate accessory locations, installation, and sequencing with other work to avoid interference with and ensure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.4 WARRANTY

- A. Warranty: Submit a written warranty executed by mirror manufacturer, agreeing to replace any mirrors that develop visible silver spoilage defects within warranty period.
- B. Warranty Period: 10 years from date of Substantial Completion.

1.5 APPROVALS

- A. Products of other manufacturers proposed as equivalent quality must be submitted for written approval of the architect five (5) days prior to the bid date.
- B. Supporting technical data, samples, published specifications and the like must be submitted for comparison.
- C. Contractor will warrant that proposed substitutions, if accepted, will provide performance equivalent to the materials specified herein.
- D. If approved, substituting products will be set forth by Addenda; otherwise, products specified shall be provided.

PART 2 - PRODUCTS

2.1 PRODUCTS:

- A. All accessories are as noted below. Products will be listed on the Toilet Accessory Schedule as noted below.
1. Framed Mirrors: Plate or float glass mirrors of sizes shown, with stainless steel frame, and metal back with concealed anchoring by Accessory Specialties, Bradley, Miami-Carey, Parker, or equal. Install over each lavatory in toilet rooms as indicated. See Interior Elevations for Sizes.
 2. Grab Bars: Bradley 812 or equal. Bars shall be 1-1/2" O.D., 18 gauge stainless steel tubing with welded 11-14 gage end flanges and 20-22 gage snap-lock flange covers. Furnish anchorage as required by installation methods for a concealed mounting. Furnish bars in lengths noted.
 3. Soap Dispensers: GoJo 2730-12, TFX Touch Free Dispenser in gray.
 4. Paper Towel Dispenser: Georgia Pacific 59462, enMotion Wall Mount Automated Touchless Towel Dispenser in translucent smoke.
 5. Toilet Tissue Holder: Georgia Pacific 56784, Compact Side-by-Side Double Roll Bathroom Tissue Dispenser in translucent smoke.
 6. Anchors: All anchorage and fastening shall be stainless steel or other rust-proof material. Items shall be through-bolted where possible. Furnish minimum 18 gage galvanized steel backup plates for building into steel stud walls behind finish panels, for anchorage of grab bars. Generally, anchorage shall be as furnished and recommended by the item manufacturer for the various wall conditions involved.

2.2 TOILET ACCESSORY SCHEDULE

<u>Toilet</u>	
1	Framed Mirror
1	Soap Dispenser
1	Paper Towel Dispenser
1	Toilet Tissue Holder
1	36" Grab Bar

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install toilet accessory units according to manufacturers' instructions, using fasteners appropriate to substrate as recommended by unit manufacturer. Install units plumb and level, firmly anchored in locations and at heights indicated.
- B. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, according to manufacturer's instructions for type of substrate involved.
- C. Install grab bars to withstand a downward load of at least 250 lb., complying with ASTM F 446.
- D. Verify locations with Architect prior to rough-in blocking and installation. All toilet accessories shall be mounted to meet the dimensional requirements of the American Disabilities Act and ANSI A117.1.

3.2 ADJUSTING AND CLEANING

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces strictly according to manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION

DIVISION 13

SPECIAL CONSTRUCTION

SECTION 13 30 11 – PLUGGING AND ABANDONING EXISTING WATER WELL

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes: Plugging and abandoning of an existing water well.

1.2 RELATED DOCUMENTS

- A. Related Sections:
 1. Section 02 41 00 – Demolition
 2. Section 00 30 00 – Cast-In-Place Concrete

1.3 REFERENCES

- A. Texas Department of Licensing and Regulation (TDLR)
 1. Title 16 Part 4 Chapter 76 Rule §76.104 – Technical Requirements-Standards for Capping and Plugging of Wells and Plugging Wells that Penetrate Injurious Water Zones

1.4 SUBMITTALS

- A. Shop Drawings: Submit plans showing all equipment and materials to be removed and interim storage plans for each item to be salvaged for reinstalled and reuse on continued operation.
- B. Quality Control Submittals:
 1. Schedule of well abandonment, as part of and consistent with the progress schedule.
 2. Copies of any authorizations and permits required to perform Work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect system against damage and contamination.

1.6 PROTECTION

- A. Provide necessary signs, barricades, and notices to prevent persons from accidentally disturbing system being plugged and abandoned.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Concrete: Portland cement. Refer to Section 00 30 00, CAST-IN-PLACE CONCRETE, for requirements.
- B. Grout: Clean bentonite grout of a minimum 9.1 pounds per gallon weight. Sodium bentonite grout may also be used if appropriate conditions are met in accordance with the limits set within this specification and with 16 TAC §76.104.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Utilities

1. Notify Owner and appropriate utilities 72 hours prior to 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.

3.2 DECOMMISSIONING

- A. Drawings define minimum portion of equipment to be removed and structures to be modified.
- B. Prior to plugging, remove the pump from the well in accordance with 16 TAC §76.104. Remove piping from area to be plugged. Pipe, valves, and fittings adjacent to those to be removed may also be removed as salvage.
- C. Prior to plugging, remove casing from the well in accordance with 16 TAC §76.104. Any existing surface completion must also be removed.
- D. Remove all materials associated with existing equipment that is to be removed or relocated.

3.3 CONDITION INSPECTION

- A. Verify that existing well appurtenances have been removed.
- B. Provide a photo log of the condition of the well.
- C. Start the plugging of the well when conditions are satisfactory.

3.4 PLUGGING WELL

- A. All wells which are required to be plugged or capped under Texas Occupations Code, Chapters 1901 and 1902, shall be plugged and capped in accordance with the following specifications and in compliance with the local groundwater conservation district rules or incorporated city ordinances:
 1. Pressure fill entire well via a tremie pipe with clean bentonite grout. Top with a cement plug extending from land surface to a depth of at least two (2) feet.
 - a. Bentonite grout may not be used if a water zone contains chlorides above one thousand five hundred (1,500) ppm or if hydrocarbons are present.
 2. If the well contains one hundred (100) feet or less of standing water, the entire well may be filled with a solid column of 3/8-inch or larger granular sodium bentonite. The sodium bentonite must be hydrated at frequent intervals adhering strictly to the manufacturer's recommended rate and method of application.
 3. The top two (2) feet above any bentonite grout or granular sodium bentonite shall be filled with cement as an atmospheric barrier.
 4. Injurious water must be isolated from fresh water zones with cement plugs and the remainder of the wellbore filled with neat cement or clean bentonite grout of a minimum 9.1 weight followed by a cement plug extending from land surface to a depth of not less than two (2) feet.

3.5 DISPOSAL

- A. Dispose of debris and other non-salvaged materials offsite in licensed landfills.

3.6 BACKFILLING

- A. Demolished Areas: Plug to existing ground level or elevation shown on Contract Drawings.
- B. Backfill Material and Compaction:
 - 1. For fill in structures, use cement or grout conforming to requirements of 16 TAC §76.104.
 - 2. Do not use demolition debris as backfill material.

3.7 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

SECTION 13 34 19 - METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 1. Structural-steel framing.
 2. Metal roof panels.
 3. Metal soffit panels.
 4. Doors and frames.
 5. Accessories.
- B. Related Sections:
 1. 07 21 01- Metal Building Insulation

1.2 DEFINITIONS

- A. Terminology Standard: See MBMA's "Metal Building Systems Manual" for definitions of terms for metal building system construction not otherwise defined in this Section or in referenced standards.

1.3 SUBMITTALS

- A. Product Data: For each type of metal building system component. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
 1. Structural-steel-framing system.
 2. Metal roof panels.
 3. Flashing and trim.
 4. Doors.
 5. Accessories.
- B. Shop Drawings: For the following metal building system components. Include plans, elevations, sections, details, and attachments to other work.
 1. Anchor-Bolt Plans: Submit anchor-bolt plans and templates before foundation work begins. Include location, diameter, embedment depth, and projection of anchor bolts required to attach metal building to foundation. Indicate column reactions at each location.
 2. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing; include provisions for openings. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.
 3. Metal Roof Panel Layout Drawings: Show layouts of metal panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work; show locations of exposed fasteners.
 4. Accessory Drawings: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches:
 - a. Flashing and trim.
 - b. Gutters.
 - c. Downspouts.
- C. Samples for Initial Selection: For units with factory-applied color finish.
- D. Door Schedule: For doors and frames. Use same designations indicated on Drawings. Include details of reinforcement.

1. Door Hardware Schedule: Include details of fabrication and assembly of door hardware. Organize schedule into door hardware sets indicating complete designations of every item required for each door or opening.
 2. Keying Schedule: Detail Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.
- E. Delegated-Design Submittal: For metal building systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer licensed in the state of the work and responsible for their preparation.
- F. Welding certificates.
- G. Metal Building System Certificates: For each type of metal building system, from manufacturer.
1. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:
 - a. Name and location of Project.
 - b. Order number.
 - c. Name of manufacturer.
 - d. Name of Contractor.
 - e. Building dimensions including width, length, height, and roof slope.
 - f. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
 - g. Governing building code and year of edition.
 - h. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
 - 1). Verify that building frame meets the deflection criteria for supporting a CMU wall.
 - i. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
 - j. Building-Use Category: Indicate category of building use and its effect on load importance factors.
 - k. Metal Building Systems Inspection Accreditation: Include statement that the inspection program of the metal building manufacturer is accredited based on the requirements of IAS Accreditation Criteria AC472, International Building Code and related standards.
- H. Erector Certificates: For each product, from manufacturer.
- I. Manufacturer Certificates: For each product, from manufacturer.
- J. Material Test Reports: For each of the following products:
 1. Structural steel including chemical and physical properties.
 2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 3. Tension-control, high-strength, bolt-nut-washer assemblies.
 4. Shop primers.
 5. Non-shrink grout.
- K. Field quality-control reports.
- L. Maintenance Data: For metal panel finishes and door hardware to include in maintenance manuals.
- M. Warranties: Sample of special warranties.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer and member of MBMA.
 - 1. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.
- C. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
- D. Source Limitations: Obtain metal building system components, including primary and secondary framing and metal panel assemblies, from single source from single manufacturer.
- E. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - 2. AWS D1.3, "Structural Welding Code - Sheet Steel."
- F. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings," for design requirements and allowable stresses.
- G. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.
- H. Fire-Resistance Ratings: Where indicated, provide metal panel assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
 - 2. Combustion Characteristics: ASTM E 136.
- I. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
 - 1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.
- J. Pre-installation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to metal building systems including, but not limited to, the following:
 - a. Condition of foundations and other preparatory work performed by other trades.
 - b. Structural load limitations.
 - c. Construction schedule. Verify availability of materials and erector's personnel, equipment, and facilities needed to make progress and avoid delays.
 - d. Required tests, inspections, and certifications.
 - e. Unfavorable weather and forecasted weather conditions.
 - 2. Review methods and procedures related to metal roof panel assemblies including, but not limited to, the following:
 - a. Compliance with requirements for purlin and rafter conditions, including flatness and attachment to structural members.
 - b. Structural limitations of purlins and rafters during and after roofing.
 - c. Flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.

- d. Temporary protection requirements for metal roof panel assembly during and after installation.
 - e. Roof observation and repair after metal roof panel installation.
- 3. Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:
 - a. Compliance with requirements for support conditions, including alignment between and attachment to structural members.
 - b. Structural limitations of girts and columns during and after wall panel installation.
 - c. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
 - d. Temporary protection requirements for metal wall panel assembly during and after installation.
 - e. Wall observation and repair after metal wall panel installation.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weather tight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

1.6 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when weather conditions permit metal panels to be installed according to manufacturers' written instructions and warranty requirements.
- B. Field Measurements:
 - 1. Established Dimensions for Foundations: Comply with established dimensions on approved anchor-bolt plans, establishing foundation dimensions and proceeding with fabricating structural framing without field measurements. Coordinate anchor-bolt installation to ensure that actual anchorage dimensions correspond to established dimensions.
 - 2. Established Dimensions for Metal Panels: Where field measurements cannot be made without delaying the Work, either establish framing and opening dimensions and proceed with fabricating metal panels without field measurements, or allow for field trimming metal panels. Coordinate construction to ensure that actual building dimensions, locations of structural members, and openings correspond to established dimensions.

1.7 COORDINATION

- A. Coordinate sizes and locations of concrete foundations and casting of anchor-bolt inserts into foundation walls and footings. Concrete, reinforcement, and formwork requirements are specified in Division 3 Section "Cast-in-Place Concrete."
- B. Coordinate metal panel assemblies with rain drainage work, flashing, trim, and construction of supports and other adjoining work to provide a leak proof, secure, and noncorrosive installation.

1.8 WARRANTY

- A. Special Warranty on Metal Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.
- B. Special Weather tightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that leak or otherwise fail to remain weather tight within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Alliance Steel, Inc.
 - 2. Butler Manufacturing Company; a BlueScope Steel company.
 - 3. Ceco Building Systems; Division of NCI Building Systems, L.P.
 - 4. Kirby Building Systems; Nucor Company.
 - 5. Metallic Building Company; Division of NCI Building Systems, L.P.
 - 6. Nucor Building Systems.
 - 7. Pinnacle Structures, Inc.
 - 8. VP Buildings; a Division of BlueScope Buildings.

2.2 METAL BUILDING SYSTEMS

- A. Description: Provide a complete, integrated set of metal building system manufacturer's standard mutually dependent components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.
 - 1. Provide metal building system of size and with bay spacings, roof slopes, and spans as indicated on the drawings.
- B. Primary-Frame Type:
 - 1. Rigid Clear Span: Solid-member, structural-framing system without interior columns.
- C. Secondary-Frame Type: Manufacturer's standard purlins, joists, and girts, as indicated on the drawings.
- D. Eave Height: As indicated on Drawings
- E. Bay Spacing: As shown on drawings.
- F. Roof Slope: 1-inch per 12 inches, unless noted otherwise.
- G. Roof System: Manufacturer's standard vertical-rib, standing-seam metal roof panels with field-installed insulation.

2.3 METAL BUILDING SYSTEM PERFORMANCE

- A. Delegated Design: Design metal building system, including comprehensive engineering analysis by a qualified professional engineer licensed in the state of the work, using performance requirements and design criteria indicated.
- B. Structural Performance: Metal building systems shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."
 - 1. Design Loads: Per the load magnitude and criteria indicated on Drawings.
 - 2. Deflection Limits: Design metal building system assemblies to withstand design loads with deflections no greater than the following:
 - a. Purlins and Rafters: Vertical deflection of 1/240 of the span.
 - b. Girts: Horizontal deflection of 1/240 of the span.
 - c. Metal Roof Panels: Vertical deflection of 1/240 of the span.
 - d. Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.
 - 3. Drift Limits: Engineer building structure to withstand design loads with drift limits no greater than the following:
 - a. Lateral Drift: Maximum of 1/400 of the building height.
 - 4. Metal panel assemblies shall withstand the effects of gravity loads and loads and stresses within limits and under conditions indicated according to ASTM E 1592.
- C. Seismic Performance: Metal building systems shall withstand the effects of earthquake motions determined according to ASCE/SEI 7 per the criteria indicated on the drawings.
- D. Thermal Movements: Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, material surfaces.
- E. Air Infiltration for Metal Roof Panels: Air leakage through assembly of not more than 0.06 cfm/sq. ft. of roof area when tested according to ASTM E 1680 at negative test-pressure difference of 1.57 lbf/sq. ft.
- F. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E 1646 at test-pressure difference of 2.86 lbf/sq. ft.
- G. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for Class 60.

2.4 STRUCTURAL-STEEL FRAMING

- A. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafter, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.
 - 1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.
 - a. Slight variations in span and spacing may be acceptable if necessary to comply with manufacturer's standard, as approved by Engineer.
 - 2. Rigid Clear-Span Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Interior columns are not permitted.
 - 3. Frame Configuration: Single gable.
 - 4. Exterior Column Type: Uniform depth or Tapered.
 - 5. Rafter Type: Uniform depth or Tapered.

- B. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, pre-painted with coil coating, to comply with the following:
1. Purlins: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; minimum 2-1/2-inch- wide flanges.
 - a. Depth: As needed to comply with system performance requirements.
 2. Girts: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 40 to 50 degrees from flange, with minimum 2-1/2-inch- wide flanges.
 - a. Depth: As required to comply with system performance requirements
 3. Eave Struts: Unequal-flange, C-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; to provide adequate backup for metal panels.
 4. Flange Bracing: Minimum 2-by-2-by-1/8-inch structural-steel angles or 1-inch diameter, cold-formed structural tubing to stiffen primary-frame flanges.
 5. Sag Bracing: Minimum 1-by-1-by-1/8-inch structural-steel angles.
 6. Base or Sill Angles: Minimum 3-by-2-inch zinc-coated (galvanized) steel sheet.
 7. Purlin and Girt Clips: Manufacturer's standard clips fabricated from steel sheet. Provide galvanized clips where clips are connected to galvanized framing members.
 8. Secondary End-Wall Framing: Manufacturer's standard sections fabricated from zinc-coated (galvanized) steel sheet.
 9. Framing for Openings: Channel shapes; fabricated from cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings and head, jamb, and sill of other openings.
 10. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.
- C. Bracing: Provide adjustable wind bracing as follows:
1. Rod bracing: Fabricated solid rods of the size required to withstand design loads.
- D. Bolts: Provide plain-finish bolts for structural-framing components that are primed or finish painted. Provide zinc-plated or hot-dip galvanized bolts for structural-framing components that are galvanized.
- E. Materials:
1. W-Shapes: ASTM A 992, ASTM A 572, Grade 50 min; or ASTM A 529, Grade 50 min.
 2. Channels, Angles, M-Shapes, and S-Shapes: ASTM A 572, Grade 50 min; or ASTM A 529, Grade 50 min.
 3. Plate and Bar: ASTM A 572, Grade 50 min; or ASTM A 529, Grade 50 min.
 4. Steel Pipe: ASTM A 53, Type E or S, Grade B.
 5. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B or C, structural tubing.
 6. Structural-Steel Sheet: Hot-rolled, ASTM A 1011, Structural Steel (SS), Grades 30 through 55, or High-Strength Low-Alloy Steel (HSLAS), Grades 45 through 70; or cold-rolled, ASTM A 1008, Structural Steel (SS), Grades 25 through 80, or High-Strength Low-Alloy Steel (HSLAS), Grades 45 through 70.
 7. Metallic-Coated Steel Sheet: ASTM A 653, Structural Steel (SS), Grades 33 through 80 or High-Strength Low-Alloy Steel (HSLAS), Grades 50 through 80; with G60 coating designation; mill phosphatized.
 8. Metallic-Coated Steel Sheet Pre-painted with Coil Coating: Steel sheet, metallic coated by the hot-dip process and pre-painted by the coil-coating process to comply with ASTM A 755.
 - a. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653, Structural Steel (SS), Grades 33 through 80 or High-Strength Low-Alloy Steel (HSLAS), Grades 50 through 80; with G90 coating designation.

- b. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792, Structural Steel (SS), Grade 50 or 80; with Class AZ50 coating.
 - 9. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563 heavy-hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
 - a. Finish: Plain.
 - 10. Un-headed Anchor Rods: ASTM F 1554, Grade 36 or ASTM A 572, Grade 50.
 - a. Configuration: Straight.
 - b. Nuts: ASTM A 563 heavy-hex carbon steel.
 - c. Plate Washers: ASTM A 36 carbon steel.
 - d. Washers: ASTM F 436 hardened carbon steel.
 - e. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.
- F. Finish: Factory primed. Apply specified primer immediately after cleaning and pre-treating.
 - 1. Apply primer to primary and secondary framing to a minimum dry film thickness of 1 mil.
 - a. Prime secondary framing formed from uncoated steel sheet to a minimum dry film thickness of 0.5 mil on each side.
 - 2. Prime galvanized members with specified primer after phosphoric acid pretreatment.
 - 3. Primer: SSPC-Paint 15, Type I, red oxide.

2.5 METAL ROOF PANELS

- A. Vertical-Rib, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels.
 - 1. Material: Zinc-coated (galvanized) steel sheet, 0.028-inch nominal thickness.
 - a. Exterior Finish: Fluoropolymer.
 - b. Color: As selected by Owner or Engineer from manufacturer's full range.
 - 2. Clips: Manufacturer's standard, fixed type; fabricated from zinc-coated (galvanized) steel, aluminum-zinc alloy-coated steel, or stainless-steel sheet.
 - 3. Joint Type: Panels snapped together.
 - 4. Joint Type: Mechanically seamed, folded according to manufacturer's standard.
 - 5. Panel Coverage: 24 inches.
 - 6. Panel Height: 3 inches.
 - 7. Uplift Rating: UL 60.
- B. Materials:
 - 1. Metallic-Coated Steel Sheet: Restricted-flatness steel sheet, metallic coated by the hot-dip process and pre-painted by the coil-coating process to comply with ASTM A 755.
 - a. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653, G90 coating designation; structural quality.
 - b. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792, Class AZ50 coating designation, Grade 40; structural quality.
 - c. Surface: Smooth, flat finish.
- C. Finishes:
 - 1. Exposed Coil-Coated Finish:
 - a. Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - b. Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

2.6 METAL SOFFIT PANELS

- A. General: Provide factory-formed metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weather tight installation.
- B. Metal Soffit Panels: Match profile and material of metal roof panels.
 1. Finish: Match finish and color of metal roof panels.

2.7 ACCESSORIES

- A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.
 1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
- B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
 1. Closures: Provide closures at eaves and ridges, fabricated of same material as metal roof panels.
 2. Clips: Manufacturer's standard, formed from stainless-steel sheet, designed to withstand negative-load requirements.
 3. Cleats: Manufacturer's standard, mechanically seamed cleats formed from stainless-steel sheet or nylon-coated aluminum sheet.
 4. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 5. Closure Strips: Closed-cell, expanded, cellular, rubber or cross linked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- thick, flexible closure strips; cut or pre-molded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weather tight construction.
 6. Thermal Spacer Blocks: Where metal panels attach directly to purlins, provide thermal spacer blocks of thickness required to provide 1-inch standoff; fabricated from extruded polystyrene.
- C. Flashing and Trim: Formed from 0.022-inch nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet pre-painted with coil coating; finished to match adjacent metal panels.
 1. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
 2. Opening Trim: Formed from 0.034-inch nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet pre-painted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.
- D. Gutters: Formed from 0.022-inch nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet pre-painted with coil coating; finished to match roof fascia and rake

trim. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- long sections, sized according to SMACNA's "Architectural Sheet Metal Manual."

1. Gutter Supports: Fabricated from same material and finish as gutters.
2. Strainers: Bronze, copper, or aluminum wire ball type at outlets.

- E. Downspouts: Formed from 0.022-inch nominal-thickness, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet pre-painted with coil coating; finished to match metal wall panels. Fabricate in minimum 10-foot- long sections, complete with formed elbows and offsets.

1. Mounting Straps: Fabricated from same material and finish as gutters.
2. Number and Locations: As shown on the drawings.

- F. Materials:

1. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of materials being fastened by means of plastic caps or factory-applied coating.
 - a. Fasteners for Metal Roof Panels: Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with a stainless-steel cap or zinc-aluminum-alloy head and EPDM sealing washer.
 - b. Fasteners for Metal Roof Panels: Self-drilling, Type 410 stainless-steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM washer under heads of fasteners bearing on weather side of metal panels.
 - c. Fasteners for Metal Wall Panels: Self-drilling, Type 410 stainless-steel or self-tapping, Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM sealing washers bearing on weather side of metal panels.
 - d. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
 - e. Blind Fasteners: High-strength aluminum or stainless-steel rivets.
2. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
3. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, non-staining, mixed with water to consistency suitable for application and a 30-minute working time.
4. Metal Panel Sealants:
 - a. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene-compound sealant tape with release-paper backing. Provide permanently elastic, non-sag, nontoxic, non-staining tape of manufacturer's standard size.
 - b. Joint Sealant: ASTM C 920; one-part elastomeric polyurethane or polysulfide; of type, grade, class, and use classifications required to seal joints in metal panels and remain weather tight; and as recommended by metal building system manufacturer.

2.8 FABRICATION

- A. General: Design components and field connections required for erection to permit easy assembly.
1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
 2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.
- B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.

- C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.
 - 1. Make shop connections by welding or by using high-strength bolts.
 - 2. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
 - 3. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
 - 4. Weld clips to frames for attaching secondary framing.
 - 5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication.
- D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll-forming or break-forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.
 - 1. Make shop connections by welding or by using non-high-strength bolts.
 - 2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary framing with specified primer after fabrication.
- E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
 - 1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Before erection proceeds, survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedment's to receive structural framing, with erector present, for compliance with requirements and metal building system manufacturer's tolerances.
 - 1. Engage land surveyor to perform surveying.
- C. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.
- B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION OF STRUCTURAL FRAMING

- A. Erect metal building system according to manufacturer's written erection instructions and erection drawings.
- B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.
- C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.
- D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 - 3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
 - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.
- F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.
 - 1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for bolt type and joint type specified.
 - a. Joint Type: Snug tightened or pre-tensioned.
- G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.
 - 1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
 - 2. Locate and space wall girts to suit openings such as doors and windows.
 - 3. Locate canopy framing as indicated.
 - 4. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.
- H. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.
 - 1. Tighten rod and cable bracing to avoid sag.
 - 2. Locate interior end-bay bracing only where indicated.
- I. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.
- J. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.4 METAL PANEL INSTALLATION, GENERAL

- A. Examination: Examine primary and secondary framing to verify that structural-panel support members and anchorages have been installed within alignment tolerances required by manufacturer.
 - 1. Examine roughing-in for components and systems penetrating metal panels, to verify actual locations of penetrations relative to seams before metal panel installation.
- B. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.
 - a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.
 - 2. Install metal panels perpendicular to structural supports unless otherwise indicated.
 - 3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
 - 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 - 5. Locate metal panel splices over, but not attached to, structural supports with end laps in alignment.
 - 6. Lap metal flashing over metal panels to allow moisture to run over and off the material.
- C. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.
 - 1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weather tight enclosure. Avoid "panel creep" or application not true to line.
- D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.
- E. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.
 - 1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
 - 2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

3.5 METAL ROOF PANEL INSTALLATION

- A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.
 - 1. Install ridge and hip caps as metal roof panel work proceeds.
 - 2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.
- B. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint, at location and spacing and with fasteners recommended by manufacturer.
 - 1. Install clips to supports with self-drilling or self-tapping fasteners.
 - 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.

3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
4. Seamed Joint: Crimp standing seams with manufacturer-approved motorized seamer tool so that clip, metal roof panel, and factory-applied sealant are completely engaged.
5. Rigidly fasten eave end of metal roof panels and allow ridge end free movement due to thermal expansion and contraction. Pre-drill panels for fasteners.
6. Provide metal closures at peaks each side of ridge and hip caps.

C. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

D. Metal Roof Panel Installation Tolerances: Shim and align metal roof panels within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 METAL SOFFIT PANEL INSTALLATION

- A. Provide metal soffit panels the full width of soffits. Install panels perpendicular to support framing.
- B. Flash and seal metal soffit panels with weather closures where panels meet walls and at perimeter of all openings.

3.7 DOOR AND FRAME INSTALLATION

- A. General: Install doors and frames plumb, rigid, properly aligned, and securely fastened in place according to manufacturers' written instructions. Coordinate installation with wall flashings and other components. Seal perimeter of each door frame with elastomeric sealant used for metal wall panels.
- B. Field Glazing: Comply with installation requirements in Division 8 Section "Glazing."
- C. Door Hardware: Mount units at heights indicated in DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 1. Install surface-mounted items after finishes have been completed on substrates involved.
 2. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 3. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
 4. Set thresholds for exterior doors in full bed of butyl-rubber sealant complying with requirements specified in Division 7 Section "Joint Sealants."

3.8 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
 1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
 2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
 3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.

- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- C. Gutters: Join sections with riveted-and-soldered or lapped-and-sealed joints. Attach gutters to eave with gutter hangers spaced as required for gutter size, but not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.
- D. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.
1. Provide elbows at base of downspouts to direct water away from building.
- E. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.
- F. FIELD QUALITY CONTROL
1. Testing Agency: The Contractor will engage a qualified testing agency to perform tests and inspections.
- G. Tests and Inspections:
1. High-Strength, Field-Bolted Connections: Connections shall be tested and inspected during installation according to RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
 2. Welded Connections: In addition to visual inspection, field-welded connections shall be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at inspector's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.
- H. Product will be considered defective if it does not pass tests and inspections.
- I. Prepare test and inspection reports.
- 3.9 ADJUSTING
- A. Doors: After completing installation, test and adjust doors to operate easily, free of warp, twist, or distortion.

- B. Door Hardware: Adjust and check each operating item of door hardware and each door to ensure proper operation and function of every unit. Replace units that cannot be adjusted to operate as intended.

3.10 CLEANING AND PROTECTION

- A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A780 and manufacturer's written instructions.
- B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.
- C. Touchup Painting: After erection, promptly clean, prepare, and prime or re-prime field connections, rust spots, and abraded surfaces of prime-painted structural framing, bearing plates, and accessories.
 - 1. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPC-SP 3, "Power Tool Cleaning."
 - 2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.
- D. Touchup Painting: Cleaning and touchup painting are specified in Division 9 painting Sections.
- E. Metal Panels: Remove temporary protective coverings and strippable films, if any, as metal panels are installed. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
 - 1. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.
- F. Doors and Frames: Immediately after installation, sand rusted or damaged areas of prime coat until smooth and apply touchup of compatible air-drying primer.
 - 1. Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION

DIVISION 22 PLUMBING

SECTION 22 05 00 - PLUMBING GENERAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide equipment, labor, material, etc., required to make a complete working installation as shown or as specified.
- B. Equipment and materials used in the work shall be:
 - 1. In accordance with the contract documents.
 - 2. The best quality and grade for the use intended.
 - 3. New and unused.
 - 4. The manufacturer's latest standard or current model.
- C. All equipment and method shall be installed and connected in accordance with the best engineering practices and in accordance with the manufacturer's recommendations.
- D. Mechanical work includes, but is not limited to:
 - 1. Make arrangements with local utility company for services as shown or specified.
 - 2. Obtain all permits and inspections including: Building permits, health department permits and sewer tap permits.
 - 3. Disconnect, remove and re-install mechanical services located on or crossing through contract limits, above or below grade, obstructing construction of project or conflicting with completed project or any applicable codes.
 - 4. Modify, extend or tie-into existing mechanical services or systems.
 - 5. Complete alterations and additions to the domestic water distribution system.
 - 6. Provide cutting of pavement, sidewalks, driveways, etc., excavating, trenching, shoring and de-watering. Provide backfill material and perform backfilling.
 - 7. Restore site to original condition or new final grades. Provide paving, concrete, seed, or sod.
 - 8. Complete alterations and additions to the domestic hot and cold water system. Provide sanitary rinse and flush.
 - 9. Complete alterations and additions to the interior sanitary sewer.
 - 10. Provide roofing including flashing, and counter flashing for roof mounted equipment; roof penetrations and supports for work in this Division, unless noted otherwise.

1.2 UTILITY CONNECTIONS

- A. Arrange with local utility companies for utility service connections, taps, meters and installation. Pay all fees and charges (if any) necessary for the utility services shown on the drawings or listed in the specifications.
- B. It is the responsibility of the Contractor to re-confirm with the Utility Companies, prior to bidding, that locations, arrangements, line sizes, pressures, interruptions, shut downs, etc. are in accordance with their regulations and requirements.
- C. If the utility company requirements are at variance with these drawings and specifications, this Contractor shall include the utility company requirements in his work without additional cost to the Owner.
- D. Obtain from Utility Company any additional charges for service of type, size and location called for. Include charges in bid to be paid by Contractor to appropriate party. Provide payment of these charges so as to allow logical progression of construction and avoid delay of completion.

- E. Should cost above not be available prior to bid, submit with bid a letter signed by responsible Utility Company personnel stating that cost is not available. Prime Contractor shall submit letter with his bid to Owner. Cost will then be omitted from contract and become responsibility of Owner.
- F. Furnish with shop drawings a signed document from each utility company describing location and type of service to be supplied and requirements for service. Document shall be signed by the appropriate responsible representative of the respective utility company.

1.3 WORK NOT INCLUDED

- A. Electrical wiring and conduits shown on the electrical drawings.
- B. Asbestos removal.

1.4 RELATED WORK SPECIFIED ELSEWHERE

- A. Electrical: Division 26.

1.5 REQUIREMENTS OF REGULATORY AGENCIES

- A. Obtain and pay for all permits required for the work. Comply with all ordinances pertaining to work described herein.
- B. Install the work under this Division in accordance with drawings and specifications and the standards and codes (latest edition) that apply to this work. In the event of a conflict, install work in accordance with the most stringent code requirements determined by Engineer.
- C. Arrange, pay for and complete work to pass required tests by agencies having authority over work. Deliver to Engineer Certificates of Inspection and approval issued by authorities.

1.6 QUALIFICATION OF CONTRACTOR

- A. Has completed minimum two projects same size and scope in past five (5) years.
- B. This qualification applies to Sub-Contractors.
- C. Use workmen experienced in their respective trade. Submit qualifications of Superintendent for review.
- D. Owner reserves right to reject bid of any Contractor failing to meet these qualifications.

1.7 GENERAL JOB REQUIREMENTS

- A. Drawings and Specifications:
 1. Drawings and specifications are complementary. Work called for by one is binding as if called for by both.
 2. Drawings are drawn to a small scale and are diagrammatic only. The drawings indicate size and general arrangement of equipment.
 3. Do not scale drawings for exact locations. Refer to dimensional plans. Field measurements take precedence.
- B. Provide all necessary offsets, elbows and fittings in piping as required to avoid conflict with work of other trades. Maintain proper headroom and clear passageways to allow adequate access and working clearances for equipment dampers, valves, etc. This shall be done at no additional cost to the Owner.

- C. Visit to Site/Work in other Division:
1. Examine not only the plans and specifications for this Division, but plans and specifications of the other Divisions of work and visit the site to become acquainted with existing conditions. Execution of Contract is evidence that Contractor has examined all drawings and specifications, and that all conditions which have a bearing in any way on the manner of installing the work in this Division are known. Later claims for labor and materials required due to difficulties encountered will not be recognized.
- D. Underground Utilities/Concealed Utilities:
1. All utilities and services, whether shown on the drawings or not, shall be suitably protected and maintained, and any damages thereto shall be promptly repaired. Owner shall be advised immediately of any damages sustained. If any extra expense is incurred due to the existence of buried utilities not shown on the drawings, or the location of which is not made known to the Contractor, the contract price shall be adjusted in accordance with the General Conditions. The Contractor shall advise the Owner three (3) days in advance of any operation which could possibly disrupt any underground utility. The Contractor shall utilize locator services to mark any underground utilities in the area he is working in, and shall make any other measure deemed necessary to avoid utility disruption.
- E. Definitions:
1. Concealed: Materials or systems not visible. Work installed above a ceiling, furred behind a wall or enclosed in a chase.
 2. Exposed: Materials or systems that is visible. Work installed in a room without a ceiling. Work not enclosed by walls.
 3. Provide: Furnish, install and make complete.
 4. Install: Receive, unload, move into place, and make connections.
 5. Work: Materials completely installed and connected.
 6. ADC: Air Diffusion Council.
 7. AGA: American Gas Association.
 8. AMCA: Air Movement and Control Association.
 9. ANSI: American National Standard Institute.
 10. API: American Petroleum Institute.
 11. ARI: American Refrigeration Institute.
 12. ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers.
 13. ASME: American Society of Mechanical Engineers.
 14. ASTM: American Society of Testing Materials.
 15. AWS: American Welding Society.
 16. FM: Association of Factory Mutual Fire Insurance Company.
 17. International: Building Code, Gas Code, Mechanical Code, Plumbing Code, Energy Code.
 18. MSS: Manufacturer's Standard Society of the Valve and Fittings Industry, Inc.
 19. NEC: National Electrical Code.
 20. NEMA: National Electrical Manufacturer's Association.
 21. NFPA: National Fire Protection Association.
 22. NRCA: National Roofing Contractors Association.
 23. NSF: National Sanitation Foundation.
 24. OSHA: Occupational Safety and Health Act.
 25. PDI: Plumbing Drainage Institute.
 26. PFMA: Power Fan Manufactures Association.
 27. SMACNA: Sheet Metal and Air Conditioning Contractors National Association.
 28. UL: Underwriters Laboratories.
- F. Workmanship, Warranty and Acceptance:
1. Work under this Division shall be first class with emphasis on neatness and workmanship.

2. Install work using competent mechanics, under supervision of foreman, all duly certified by local authorities. Installation subject to Engineer's observation, final approval, and acceptance. Engineer may reject unsuitable work.
 3. Furnish Engineer written warranty, stating that if workmanship and/or materials executed under this Division are proven defective within one (1) year after final acceptance, such defects and other work damaged will be repaired and/or replaced.
 4. In event that project is occupied or system placed in operation in several phases at Owner's request, warranty will begin on date each system or item of equipment is accepted by Owner.
- G. Observations of Work and Demonstration of Operation:
1. When observations are scheduled, provide sufficient personnel to expedite removal of access doors, cover plates, manholes covers, etc.
 2. Contractor to assist Engineer in demonstration of operation of new systems to satisfaction of Owner. Contractor to have manpower available for demonstration of systems where requested by Owner.
- H. Materials and Substitutions:
1. All materials shall be new. All materials and equipment, for which a UL Standard, an AGA approval, an AWWA standard, FM listing or ASME requirements is established, shall be so approved and labeled or stamped.
 2. Wherever in these specifications products are specified by manufacturer's name, bids shall be based on the named products. Where more than one manufacturer's name is mentioned, the one first listed establishes the standard for that product. If the bidder desires to submit a product of a manufacturer other than listed first, it must be the equivalent of the one listed first.
 3. The drawings are based on the use of products specified and listed first. If any revision in piping, ductwork, conduit work, foundations, anchor bolts, connections, etc., is required by other named products or approved substitutions, it shall be the Contractor's responsibility to make such revisions at no additional expense to the Owner.
 4. If any bidder desires to submit products of manufacturers not listed, he may submit a request for prior approval to the Engineer no later than 10 days prior to the bid date. If the Engineer decides to accept the manufacturers, they will be listed as "Approved" by written addendum.
 5. If the manufacturers are not listed as approved either by addendum or in the specifications, they will not be accepted.
- I. Shop and Erection Drawings:
1. Shop drawings shall be submitted on a timely basis to allow adequate lead time for review, resubmission if necessary, manufacture and delivery to allow access of material to project at correct time based on schedule established by Engineer/Contractor. On each shop drawing include the specification section that applies to that submittal. Include complete descriptive data with dimensions, operating data and weight for each item of equipment. Carefully examine shop drawings to assure compliance with drawings and specifications prior to submittal to Engineer. Shop drawings and submittals shall bear the stamp of approval of the Contractor as evidence that the drawings have been checked by him. Drawing submitted without this stamp of approval will not be considered and will be returned for proper resubmission.
 2. Review of shop drawings does not relieve Contractor of responsibility for errors and omissions in shop drawings. Contractor's responsible for meeting the requirements of the contract documents.
 3. Contractor is responsible for dimensions and sizes of equipment. Inform Engineer in writing of equipment differing from that shown.
 4. Prepare erection drawings when required by Engineer. Investigate thoroughly all conditions affecting work and indicate on drawing. Engineer will review erection drawings before work commences.

- J. Operating and Maintenance Manuals:
 - 1. Provide maintenance and operating manuals bound in 8-1/2" x 11" hardback, three-post binders. Manuals shall contain written instructions for each system, shop drawings, schematic drawings, equipment catalog cuts, manufacturer's instructions, manufacturer's warranties, and valve tag list.
 - 2. Arrange information in the following sequence: title of job, Owner, address, date of submittal, name of Contractor, name of Engineer, index, shop drawings, operating instruction, Contractor's purchase order numbers, supplier's name and address, date of start-up of each piece of equipment and valve tag list.
 - 3. Submit one (1) copy for review. Make required corrections, and submit two (2) record copies.
- K. Record Drawings:
 - 1. Provide Record Drawings as noted in Section 01 77 00.

1.8 PROTECTION AND STORAGE

- A. Provide warning lights, bracing, shoring, rails, guards and covers necessary to prevent damage or injury.
- B. Protect all equipment and materials, from damage by weather, entrance of water or dirt. Cap open piping, use plastic covers made for that purpose. Do not use rags or construction debris.
- C. Avoid damage to materials and equipment in place. Repair, or remove and replace damaged work and materials.
- D. Protect all surfaces from weld spatter, solder and cutting oil.
- E. Deliver equipment and materials to job site in original, unopened, labeled container. Store to prevent damage and injury. Store ferrous materials to prevent rusting. Store finished materials and equipment to prevent staining and discoloring. Store materials affected by condensation in warm dry areas. Provide heaters. Storage space on site and in building designated by Owner/Engineer.

END OF SECTION

SECTION 22 05 29 PROCESS SUPPORTS AND ANCHORS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following hangers and supports for mechanical system piping and equipment:
 - 1. Steel pipe hangers and supports.
 - 2. Trapeze pipe hangers.
 - 3. Metal framing systems.
 - 4. Thermal-hanger shield inserts.
 - 5. Fastener systems.
 - 6. Pipe positioning systems.
 - 7. Equipment supports.
- B. Related Sections include the following:
 - 1. Section 01 81 02 – Seismic Design Criteria
 - 2. Section 23 31 13 – Metal Ducts
 - 3. Section 40 23 39 – Process Piping - General

1.2 DEFINITIONS

- A. MSS: Manufacturers Standardization Society for the Valve and Fittings Industry Inc.
- B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

1.3 REFERENCES

- A. A. Manufacturer's Standardization Society (MSS):
 - 1. 1. SP-58 - Pipe Hangers and Supports - Materials, Design, and Manufacture.
 - 2. 2. SP-69 - Pipe Hangers and Supports - Selection and Application.

1.4 PERFORMANCE REQUIREMENTS

- A. Design supports for multiple pipes, capable of supporting combined weight of supported systems, system contents, and test water.
- B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- C. Design seismic-restraint hangers and supports for piping and equipment.
- D. Design Responsibility:
 - 1. The manufacturer of all pipe support systems, all pipe hangers systems, and preformed channel pipe support systems shall be considered the designer of the support systems.
 - 2. Prepare design calculations utilizing the design criteria included in these Specifications.
 - 3. Prepare detailed Shop Drawings illustrating the layout of the support system and identifying the components of the support system.
- E. Design Criteria:
 - 1. Include live, dead, and seismic loads associated with piping, valves, and appurtenances. Consider the content of the pipes in load calculations.
 - 2. Minimum Gauge Thickness: 12 gauge.

3. Allowable Stress of Channels:
 - a. Steel Channels: The lesser of 25,000 pounds per square inch, or 0.66 times yield stress of steel.
 - b. Stainless Steel Channels: 0.66 times the yield stress of the stainless steel alloy.
 4. Maximum Deflection: 1/240 of span.
 5. Allowable Column Loads: As recommended by manufacturer in published instruction for column's unsupported height and "K" value for calculating effective column length of not less than 1.0.
 6. Future Loads:
 - a. Support systems indicated on the Drawings may include spaces intended to accommodate future pipes.
 - b. Assume such spaces are occupied by 6-inch diameter ductile iron pipes. Only the number of pipes that would physically fit into the space need be considered.
 - c. Include the weight of the pipe contents in determining future loads. Assume pipe contents are water.
 7. Seismic Design Criteria: As specified in Section 01 81 02 as specified for mechanical equipment.
 8. Spacing of Supports: As required to comply with design requirements but not more than 5 feet.
- F. Supports below the top of walls of water bearing structures: Use Type 316 stainless steel for support system components.
1. Supports in other locations: Use hot-dipped galvanized components unless other materials are specifically indicated on the Drawings.

1.5 SUBMITTALS

- A. Product Data: For the following:
 1. Steel pipe hangers and supports.
 2. Thermal-hanger shield inserts.
 3. Pipe positioning systems.
 4. Non-metallic pipe hangers and supports.
- B. Shop Drawings:
 1. Show fabrication and installation details and include calculations for the following:
 - a. Trapeze pipe hangers. Include Product Data for components.
 - b. Metal framing systems. Include Product Data for components.
 - c. Equipment supports.
 2. Drawings of piping support system, locating each support, brace, hanger, guide, component and anchor. Identify support, hanger, guide, and anchor type by catalog number and Shop Drawing detail number.
 3. Revisions to support systems resulting from changes in related piping system layout or addition of flexible joints.
- C. Welding certificates.
- D. Contract Closeout Submittals: Maintenance information on piping support system.

1.6 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel and ASME Boiler and Pressure Vessel Code: Section IX.
- B. Welding: Qualify procedures and personnel according to the following:
 1. AWS D1.1, "Structural Welding Code--Steel."

2. AWS D1.2, "Structural Welding Code--Aluminum."
3. AWS D1.3, "Structural Welding Code--Sheet Steel."
4. AWS D1.4, "Structural Welding Code--Reinforcing Steel."
5. ASME Boiler and Pressure Vessel Code: Section IX.

- C. Design Preformed Channel Pipe Support System for Loads in Accordance with Applicable Provisions of:
1. AISC Manual of Steel Construction.
 2. AISI Cold-Formed Steel Design Manual.
- D. Product Standards:
1. Pipe Support Components: Conform to MSS SP-69.
 2. Pipe Support Materials: Conform to MSS SP-58.

1.7 DESIGN REQUIREMENTS

- A. General:
1. Contractor shall be responsible for the design, size, and location of process piping support systems in accordance with the requirements specified herein and in general conformance with the Drawings and the Design Details. The design shall be provided by a company specifically specializing in the design of support systems. The pipe support system design company shall demonstrate that they have at least five years of experience in pipe support design and have successfully completed at least three designs in the previous year. The Contractor shall provide Certification of Compliance with these requirements.
 1. Seismic Load: See Specification Section 01 81 02 and structural notes found on the Drawings.
 2. Piping smaller than 30": Supports are shown only where specific types and locations are required; additional pipe supports may be required.
 3. Piping 30" and larger: Support systems have been designed for piping shown.
 4. Meet requirements of MSS SP 58, MSS SP 69, and MSS SP 89.
- B. Pipe Support Systems:
1. Support Load: Dead loads imposed by weight of pipes filled with water, except air and gas pipes, plus insulation and capable of supporting combined weight of supported systems, system contents, and test water.
 2. Safety Factor: Minimum of 5.
 3. Maximum Support Spacing and Minimum Rod Size:
 - a. Steel or Ductile Iron Piping:

Pipe Size	Maximum Support/ Hanger Spacing	Minimum Rod Size Single Rod Hangers
1-inch & smaller	6 feet	1/4-inch
1-1/2-inch thru	8 feet	1/4-inch
2-1/2-inch		
3-inch & 4-inch	10 feet	3/8-inch
6-inch	12 feet	3/8-inch
8-inch	12 feet	1/2-inch
10-inch & 12-inch	14 feet	5/8-inch
14-inch	16 feet	3/4-inch
16-inch & 18-inch	16 feet	7/8-inch
20-inch	18 feet	1-inch

Pipe Size	Maximum Support/ Hanger Spacing	Minimum Rod Size Single Rod Hangers
24-inch	18 feet	1-1/4-inch
30-inch & larger	As shown on Drawings	As shown on Drawings

- b. Copper Piping:
Maximum Support Spacing: 2 feet less per size than listed for steel pipe, with 1" and smaller pipe supported every 5 feet.
Minimum Hanger Rod Sizing: Same as listed for steel pipe.
- c. Plastic and Fiberglass Piping:
Maximum support spacing: As recommended by manufacturer for flow temperature in pipe.
Minimum Hanger Rod Sizing: Same as listed for steel pipe.
- d. Stainless Steel Piping:

SST Pipe Size	Maximum Support/ Hanger Spacing	Minimum Rod Size Single Rod Hangers
1-inch thru 4-inch	8 feet	1/4-inch
6-inch	8 feet	3/8-inch
8-inch & 10-inch	10 feet	1/2-inch
12-inch	10 feet	1/2-inch
14-inch & 16-inch	12 feet	5/8-inch
18-inch & 20-inch	14 feet	3/4-inch
24-inch	14 feet	7/8-inch

- C. Framing Support System:
- Beams: Size such that beam stress does not exceed 25,000 psi and maximum deflection does not exceed 1/240 of span.
 - Column Members: Size in accordance with Manufacturer's recommended method.
 - Support Loads: Calculate using weight of pipes filled with water.
 - Maximum Spans:
 - Steel and Ductile Iron Pipe, 3" Diameter and Larger: 10-foot centers, unless otherwise shown.
 - Other Pipelines and Special Situations: May require supplementary hangers and supports.
 - Electrical Conduit Support: Include in design of framing support system.
- D. Anchoring Devices: Design, size, and space support anchoring devices, including anchor bolts, inserts, and other devices used to anchor support, to withstand shear and pullout loads imposed by loading and spacing on each particular support.
- E. Vertical Sway Bracing: 10-foot maximum centers, or as shown.
- F. Existing Support Systems: Use existing supports systems to support new piping only if Contractor can show that they are adequate for additional load, or if they are strengthened to support the additional load.

PART 2 - PRODUCTS

2.1 GENERAL

- A. When specified items are not available, fabricate pipe supports of correct material and to general configuration indicated by catalogs.
- B. Special support and hanger details are shown for cases where standard catalog supports are inapplicable.

C. Materials:

1. Wetted and Submerged: Stainless steel.
2. Atmospheric Exposed: Galvanized or painted steel in accordance with Section 09 90 00, Painting and Protective Coatings.
3. Corrosive Areas: FRP
4. Stainless Steel (Type 304 or 316): Use in all submerged locations, above water level but below top of wall inside water bearing structures, and where specifically indicated on the Drawings:
 - a. Shop-Fabricate: At the shop, perform pickling and passivation on all surfaces inside and out.
 - b. Field welding is prohibited.
5. Hot-Dip Galvanized Steel: Use in areas other than above and where specifically indicated on the Drawings. Hot-dip galvanize pipe supports after fabrication.
6. Plastic, aluminum, FRP, and other miscellaneous materials: Use where specifically indicated on the Drawings.
7. Non-metallic pipe support systems shall be used in areas where exposed to reactive chemicals such as chemical pumping area and chemical storage area.
8. Fiberglass Resin: Corrosion resistant premium grade vinylester.
9. Injection Molded Components: Polyurethane thermoplastics.
10. Flame Spread of Fiberglass:
 - a. Vinylester Fiberglass (Series VF): Class 1, ASTM E 84.
 - b. Polyurethane: V-O UL 94V.
11. Physical Properties of Fiberglass:

	Longitudinal	Transverse
Tensile Strength	37,500 pounds per square inch, (psi)	10,000 pounds per square inch, (psi)
Tensile Modules	3.0 X 10 ⁶ psi	1.0 X 10 ⁶ psi
Flexural Strength	37,500 psi	14,000 psi
Flexural Modules	2.0 X 10 ⁶ psi	1.0 X 10 ⁶ psi
Compressive Strength	37,500 psi	20,000 psi
Shear Strength	6,000 psi	5,500 psi
Izod Impact	30 foot-pounds per square inch	5 foot-pounds per square inch

12. Surface Veil: Fiberglass channel shall have polyester surface veil over 100 percent of the surface to provide protection against degradation from ultraviolet light.
13. Touch-Up Resin:
 - a. Manufacturers: One of the following or equal:
 - 1) Krylon, 7006-Satin Polyurethane Clear Finish.

2.2 MANUFACTURERS

- A. The following requirements apply to product selection:

1. 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.

2.3 STEEL PIPE HANGERS AND SUPPORTS

- A. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.
- B. Manufacturers:
 1. B-Line Systems, Inc.; a division of Cooper Industries.
 2. Empire Industries, Inc.
 3. ERICO/Michigan Hanger Co.
 4. Globe Pipe Hanger Products, Inc.
 5. Grinnell Corp.
 6. GS Metals Corp.
 7. National Pipe Hanger Corporation.
- C. Galvanized, Metallic Coatings: Pre-galvanized or hot dipped.
- D. Nonmetallic Coatings: Plastic coating, jacket, or liner.
- E. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion for support of bearing surface of piping.

2.4 TRAPEZE PIPE HANGERS

- A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural-steel shapes with MSS SP-58 hanger rods, nuts, saddles, and U-bolts.

2.5 METAL FRAMING SYSTEMS

- A. Description: MFMA-3, shop- or field-fabricated pipe-support assembly made of steel channels and other components.
- B. Manufacturers:
 1. B-Line Systems, Inc.; a division of Cooper Industries.
 2. Power-Strut Div.; Tyco International, Ltd.
 3. Thomas & Betts Corporation.
 4. Tolco Inc.
 5. Unistrut Corp.; Tyco International, Ltd.
- C. Coatings: Manufacturer's standard finish, unless bare metal surfaces are indicated.
- D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

2.6 THERMAL-HANGER SHIELD INSERTS

- A. Description: 100-psig- minimum, compressive-strength insulation insert encased in sheet metal shield.
- B. Manufacturers:
 1. Carpenter & Paterson, Inc.
 2. ERICO/Michigan Hanger Co.
 3. PHS Industries, Inc.

4. Pipe Shields, Inc.
5. Rilco Manufacturing Company, Inc.
6. Value Engineered Products, Inc.

- C. Insulation-Insert Material for Cold Piping: Water-repellent treated, ASTM C 533, Water-repellent treated, ASTM C 533, Type I calcium silicate or ASTM C 552, Type II cellular glass with vapor barrier.
- D. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate or ASTM C 552, Type II cellular glass.
- E. Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.
- F. Clevis or Band Hangers: Insert and shield shall cover lower 180° of pipe.
- G. Insert Length: Extend 2" beyond sheet metal shield for piping operating below ambient air temperature.

2.7 FASTENER SYSTEMS

- A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened Portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
 1. Manufacturers:
 - a. Hilti, Inc.
 - b. ITW Ramset/Red Head.
 - c. Masterset Fastening Systems, Inc.
 - d. MKT Fastening, LLC.
 - e. Powers Fasteners.
- B. Mechanical-Expansion Anchors: Insert-wedge-type stainless steel, for use in hardened Portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
 1. Manufacturers:
 - a. B-Line Systems, Inc.; a division of Cooper Industries.
 - b. Empire Industries, Inc.
 - c. Hilti, Inc.
 - d. ITW Ramset/Red Head.
 - e. MKT Fastening, LLC.
 - f. Powers Fasteners.

2.8 PIPE POSITIONING SYSTEMS

- A. Description: IAPMO PS 42, system of metal brackets, clips, and straps for positioning piping in pipe spaces for plumbing fixtures for commercial applications.
- B. Manufacturers:
 1. C & S Mfg. Corp.
 2. HOLDRITE Corp.; Hubbard Enterprises.
 3. Samco Stamping, Inc.

2.9 EQUIPMENT SUPPORTS

- A. Description: Welded, shop- or field-fabricated equipment support made from structural-steel shapes.

2.10 MISCELLANEOUS MATERIALS

- A. Structural Steel: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
 - 1. Properties: Nonstaining, noncorrosive, and nongaseous.
 - 2. Design Mix: 5000-psi, 28-day compressive strength.

2.11 PREFORMED CHANNEL PIPE SUPPORT SYSTEM

- A. Fabricate preformed channel pipe support system using, as a minimum, parts specified below and meeting the requirements specified under Design Criteria.
 - 1. Manufacturers: One of the following or equal:
 - a. Unistrut, Series P1000 or P1001; P5500 or P5501.
 - b. Allied Support Systems, Power Strut, Figure PS-200 or PS-200 2TS; PS-150 or PS-150 2TS.
 - c. B-Line Systems, Inc., Channel Type B22 or B22A; B12 or B12A.
- B. Preformed Channel Concrete Inserts: Minimum 12 inches long.
 - 1. Manufacturers: One of the following or equal:
 - a. Unistrut, Series P-3200.
 - b. Allied Support Systems, Figure 282.
 - c. B-Line Systems, Series B321.
- C. 90-Degree Angle Fittings:
 - 1. Manufacturers: One of the following or equal:
 - a. Unistrut, P1026.
 - b. Allied Support Systems, Power Strut, P603.
- D. Pipe Straps:
 - 1. For Pipes 8 Inches in Diameter and Smaller: Use 2-piece universal strap with slotted hex head screw and nut.
 - a. Manufacturers: One of the following or equal:
 - 1) Unistrut, Series P1109 through P1126.
 - 2) Allied Support Systems, PS1100.
 - 3) B-Line Systems, Inc., Series B2000.
 - 2. For Pipes Greater Than 8 Inches in Diameter: Unless different material is otherwise indicated on the Drawings use 1-piece 1 inch wide by 1/8 inch thick steel strap, hot-dip galvanized after fabrication.
 - 3. For Stainless Steel Pipes: Use type of strap required for the pipe sizes specified above, but use Type 316 stainless steel materials.
- E. Touch-Up Paint Galvanized Surfaces:
 - 1. Manufacturers: One of the following or equal:
 - a. Galvinox, Galvo-Weld.
- F. Touch-Up Paint for Painted Surfaces: Same formulation as factory paint.
- G. Hot-dip galvanize support system components after fabrication to required length and shape.
- H. Do not galvanize or paint stainless steel components.

2.12 NON-METALLIC PIPE SUPPORT SYSTEM

- A. Manufacturers:
 - 1. StrutTech, Redmond, Washington.
 - 2. Unistrut, Wayne, Michigan.
- B. Supply all materials from a single manufacturer with sole responsibility for the pipe support system.
- C. The supplied system, including pipe clamps, shall be interchangeable with industry standard 1-5/8 inch steel and fiberglass channel framing systems.
- D. Channel Framing:
 - 1. All channel framing shall be supplied with integral notches 1 inch on center.
 - 2. Locate notches on interior flange to prevent slippage of pipe clamps and fittings after installation.
- E. Pipe Clamps:
 - 1. Adjustable Type: Non-metallic and non-conductive.
 - 2. Fixed Type:
 - a. Pipe clamps for pipe less than 6 inches in diameter shall be non-metallic and non-conductive.
 - b. Pipe clamps for pipe equal to and greater than 6 inches in diameter shall be fiberglass.
- F. Channel Fittings:
 - 1. Make fittings and post bases from glass-filled polyurethane or polyester.
- G. Fasteners:
 - 1. Make fasteners from one of the following materials:
 - a. Glass-filled polyurethane.
 - b. Vinylester fiberglass.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install support systems in accordance with MSS SP 69, Pipe Hangers and Supports-Selection and Application and MSS SP 89, Pipe Hangers and Supports-Fabrication and Installation, unless shown otherwise.
- B. Support piping connections to equipment by pipe support and not by the equipment.
- C. Support large or heavy valves, fittings, and appurtenances independently of connected piping.
- D. Support no pipe from the pipe above it.
- E. Support pipe at changes in direction or in elevation, adjacent to flexible joints and couplings, and where shown.
- F. Do not install pipe supports and hangers in equipment access areas or bridge crane runs.
- G. Brace hanging pipes against horizontal movement by both longitudinal and lateral sway bracing.
- H. Install lateral supports for seismic loads at all changes in direction.

- I. Install pipe anchors where required to withstand expansion thrust loads and to direct and control thermal expansion.
- J. Repair mounting surfaces to original condition after attachments are made.

3.2 HANGER AND SUPPORT APPLICATIONS

- A. Specific hanger and support requirements are specified in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish.
- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- E. Use padded hangers for piping that is subject to scratching.
- F. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of non-insulated or insulated stationary pipes, NPS 1/2 to NPS 30.
 - 2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of 120 to 450 °F pipes, NPS 4 to NPS 16, requiring up to 4" of insulation.
 - 3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes, NPS 3/4 to NPS 24, requiring clamp flexibility and up to 4" of insulation.
 - 4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes, NPS 1/2 to NPS 24, if little or no insulation is required.
 - 5. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
 - 6. Adjustable Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of non-insulated stationary pipes, NPS 3/4 to NPS 8.
 - 7. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of non-insulated stationary pipes, NPS 1/2 to NPS 8.
 - 8. Adjustable Band Hangers (MSS Type 9): For suspension of non-insulated stationary pipes, NPS 1/2 to NPS 8.
 - 9. Adjustable Swivel-Ring Band Hangers (MSS Type 10): For suspension of non-insulated stationary pipes, NPS 1/2 to NPS 2.
 - 10. Split Pipe-Ring with or without Turnbuckle-Adjustment Hangers (MSS Type 11): For suspension of non-insulated stationary pipes, NPS 3/8 to NPS 8.
 - 11. Extension Hinged or 2-Bolt Split Pipe Clamps (MSS Type 12): For suspension of non-insulated stationary pipes, NPS 3/8 to NPS 3.
 - 12. U-Bolts (MSS Type 24): For support of heavy pipes, NPS 1/2 to NPS 30.
 - 13. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
 - 14. Pipe Saddle Supports (MSS Type 36): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and cast-iron floor flange.
 - 15. Pipe Stanchion Saddles (MSS Type 37): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and cast-iron floor flange and with U-bolt to retain pipe.
 - 16. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes, NPS 2-1/2 to NPS 36, if vertical adjustment is required, with steel pipe base stanchion support and cast-iron floor flange.

17. Single Pipe Rolls (MSS Type 41): For suspension of pipes, NPS 1 to NPS 30, from 2 rods if longitudinal movement caused by expansion and contraction might occur.
 18. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes, NPS 2-1/2 to NPS 20, from single rod if horizontal movement caused by expansion and contraction might occur.
 19. Complete Pipe Rolls (MSS Type 44): For support of pipes, NPS 2 to NPS 42, if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
 20. Pipe Roll and Plate Units (MSS Type 45): For support of pipes, NPS 2 to NPS 24, if small horizontal movement caused by expansion and contraction might occur and vertical adjustment is not necessary.
 21. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes, NPS 2 to NPS 30, if vertical and lateral adjustment during installation might be required in addition to expansion and contraction.
- G. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 20.
 2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers, NPS 3/4 to NPS 20, if longer ends are required for riser clamps.
- H. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6" for heavy loads.
 2. Steel Clevises (MSS Type 14): For 120 to 450 °F piping installations.
 3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
 4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
 5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 °F piping installations.
- I. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction to attach to top flange of structural shape.
 3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
 4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
 5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
 6. C-Clamps (MSS Type 23): For structural shapes.
 7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
 8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
 9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
 10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
 11. Malleable Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
 12. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:
 - a. Light (MSS Type 31): 750 lb.
 - b. Medium (MSS Type 32): 1500 lb.
 - c. Heavy (MSS Type 33): 3000 lb.

13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
 14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
 15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.
- J. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
 2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
 3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.
- K. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
 2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4".
 3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41 roll hanger with springs.
 4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
 5. Variable-Spring Hangers (MSS Type 51): Preset to indicated load and limit variability factor to 25% to absorb expansion and contraction of piping system from hanger.
 6. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25% to absorb expansion and contraction of piping system from base support.
 7. Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load and limit variability factor to 25% to absorb expansion and contraction of piping system from trapeze support.
 8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:
 - a. Horizontal (MSS Type 54): Mounted horizontally.
 - b. Vertical (MSS Type 55): Mounted vertically.
 - c. Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.
- L. Comply with MSS SP-69 for trapeze pipe hanger selections and applications that are not specified in piping system Sections.
- M. Comply with MFMA-102 for metal framing system selections and applications that are not specified in piping system Sections.
- N. Use mechanical-expansion anchors instead of building attachments where required in concrete construction.
- O. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.
- 3.3 HANGER AND SUPPORT INSTALLATION
- A. Steel Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

- B. Trapeze Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated trapeze pipe hangers.
 - 1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
 - 2. Field fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported. Weld steel according to AWS D1.1.
- C. Fiberglass Pipe Hanger Installation: Comply with applicable portions of MSS SP-69 and MSS SP-89. Install hangers and attachments as required to properly support piping from building structure.
- D. Metal Framing System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled metal framing systems.
- E. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- F. Fastener System Installation:
 - 1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4" thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool Manufacturer. Install fasteners according to powder-actuated tool Manufacturer's operating manual.
 - 2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to Manufacturer's written instructions.
- G. Pipe Positioning System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture.
- H. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.
- I. Equipment Support Installation: Fabricate from welded-structural-steel shapes.
- J. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- K. Install lateral bracing with pipe hangers and supports to prevent swaying.
- L. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
- M. Load Distribution: Install hangers and supports so piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- N. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.1 (for power piping) and ASME B31.9 (for building services piping) are not exceeded.
- O. Insulated Piping: Comply with the following:
 - 1. Attach clamps and spacers to piping.

- a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
 - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
 - c. Do not exceed pipe stress limits according to ASME B31.1 for power piping and ASME B31.9 for building services piping.
- 2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
- 3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180°.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
- 4. Shield Dimensions for Pipe: Not less than the following:
 - a. NPS 1/4 to NPS 3-1/2: 12" long and 0.048" thick.
 - b. NPS 4: 12" long and 0.06" thick.
 - c. NPS 5 and NPS 6: 18" long and 0.06" thick.
 - d. NPS 8 to NPS 14: 24" long and 0.075" thick.
 - e. NPS 16 to NPS 24: 24" long and 0.105" thick.
- 5. Pipes NPS 8 and Larger: Include wood inserts.
- 6. Insert Material: Length at least as long as protective shield.
- 7. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.4 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make smooth bearing surface.
- C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.5 METAL FABRICATIONS

- A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

3.6 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2".

3.7 PAINTING

- A. Paint exposed surfaces immediately after erecting hangers and supports as specified in Section 09 90 00, PROTECTIVE PAINTING AND COATINGS.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

SECTION 22 05 53 - MECHANICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Extent of mechanical identification work required by this section is indicated on drawings and/or specified in other sections.
- B. Types of identification devices specified in this section include the following:
 - 1. Painted Identification Materials.
 - 2. Equipment Labels.
 - 3. Plastic Pipe Markers.
 - 4. Plastic Tape.
 - 5. Underground-Type Plastic Line Marker.
 - 6. Valve Tags.
 - 7. Valve Schedule Frames.
 - 8. Engraved Plastic-Laminate Signs.

1.2 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of identification devices of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Codes and Standards:
 - 1. ANSI Standards: Comply with ANSI A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.

1.3 SUBMITTALS

- A. Product Data: Submit Manufacturer's technical product data and installation instructions for each identification material and device required.
- B. Schedules: Submit valve schedule for each piping system, typewritten and reproduced on 8-1/2" x 11" bond paper. Tabulate the valve number, piping system, system abbreviation (as shown on tag), location of valve (room or space), and variations for identification (if any). Mark valves which are intended for emergency shut-off and similar special uses, by special "flags", in margin of schedule. In addition to mounted copies, furnish extra copies for Maintenance Manuals as specified in Division 1.
- C. Maintenance Data: Include product data and schedules in maintenance manuals; in accordance with requirements of Division 01.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering mechanical identification materials which may be incorporated in the work include; but are not limited to, the following:
 - 1. Allen Systems, Inc.
 - 2. Brady (W.H.) Co.; Signmark Div.
 - 3. Industrial Safety Supply Co., Inc.
 - 4. Seton Name Plate Corp.

2.2 MECHANICAL IDENTIFICATION MATERIALS

- A. General: Provide Manufacturer's standard products of categories and types required for each application as referenced in other sections. Selection is Installer's option where more than a single type is specified for applications but provide single selection for each product category.

2.3 PAINTED IDENTIFICATION MATERIALS

- A. Stencils: Standard fiberboard stencils, prepared for required applications with letter sizes generally complying with recommendations of ANSI A13.1 for piping and similar applications, but not less than 1-1/4" high letters for ductwork and not less than 3/4" high letters for access door signs and similar operational instructions.
- B. Stencil Paint: Standard exterior type stenciling enamel; black, except as otherwise indicated; either brushing grade or pressurized spray-can form and grade.
- C. Identification Paint: Standard identification enamel of colors indicated or, if not otherwise indicated for piping systems, complying with ANSI A13.1 and/or Owner Selection for colors.
- D. See Section 09 90 00, PAINTING AND PROTECTIVE COATINGS.

2.4 EQUIPMENT LABELS

- A. Metal Labels for Equipment:
 1. Material and Thickness: Stainless steel, 0.025-inch (0.64-mm) minimum thickness, and having predrilled or stamped holes for attachment hardware.
 2. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch (64 by 19 mm).
 3. Minimum Letter Size: 1/4 inch (6.4 mm) for name of units if viewing distance is less than 24 inches (600 mm), 1/2 inch (13 mm) for viewing distances up to 72 inches (1830 mm), and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
 4. Fasteners: Stainless-steel rivets or self-tapping screws
 5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

2.5 PLASTIC PIPE MARKERS

- A. Snap-On Type: Provide Manufacturer's standard pre-printed, semi-rigid snap-on, color-coded pipe markers, complying with ANSI A13.1.
- B. Pressure-Sensitive Type: Provide Manufacturer's standard pre-printed, permanent adhesive, color-coded, pressure-sensitive vinyl pipe markers, complying with ANSI A13.1.
- C. Insulation: Furnish 1" thick molded fiberglass insulation with jacket for each plastic pipe marker to be installed on un-insulated pipes subjected to fluid temperatures of 125 °F (52 °C) or greater. Cut length to extend 2" beyond each end of plastic pipe marker.
 1. Small Pipes: For external diameters less than 6" (including insulation if any), provide full-band pipe markers, extending 360° around pipe at each location, fastened by one of the following methods:
 - a. Snap-on application of pre-tensioned semi-rigid plastic pipe marker.
 - b. Adhesive lap joint in pipe marker overlap.
 - c. Laminated or bonded application of pipe marker to pipe (or insulation).
 - d. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than 3/4" wide; full circle at both ends of pipe marker, tape lapped 1-1/2".

2. Large Pipes: For external diameters of 6" and larger (including insulation if any), provide either full-band or strip-type pipe markers, but not narrower than 3 times letter height (and of required length), fastened by one of the following methods:
 - a. Laminated or bonded application of pipe marker to pipe (or insulation).
 - b. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than 1-1/2" wide; full circle at both ends of pipe marker, tape lapped 3".
 - c. Trapped-to-pipe (or insulation) application of semi-rigid type, with Manufacturer's standard stainless steel bands.
 - D. Lettering: Manufacturer's standard pre-printed nomenclature which best describes piping system in each instance, as selected by Architect/Engineer in cases of variance with name as shown or specified.
 1. Arrows: Print each pipe marker with arrows indicating direction of flow, either integrally with piping system service lettering (to accommodate both directions), or as separate unit of plastic.
- 2.6 PLASTIC TAPE
- A. General: Provide Manufacturer's standard color-coded pressure-sensitive (self-adhesive) vinyl tape, not less than 3 mils thick.
 - B. Width: Provide 1-1/2" wide tape markers on pipes with outside diameters (including insulation, if any) of less than 6", 2-1/2" wide tape for larger pipes.
 - C. Color: Comply with ANSI A13.1, except where another color selection is indicated.
- 2.7 UNDERGROUND-TYPE PLASTIC LINE MARKERS
- A. General: Manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6" wide x 4 mils thick. Provide tape with printing which most accurately indicates type of service of buried pipe.
 - B. Provide multi-ply tape consisting of solid aluminum foil core between 2-layers of plastic tape.
- 2.8 VALVE TAGS
- A. Brass Valve Tags: Provide 19-gauge polished brass valve tags, with a stamp-engraved piping system abbreviation in 1/4" high letters and sequenced valve numbers 1/2" high, and with 5/32" hole for fastener.
 1. Provide 1-1/2" diameter tags, except as otherwise indicated.
 2. Provide size and shape as specified or scheduled for each piping system.
 3. Fill tag engraving with black enamel.
 - B. Plastic Laminate Valve Tags: Provide Manufacturer's standard 3/32" thick engraved plastic laminate valve tags, with piping system abbreviation in 1/4" high letters and sequenced valve numbers 1/2" high, and with 5/32" hole for fastener.
 1. Provide 1-1/2" sq. black tags with white lettering, except as otherwise indicated.
 2. Provide size, shape and color combination as specified or scheduled for each piping system.
 - C. Valve Tag Fasteners: Provide Manufacturer's standard solid brass chain (wire link or beaded type), or solid brass S-hooks of the sizes required for proper attachment of tags to valves, and manufactured specifically for that purpose.

- D. Access Panel Markers: Provide Manufacturer's standard 1/16" thick engraved plastic laminate access panel markers, with abbreviations and numbers corresponding to concealed valve. Include 1/8" center hole to allow attachment.

2.9 VALVE SCHEDULE FRAMES

- A. General: For each page of valve schedule, provide glazed display frame, with screws for removable mounting on masonry walls. Provide frames of finished hardwood or extruded aluminum, with SSB-grade sheet glass.

2.10 ENGRAVED PLASTIC-LAMINATE SIGNS

- A. General: Provide engraving stock melamine plastic laminate, complying with FS L-P-387, in the sizes and thicknesses indicated, engraved with engraver's standard letter style of the sizes and wording indicated, black with white core (letter color) except as otherwise indicated, punched for mechanical fastening except where adhesive mounting is necessary because of substrate.
- B. Thickness: 1/16" for units up to 20 sq. in. or 8" length; 1/8" for larger units.
- C. Fasteners: Self-tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate the substrate.

2.11 LETTERING AND GRAPHICS

- A. General: Coordinate names, abbreviations and other designations used in mechanical identification work, with corresponding designations shown, specified or scheduled. Provide numbers, lettering and wording as indicated or, if not otherwise indicated, as recommended by manufacturers or as required for proper identification and operation/maintenance of mechanical systems and equipment.
- B. Multiple Systems: Where multiple systems of same generic name are shown and specified, provide identification which indicates individual system number as well as service (as examples; Boiler No. 3, Air Supply No. 1H, Standpipe F12).

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

- A. Coordination: Where identification is to be applied to surfaces which require insulation, painting or other covering or finish including valve tags in finished mechanical spaces, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.

3.2 PREPARATION

- A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.3 EQUIPMENT LABEL INSTALLATION

- A. Install or permanently fasten labels on each major item of mechanical equipment.
- B. Locate equipment labels where accessible and visible.

3.4 PIPING SYSTEM IDENTIFICATION

- A. General: Install pipe markers of one of the following types on each system indicated to receive identification, and include arrows to show normal direction of flow:
1. Stenciled markers, including color-coded background band or rectangle, and contrasting lettering of black or white. Extend color band or rectangle 2" beyond ends of lettering.
 2. Stenciled markers, with lettering color complying with ANSI A13.1.
 3. Plastic pipe markers, with application system as indicated under "Materials" in this section. Install on pipe insulation segment where required for hot non-insulated pipes.
 4. Stenciled markers, black or white for best contrast, wherever continuous color-coded painting of piping is provided.
 5. Locate pipe markers and color bands as follows wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.
 - a. Near each valve and control device.
 - b. Near each branch, excluding short take-offs for fixtures and terminal units; mark each pipe at branch, where there could be question of flow pattern.
 - c. Near locations where pipes pass through walls or floors/ceilings, or enter non-accessible enclosures.
 - d. At access doors, manholes and similar access points which permit view of concealed piping.
 - e. Near major equipment items and other points of origination and termination.
 - f. Spaced intermediately at maximum spacing of 50' along each piping run, except reduce spacing to 25' in congested areas of piping and equipment.
 - g. On piping above removable acoustical ceilings, except omit intermediately spaced markers.

3.5 UNDERGROUND PIPING IDENTIFICATION

- A. General: During back-filling/top-soiling of each exterior underground piping system, install continuous underground-type plastic line marker, located directly over buried line at 6" to 8" below finished grade. Where multiple small lines are buried in common trench and do not exceed overall width of 16", install single line marker. For tile fields and similar installations, mark only edge pipe lines of field.

3.6 VALVE IDENTIFICATION

- A. General: Provide valve tag on every valve, cock and control device in each piping system; exclude check valves, valves within factory-fabricated equipment units, plumbing fixture faucets, convenience and lawn-watering hose bibs, and shut-off valves at plumbing fixtures, HVAC terminal devices and similar rough-in connections of end-use fixtures and units. List each tagged valve in valve schedule for each piping system.
- B. Mount valve schedule frames and schedules in machine rooms where indicated or, if not otherwise indicated, where directed by Contracting Officer.
- C. Where more than one major machine room is shown for project, install mounted valve schedule in each major machine room, and repeat only main valves which are to be operated in conjunction with operations of more than single machine room.

3.7 ADJUSTING AND CLEANING

- A. Adjusting: Relocate any mechanical identification device which has become visually blocked by work of this division or other divisions.

- B. Cleaning: Clean face of identification devices, and glass frames of valve charts.

3.8 EXTRA STOCK

- A. Furnish minimum of 5% extra stock of each mechanical identification material required, including additional numbered valve tags (not less than 3) for each piping system, additional piping system identification markers, and additional plastic laminate engraving blanks of assorted sizes.
- B. Where stenciled markers are provided, clean and retain stencils after completion of stenciling and include used stencils in extra stock, along with required stock of stenciling paints and applicators.

END OF SECTION

SECTION 22 11 16 - PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. The work required under this section includes all work necessary for a complete installation of domestic water piping inside the building to 5 feet outside the building, and sanitary waste piping to a point as indicated on the drawings.
- B. The work of this section is subject to the requirements of the Plumbing General Section.
- C. Related sections include:
 - 1. Section 22 13 16, Sanitary Waste and Vent Piping.

1.2 SUBMITTALS

- A. Submit schedule of pipe and fittings for each service.

1.3 CODES AND STANDARDS

- A. International Plumbing Code, 2012

PART 2 - PRODUCTS

2.1 GENERAL

- A. Refer to design drawings for approximate locations of pipe and for pipe size.
- B. Domestic Water Piping:
 - 1. Water piping within building:
 - a. 3 inch and smaller shall be copper tube, type "L" hard temper, ASTM.
 - 2. Piping below ground:
 - a. 2" and smaller type "K" soft temper; ASTM B-88.
- C. Sanitary Waste and Vent Piping:
 - 1. In addition see Specification Section 22 13 16 – SANITARY WASTE AND VENT PIPING.
 - 2. Schedule 40 PVC-DWV ASTM D-2665 using solvent cement ASTM D2564, for below slab and above slab.
 - 3. No-Hub Cast Iron meeting CISPI Standards for all above and/or below slab piping, as called for in the Drawings.
- D. Fittings - Domestic Water Piping:
 - 1. Wrought copper, solder type, ASTM B-75, ANSI B16.22
- E. Fittings - Sanitary Waste and Vent Piping:
 - 1. Below ground:
 - a. Schedule 40 PVC-DWV, ASTM D-2855 using solvent cement ASTM D-2564
- F. Unions:
 - 1. Solder unions shall be wrought copper, with copper ground joint. ASTM B75, ANSI B16.22.
 - 2. Di-electric, EPSO, 250 lb. WOG.
- G. Solder:

1. Solder Metal shall conform to ASTM B32-alloy grade 95TA: 95 percent tin, 5 percent antimony. Joints shall be made with approved solder containing not more than 0.2 percent lead.

H. Valves:

1. Approved Domestic manufacturers: Hammond, Kitz, Nibco, Apollo, Milwaukee, or approved equal. See Drawings for specific callouts referring to Specification Section 40 23 43 – PROCESS VALVES.
2. Valves should be installed according to manufacturer's recommendations.
3. Valves 2-1/2" inches and smaller shall be equal to Nibco T-585-70, full port ball type with bronze body, chrome plated ball and bronze threaded ends, 600 psi WOG or Nibco S-585-70 in copper lines.

PART 3 - EXECUTION

3.1 GENERAL

- A. All piping shall be routed to conserve building space, be coordinated with items installed by other trades and not interfere with access to or operation of the facility.
- B. Provide roof flashings for pipe penetrations through roof, to be installed by roofing contractor. Install roof drains as recommended by manufacturer and such that piping does not carry weight of roof drain.
- C. Water piping within building shall be size indicated on plans and risers. In the event no size is shown, pipe size or size required by the Plumbing Code. Piping shall be sloped toward a system drain and toward outlets, to provide for system drain-down. Install piping to prevent direct contact between ferrous and non-ferrous materials. Allow flexibility for expansion in piping.
- D. All water piping within building shall be installed on the interior side of building envelope insulation, except where installed underslab. Where installed in attic locations piping shall be insulated and installed low to trusses/structure with the envelope insulation installed on top of the piping. A poly vapor barrier shall be secured over the piping and under the building insulation. Where it is not physically possible to install the piping within the building thermal envelope, the piping shall be fitted with electric heat tracing for freeze protection. Interior building piping shall be insulated.
- E. Domestic water piping system shall be tested with potable water at a pressure of 125 psig or 25 psig above design working pressure, whichever is greater for 12 hours. Test shall be conducted with plumbing inspector unless approved otherwise in writing.
- F. Water distribution piping shall be disinfected prior to occupancy or system start-up with a chlorine solution 50 ppm. Allow system to stand for six hours minimum; then exercise all valves to ensure treatment of all branches and components. System shall be flushed with potable water after disinfection and prior to placement into service.
- G. Sanitary waste and vent piping shall be tested in accordance with water and air tests as specified in the International Plumbing Code, in addition to any tests required by the local plumbing official. (10 feet of head with no apparent leaks. Hold for 30 minutes minimum). Flush all gravity piping including floor drains and roof drains prior to turning over to the Owner.

3.2 PREPARATION

- A. All pipe shall be cut square. Ream pipe and tube ends and remove burrs. Clean the ends of pipes to remove oil, grease and oxides.
- B. Prepare piping connections to equipment with flanges or unions.
- C. All soldered piping and equipment connections shall be properly prepared in accordance with good piping practice. Apply a thin layer of flux to only the male tubing. Rotate into the fitting with one or two revolutions.
- D. Where PVC is connected to hubless cast iron the connection must be made with special coupling press to compensate for differences in outside diameters of the two materials.

3.3 INSTALLATION

- A. Domestic Water Piping:
 - 1. Route piping in orderly manner, plumb and parallel to building structure, and maintain gradient.
 - 2. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
 - 3. Provide clearance for installation of insulation and access to valves and fittings.
 - 4. Provide access where valves and fittings are not exposed.
 - 5. Install valves with stems upright or horizontal. Provide drain valves at low points in systems.
 - 6. Test cold water piping before being insulated, or concealed in walls or ceiling.
- B. Sanitary Waste and Vent Piping:
 - 1. Horizontal soil, waste and drainage lines within building shall have a minimum uniform slope of 1/8 inch per foot on 4 inch and larger, and 1/4 inch per foot on lines 3 inch and smaller.
 - 2. Turns in sanitary, soil, and drain piping shall be made using 45 degree elbows, wyes, quarter-, eighth-, or sixteenth bends, or other bends approved by the Plumbing Code.
 - 3. Do not use sanitary tees or crosses except where discharging from horizontal to vertical.
 - 4. Make changes in pipe sizes with reducing fittings and recessed reducers. Do not reduce line size in direction of flow.
 - 5. Provide cleanouts in all horizontal turns in waste piping greater than 45 degrees.
 - 6. Provide deep seal traps on all floor drains, and trap primers where required by code or as indicated on drawings.
 - 7. Indirect waste lines dumping into floor or hub drains shall maintain a 2-inch air gap between the end of the waste line and the rim of the floor or hub drain.

3.4 APPLICATION

- A. Install unions downstream of valves and at equipment or apparatus connections. Install dielectric unions where joining dissimilar materials.
- B. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- C. Install brackets at cast iron no hub cleanouts to protect the integrity of the joint.

END OF SECTION

SECTION 22 13 16 - SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 1. Pipe, tube, and fittings.
 2. Specialty pipe fittings.
 3. Encasement for underground metal piping.

1.2 PERFORMANCE REQUIREMENTS

- A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:
 1. Soil, Waste, and Vent Piping: 10-foot head of water (30 kPa).

1.3 SUBMITTALS

- A. Product Data: For each type of pipe and product indicated.

1.4 QUALITY ASSURANCE

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

1.5 PROJECT CONDITIONS

- A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
 1. Notify Owner no fewer than two days in advance of proposed interruption of sanitary waste service.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. Refer to drawings for where different pipe materials are to be installed.

2.2 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 74, Service classes.
- B. Gaskets: ASTM C 564, rubber.
- C. Calking Materials: ASTM B 29, pure lead and oakum or hemp fiber.

2.3 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 888 or CISPI 301.

- B. Solvent Stack Fittings: ASME B16.45 or ASSE 1043, hubless, cast-iron aerator and de-aerator drainage fittings.
- C. CISPI, Hubless-Piping Couplings:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ANACO-Husky.
 - b. Dallas Specialty & Mfg. Co.
 - c. Fernco Inc.
 - d. Matco-Norca, Inc.
 - e. MIFAB, Inc.
 - f. Mission Rubber Company; a division of MCP Industries, Inc.
 - g. Stant.
 - h. Tyler Pipe.
 - 2. Standards: ASTM C 1277 and CISPI 310.
 - 3. Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

2.4 PVC PIPE AND FITTINGS

- A. Solid-Wall PVC Pipe: ASTM D 2665, drain, waste, and vent.
- B. Cellular-Core PVC Pipe: ASTM F 891, Schedule 40.
- C. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.
- D. Adhesive Primer: ASTM F 656.
- E. Solvent Cement: ASTM D 2564.

2.5 SPECIALTY PIPE FITTINGS

- A. Transition Couplings:
 - 1. General Requirements: Fitting or device for joining piping with small differences in OD's or of different materials. Include end connections same size as and compatible with pipes to be joined.
 - 2. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
 - 3. Shielded, Nonpressure Transition Couplings:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1). Cascade Waterworks Mfg. Co.
 - 2). Mission Rubber Company; a division of MCP Industries, Inc.
 - b. Standard: ASTM C 1460.
 - c. Description: Elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
- B. Dielectric Fittings:
 - 1. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

2.6 ENCASEMENT FOR UNDERGROUND METAL PIPING

- A. Standard: ASTM A 674 or AWWA C105/A 21.5.
- B. Material: Linear low-density polyethylene film of 0.008-inch (0.20-mm) or high-density, cross-laminated polyethylene film of 0.004-inch (0.10-mm) minimum thickness.
- C. Form: tube.

PART 3 - EXECUTION

3.1 EARTH MOVING

- A. Comply with requirements for excavating, trenching, and backfilling specified in Division 31.

3.2 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping to allow application of insulation.
- J. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.
- K. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

- L. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:
 - 1. Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 (DN 80) and smaller; 1 percent downward in direction of flow for piping NPS 4 (DN 100) and larger.
 - 2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.
 - 3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.
 - M. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
 - 1. Install encasement on underground piping according to ASTM A 674 or AWWA C105/A 21.5.
 - N. Install aboveground PVC piping according to ASTM D 2665.
 - O. Install underground PVC piping according to ASTM D 2321.
 - P. Install engineered soil and waste drainage and vent piping systems as follows:
 - 1. Combination Waste and Vent: Comply with standards of authorities having jurisdiction.
 - 2. Solvent Drainage System: Comply with ASSE 1043 and solvent fitting manufacturer's written installation instructions.
 - 3. Reduced-Size Venting: Comply with standards of authorities having jurisdiction.
 - Q. Plumbing Specialties:
 - 1. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary drainage gravity-flow piping. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping.
 - R. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.
 - S. Install sleeves for piping penetrations of walls, ceilings, and floors
 - T. Install sleeve seals for piping penetrations of concrete walls and slabs.
 - U. Install escutcheons for piping penetrations of walls, ceilings, and floors.
- 3.3 JOINT CONSTRUCTION
- A. Join hub-and-spigot, cast-iron soil piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.
 - B. Join hub-and-spigot, cast-iron soil piping with calked joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for lead-and-oakum calked joints.
 - C. Plastic, Nonpressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - 2. PVC Piping: Join according to ASTM D 2855 and ASTM D 2665 Appendixes.
- 3.4 SPECIALTY PIPE FITTING INSTALLATION
- A. Transition Couplings:
 - 1. Install transition couplings at joints of piping with small differences in OD's.

2. In Drainage Piping: nonpressure transition couplings.

3.5 HANGER AND SUPPORT INSTALLATION

- A. Comply with requirements for pipe hanger and support devices and installation specified in Division 23 Section "Hangers and Supports for Plumbing Piping and Equipment."
 1. Install galvanized steel pipe hangers for horizontal piping in noncorrosive environments.
 2. Install individual, straight, horizontal piping runs:
 - a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.
 - b. Longer Than 100 Feet (30 m): MSS Type 43, adjustable roller hangers.
 - c. Longer Than 100 Feet (30 m) if Indicated: MSS Type 49, spring cushion rolls.
 3. Multiple, Straight, Horizontal Piping Runs 100 Feet (30 m) or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
 4. Base of Vertical Piping: MSS Type 52, spring hangers.
- B. Support horizontal piping and tubing within 12 inches (300 mm) of each fitting and coupling.
- C. Support vertical piping and tubing at base and at each floor.
- D. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch (10-mm) minimum rods.
- E. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:
 1. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 60 inches (1500 mm) with 3/8-inch (10-mm) rod.
 2. NPS 3 (DN 80): 60 inches (1500 mm) with 1/2-inch (13-mm) rod.
 3. NPS 4 and NPS 5 (DN 100 and DN 125): 60 inches (1500 mm) with 5/8-inch (16-mm) rod.
 4. NPS 6 and NPS 8 (DN 150 and DN 200): 60 inches (1500 mm) with 3/4-inch (19-mm) rod.
 5. NPS 10 and NPS 12 (DN 250 and DN 300): 60 inches (1500 mm) with 7/8-inch (22-mm) rod.
 6. Spacing for 10-foot (3-m) lengths may be increased to 10 feet (3 m). Spacing for fittings is limited to 60 inches (1500 mm).
- F. Install supports for vertical cast-iron soil piping every 15 feet (4.5 m).
- G. Install hangers for PVC piping with the following maximum horizontal spacing and minimum rod diameters:
 1. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 48 inches (1200 mm) with 3/8-inch (10-mm) rod.
 2. NPS 3 (DN 80): 48 inches (1200 mm) with 1/2-inch (13-mm) rod.
 3. NPS 4 and NPS 5 (DN 100 and DN 125): 48 inches (1200 mm) with 5/8-inch (16-mm) rod.
 4. NPS 6 and NPS 8 (DN 150 and DN 200): 48 inches (1200 mm) with 3/4-inch (19-mm) rod.
 5. NPS 10 and NPS 12 (DN 250 and DN 300): 48 inches (1200 mm) with 7/8-inch (22-mm) rod.
- H. Install supports for vertical PVC piping every 48 inches (1200 mm).
- I. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.6 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.
- C. Connect drainage and vent piping to the following:
 - 1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
 - 2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
 - 3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
 - 4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.
 - 5. Equipment: Connect drainage piping as indicated. Provide shutoff valve if indicated and union for each connection. Use flanges instead of unions for connections NPS 2-1/2 (DN 65) and larger.
- D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.
- E. Make connections according to the following unless otherwise indicated:
 - 1. Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
 - 2. Install flanges, in piping NPS 2-1/2 (DN 65) and larger, adjacent to flanged valves and at final connection to each piece of equipment.

3.7 IDENTIFICATION

- A. Identify exposed sanitary waste and vent piping. Comply with requirements for identification specified in Division 22 Section "Identification for Plumbing Piping and Equipment."

3.8 FIELD QUALITY CONTROL

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
 - 1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
 - 2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
- B. Re-inspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for re-inspection.
- C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
- D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
 - 1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.

2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water (30 kPa). From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg (250 Pa). Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

3.9 CLEANING AND PROTECTION

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- C. Place plugs in ends of uncompleted piping at end of day and when work stops.
- D. Exposed PVC Piping: Protect plumbing vents exposed to sunlight with two coats of water-based latex paint.

3.10 PIPING SCHEDULE

- A. Refer to drawings for pipe material requirements.

END OF SECTION

SECTION 22 40 00 - PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This specification describes the requirements for plumbing fixtures, related components and their installation.

1.2 SUBMITTALS

- A. Submittals shall include manufacturer's data sheets and dimensional information on all fixtures and accessories according to Section Plumbing General.
- B. Format shall include a schedule of the fixtures submitted including identification number of each item, such as "WC01 Water Closet", and list of each component and accessory of the fixture, including manufacturer's model number. This schedule must be included in the front of the submittal booklet.

1.3 CODES AND STANDARDS

- A. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities"; Public Law 90-480, "Architectural Barriers Act"; and Public Law 101-336, "Americans with Disabilities Act"; about plumbing fixtures for people with disabilities.
- B. Regulatory Requirements: Comply with requirements in U.S. Architectural & Transportation Barriers Compliance Board's "Uniform Federal Accessibility Standards (UFAS), 1985-494-187" about plumbing fixtures for people with disabilities.
- C. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy Act," about water flow and consumption rates for plumbing fixtures.
- D. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.
- E. Comply with the following applicable standards and other requirements specified for plumbing fixtures:
 - 1. Enameled, Cast-Iron Fixtures: ASME A112.19.1M.
 - 2. Hand Sinks: NSF 2 construction.
 - 3. Vitreous-China Fixtures: ASME A112.19.2M.
 - 4. Water-Closet, Flush Valve, Tank Trim: ASME A112.19.5.
- F. Comply with the following applicable standards and other requirements specified for lavatory and sink faucets:
 - 1. Faucets: ASME A112.18.1M.
 - 2. Integral, Atmospheric Vacuum Breakers: ASSE 1001.
 - 3. NSF Materials: NSF 61.
 - 4. Pipe Threads: ASME B1.20.1.
 - 5. Supply and Drain Fittings: ASME A112.18.1M.
- G. Comply with the following applicable standards and other requirements specified for miscellaneous fittings:
 - 1. Atmospheric Vacuum Breakers: ASSE 1001.
 - 2. Brass and Copper Supplies: ASME A112.18.1M.

3. Manual-Operation Flushometers: ASSE 1037.
 4. Tubular Brass Drainage Fittings and Piping: ASME A112.18.1M.
- H. Comply with the following applicable standards and other requirements specified for miscellaneous components:
1. Hose-Coupling Threads: ASME B1.20.7.
 2. Off-Floor Fixture Supports: ASME A112.6.1M.
 3. Pipe Threads: ASME B1.20.1.
 4. Plastic Toilet Seats: ANSI Z124.5.
 5. Supply and Drain Protective Shielding Guards: ICC A117.1.
- I. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.
- J. ARI Standard: Comply with ARI 1010, "Self-Contained, Mechanically Refrigerated Drinking-Water Coolers," for water coolers and with ARI's "Directory of Certified Drinking Water Coolers" for type and style classifications.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Vitreous ware shall be white, regular section, of weight required, free from cracks, flaws, blisters, crazes or other defects. Provide with mounting brackets for wall mounted fixtures unless floor carriers are indicated.
- B. Stainless steel shall have machine ground finish. Decks and sink compartment sides shall be buffed. Exposed surfaces shall have no. 4 satin finish. Interior surfaces shall be deadened. Exposed metal parts shall be chromium plated and protected during construction by a coat of grease.
- C. Closet and urinal carriers shall have tapered thread face plate, plastic coupling with test cap, and neoprene rubber gasket. Lavatory, sink and urinal carriers shall have rectangular structural steel uprights. Carriers shall have necessary accessories for proper installation.
- D. Water closets and urinals shall have bolt caps.
- E. Seats shall be white, solid plastic, with internal check and molded stainless steel hinge without visible metal parts, except as hereinafter specified.
- F. Chromium plated traps shall be brass with chromium plated nipple to wall and escutcheon.
- G. Fittings and accessories specified designate type only; provide modifications to make fittings work properly with fixture and piping.
- H. Provide necessary tailpiece and shanks.

2.2 FIXTURES

- A. Provide fixtures, in complete working order, as described in the Basis of Design Schedule.

2.3 ACCEPTABLE MANUFACTURERS

- A. Fixtures, Vitreous China - American Standard, Crane, Eljer, Kohler, Toto

- B. Fixtures, Stainless Steel - Just, Elkay, Advance Tabco, Amtekco Industries
- C. Toilet Seats - Olsonite, Sperzel, Church, Beneke, Bemis, Toto
- D. Faucets - T&S Brass, Speakman, Chicago, Symmons, Eljer, Delta, Toto
- E. Trim, Chromed Brass - McGuire, Sanitary Dash, Bridgeport

PART 3 - EXECUTION

3.1 GENERAL

- A. Verify all dimensions by field measurements. Verify that all plumbing fixtures are installed in accordance with pertinent codes and regulations and reference standards.
- B. Verify location of rough-in for potable water and waste piping.
- C. Examine walls, floors, and millwork for conditions suitable for fixture installation.
- D. Carriers shall have short feet. Lavatory carriers shall have concealed arms. Bolt carrier feet to the floor with 2 inch bolts and anchors.

3.2 INSTALLATION

- A. Install plumbing fixture level and plumb, in accordance with fixture manufacturer's published literature, rough-in drawings, codes regulations, and reference standards.
- B. Fasten plumbing fixtures securely to supports or building structure. Rigidly support water supplies behind or within wall constriction.
- C. Provide stop valve in the water supply to each fixture in an accessible location.
- D. Connect fixtures to water supply with copper or brass (no steel).
- E. Each fixture and piece of equipment requiring connection to drainage system to have separate traps installed as close to fixture as possible, except fixtures with integral traps.
- F. Provide iron or steel backing for all wall mounted fixtures (or wood backing only if building structure is wood).
- G. Provide escutcheons at each wall, floor and ceiling penetration in exposed finished locations and within cabinets and millwork.
- H. Apply SCP3154 primer and General Electric Co.'s No. 1702 silicone sanitary sealant around plumbing fixtures to conceal voids at wall and contact points of fixture after walls have been painted. Match sealant color to fixture color.
- I. Apply SCP3154 primer and General Electric Co.'s Silpruf Sealant on plain concrete walls.
- J. Floor mounted water closets to be 12 inch rough-in (except special fixtures).

3.3 TESTING AND QUALITY CONTROL

- A. Inspect each unit for damage. Replace damaged fixtures.

- B. Test fixtures to demonstrate operation. Replace malfunctioning units and retest.
- C. Adjust water pressure at faucets, shower valves, and flush valves to provide proper flow, and temperature.
- D. Replace washers of leaking or dripping faucets and stops. Clean fixtures, trim, and strainers using manufacturer's recommended cleaning methods and materials.
- E. Adjust fixture flow regulators for proper flow and stream height.
- F. Adjust water-cooler temperature settings.

3.4 CLEANING

- A. Clean fixtures, trim, and strainers using manufacturer's recommended cleaning methods and materials. Remove labels.
- B. Remove faucet spouts and strains, remove sediment and debris, and reinstall spouts and strainers.

3.5 PROTECTION

- A. Provide protection covering for installed fixtures, water coolers, and trim.

3.6 MOUNTING HEIGHTS SCHEDULE:

<u>Fixture</u>	<u>Mounting Height</u>
Lavatory or Sink	31 inches floor to rim (34 inches for ADA Compliant)
Water Closet	15 inches floor to rim (17 inches for ADA Compliant)

END OF SECTION

DIVISION 23

HVAC

SECTION 23 01 00 - MECHANICAL GENERAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide equipment, labor, material, etc., required to make a complete working installation as shown or as specified.
- B. Equipment and materials used in the work shall be:
 - 1. In accordance with the contract documents.
 - 2. The best quality and grade for the use intended.
 - 3. New and unused.
 - 4. The manufacturer's latest standard or current model.
- C. All equipment and method shall be installed and connected in accordance with the best engineering practices and in accordance with the manufacturer's recommendations.
- D. Mechanical work includes, but is not limited to:
 - 1. Make arrangements with local utility company for services as shown or specified.
 - 2. Obtain all permits and inspections including: Building permits and health department permits.
 - 3. Disconnect, remove and re-install mechanical services located on or crossing through contract limits, above or below grade, obstructing construction of project or conflicting with completed project or any applicable codes.
 - 4. Modify, extend or tie-into existing mechanical services or systems.
 - 5. Complete insulation on piping, ductwork and equipment.
 - 6. Complete the packaged air conditioning system.
 - 7. Complete the ductwork.
 - 8. Complete the casing and plenums.
 - 9. Complete the heating systems.
 - 10. Complete the ventilating systems.
 - 11. Install devices furnished by the temperature controls sub- contractor if applicable.
 - 12. Testing and Balancing will be by an independent agency paid for by this contractor.
 - 13. Provide vibration isolation devices for all rotating or reciprocating equipment and piping connected to that equipment.
 - 14. Provide roofing including flashing, and counter flashing for roof mounted equipment; roof penetrations and supports for work in this Division, unless noted otherwise.

1.2 UTILITY CONNECTIONS:

- A. Arrange with local utility companies for utility service connections, taps, meters and installation. Pay all fees and charges (if any) necessary for the utility services shown on the drawings or listed in the specifications.
- B. It is the responsibility of the Contractor to re-confirm with the Utility Companies, prior to bidding, that locations, arrangements, line sizes, pressures, interruptions, shut downs, etc. are in accordance with their regulations and requirements.
- C. If the utility company requirements are at variance with these drawings and specifications, this Contractor shall include the utility company requirements in his work without additional cost to the Owner.

- D. Obtain from Utility Company any additional charges for service of type, size and location called for. Include charges in bid to be paid by Contractor to appropriate party. Provide payment of these charges so as to allow logical progression of construction and avoid delay of completion.
- E. Should cost above not be available prior to bid, submit with bid a letter signed by responsible Utility Company personnel stating that cost is not available. Prime Contractor shall submit letter with his bid to Owner.
- F. Furnish with shop drawings a signed document from each utility company describing location and type of service to be supplied and requirements for service. Document shall be signed by the appropriate responsible representative of the respective utility company.

1.3 WORK NOT INCLUDED

- A. Finish painting of piping, ductwork or equipment.
- B. Electrical wiring and conduits shown on the electrical drawings.
- C. Asbestos removal.

1.4 RELATED WORK SPECIFIED ELSEWHERE

- A. Electrical: Division 26.
- B. Openings: Division 08.

1.5 REQUIREMENTS OF REGULATORY AGENCIES

- A. Obtain and pay for all permits required for the work. Comply with all ordinances pertaining to work described herein.
- B. Install the work under this Division in accordance with drawings and specifications and the standards and codes (latest edition) that apply to this work. In the event of a conflict, install work in accordance with the most stringent code requirements determined by Engineer.
- C. Arrange, pay for and complete work to pass required tests by agencies having authority over work. Deliver to Engineer Certificates of Inspection and approval issued by authorities.

1.6 QUALIFICATION OF CONTRACTOR

- A. Has completed minimum two projects same size and scope in past five (5) years.
- B. This qualification applies to Sub-Contractors.
- C. Use workmen experienced in their respective trade. Submit qualifications of Superintendent for review.
- D. Owner reserves right to reject bid of any Contractor failing to meet these qualifications.

1.7 GENERAL JOB REQUIREMENTS

- A. Drawings and Specifications:
 - 1. Drawings and specifications are complementary. Work called for by one is binding as if called for by both.

2. Drawings are drawn to a small scale and are diagrammatic only. The drawings indicate size and general arrangement of equipment.
 3. Do not scale drawings for exact locations. Refer to dimensional plans. Field measurements take precedence.
- B. Provide all necessary offsets, elbows and fittings in ductwork and piping as required to avoid conflict with work of other trades. Maintain proper headroom and clear passageways to allow adequate access and working clearances for equipment dampers, valves, etc. This shall be done at no additional cost to the Owner.
- C. Visit to Site/Work in other Division:
1. Examine not only the plans and specifications for this Division, but plans and specifications of the other Divisions of work and visit the site to become acquainted with existing conditions. Execution of Contract is evidence that Contractor has examined all drawings and specifications, and that all conditions which have a bearing in any way on the manner of installing the work in this Division are known. Later claims for labor and materials required due to difficulties encountered will not be recognized.
- D. Underground Utilities/Concealed Utilities:
1. All utilities and services, whether shown on the drawings or not, shall be suitably protected and maintained, and any damages thereto shall be promptly repaired. Owner shall be advised immediately of any damages sustained. If any extra expense is incurred due to the existence of buried utilities not shown on the drawings, or the location of which is not made known to the Contractor, the contract price shall be adjusted in accordance with the General Conditions. The Contractor shall advise the Owner three (3) days in advance of any operation which could possibly disrupt any underground utility. The Contractor shall utilize locator services to mark any underground utilities in the area he is working in, and shall make any other measure deemed necessary to avoid utility disruption.
- E. Definitions:
1. Concealed: Materials or systems not visible. Work installed above a ceiling, furred behind a wall or enclosed in a chase.
 2. Exposed: Materials or systems that is visible. Work installed in a room without a ceiling. Work not enclosed by walls.
 3. Provide: Furnish, install and make complete.
 4. Install: Receive, unload, move into place, and make connections.
 5. Work: Materials completely installed and connected.
 6. ADC: Air Diffusion Council.
 7. AGA: American Gas Association.
 8. AMCA: Air Movement and Control Association.
 9. ANSI: American National Standard Institute.
 10. API: American Petroleum Institute.
 11. ARI: American Refrigeration Institute.
 12. ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers.
 13. ASME: American Society of Mechanical Engineers.
 14. ASTM: American Society of Testing Materials.
 15. AWS: American Welding Society.
 16. FM: Association of Factory Mutual Fire Insurance Company.
 17. International: Building Code, Gas Code, Mechanical Code, Plumbing Code.
 18. MSS: Manufacturer's Standard Society of the Valve and Fittings Industry, Inc.
 19. NEC: National Electrical Code.
 20. NEMA: National Electrical Manufacturer's Association.
 21. NFPA: National Fire Protection Association.
 22. NRCA: National Roofing Contractors Association.
 23. NSF: National Sanitation Foundation.

- 24. OSHA: Occupational Safety and Health Act.
- 25. PDI: Plumbing Drainage Institute.
- 26. PFMA: Power Fan Manufacturers Association.
- 27. SMACNA: Sheet Metal and Air Conditioning Contractors National Association.
- 28. UL: Underwriters Laboratories.

F. Workmanship, Warranty and Acceptance:

- 1. Work under this Division shall be first class with emphasis on neatness and workmanship.
- 2. Install work using competent mechanics, under supervision of foreman, all duly certified by local authorities. Installation subject to Engineer's observation, final approval, and acceptance. Engineer may reject unsuitable work.
- 3. Furnish Engineer written warranty, stating that if workmanship and/or materials executed under this Division are proven defective within one (1) year after final acceptance, such defects and other work damaged will be repaired and/or replaced.
- 4. In event that project is occupied or system placed in operation in several phases at Owner's request, warranty will begin on date each system or item of equipment is accepted by Owner.

G. Observations of Work and Demonstration of Operation:

- 1. When observations are scheduled, provide sufficient personnel to expedite removal of access doors, cover plates, manholes covers, etc.
- 2. Contractor to assist Engineer in demonstration of operation of new systems to satisfaction of Owner. Contractor to have manpower available for demonstration of systems where requested by Owner.

H. Materials and Substitutions:

- 1. All materials shall be new. All materials and equipment, for which a UL Standard, an AGA approval, an AWWA standard, FM listing or ASME requirements is established, shall be so approved and labeled or stamped.
- 2. Wherever in these specifications products are specified by manufacturer's name, bids shall be based on the named products. Where more than one manufacturer's name is mentioned, the one first listed establishes the standard for that product. If the bidder desires to submit a product of a manufacturer other than listed first, it must be the equivalent of the one listed first.
- 3. The drawings are based on the use of products specified and listed first. If any revision in piping, ductwork, conduit work, foundations, anchor bolts, connections, etc., is required by other named products or approved substitutions, it shall be the Contractor's responsibility to make such revisions at no additional expense to the Owner.
- 4. If any bidder desires to submit products of manufacturers not listed, he may submit a request for prior approval to the Engineer no later than 10 days prior to the bid date. If the Engineer decides to accept the manufacturers, they will be listed as "Approved" by written addendum.
- 5. If the manufacturers are not listed as approved either by addendum or in the specifications, they will not be accepted.

I. Shop and Erection Drawings:

- 1. Submit complete shop drawings for all materials and equipment to Engineer for review within based on the contract. Shop drawings shall be submitted on a timely basis to allow adequate lead time for review, resubmission if necessary, manufacture and delivery to allow access of material to project at correct time based on schedule established by Engineer/Contractor. On each shop drawing include the specification section that applies to that submittal. Include complete descriptive data with dimensions, operating data and weight for each item of equipment. Carefully examine shop drawings to assure compliance with drawings and specifications prior to submittal to Engineer. Shop drawings and submittals shall bear the stamp of approval of the Contractor as evidence

that the drawings have been checked by him. Drawing submitted without this stamp of approval will not be considered and will be returned for proper resubmission.

2. Review of shop drawings does not relieve Contractor of responsibility for errors and omissions in shop drawings. Contractor's responsible for meeting the requirements of the contract documents.
3. Contractor is responsible for dimensions and sizes of equipment. Inform Engineer in writing of equipment differing from that shown.
4. Prepare erection drawings when required by Engineer. Investigate thoroughly all conditions affecting work and indicate on drawing. Engineer will review erection drawings before work commences.

J. Operating and Maintenance Manuals:

1. Provide maintenance and operating manuals bound in 8-1/2" x 11" hardback, three-post binders. Manuals shall contain written instructions for each system, shop drawings, schematic drawings, equipment catalog cuts, manufacturer's instructions, manufacturer's warranties, and valve tag list.
2. Arrange information in the following sequence: title of job, Owner, address, date of submittal, name of Contractor, name of Engineer, index, shop drawings, operating instruction, Contractor's purchase order numbers, supplier's name and address, date of start-up of each piece of equipment and valve tag list.
3. Submit one (1) copy for review. Make required corrections, and submit two (2) record copies.

K. Record Drawings:

1. Contractor shall maintain at the site one (1) copy of the drawings in good order and marked to record all changes made during construction.
2. Contractor shall update all drawings to incorporate all changes and deliver one (1) set of reproducible plans and one (1) electronic copy of the project in the latest "AutoCAD" version to the Owner upon completion of the work.

1.8 PROTECTION AND STORAGE

- A. Provide warning lights, bracing, shoring, rails, guards and covers necessary to prevent damage or injury.
- B. Protect all equipment and materials, from damage by weather, entrance of water or dirt. Cap open piping, use plastic covers made for that purpose. Do not use rags or construction debris.
- C. Avoid damage to materials and equipment in place. Repair, or remove and replace damaged work and materials.
- D. Protect all surfaces from weld spatter, solder and cutting oil.
- E. Deliver equipment and materials to job site in original, unopened, labeled container. Store to prevent damage and injury. Store ferrous materials to prevent rusting. Store finished materials and equipment to prevent staining and discoloring. Store materials affected by condensation in warm dry areas. Provide heaters. Storage space on site and in building designated by Owner/Engineer.

END OF SECTION

SECTION 23 05 00 - COMMON WORK RESULTS FOR MECHANICAL

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 1. Equipment installation requirements common to equipment sections.
 2. Grout.
 3. Concrete bases.
 4. Supports and anchorages.

1.2 DEFINITIONS

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and chases.
- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- F. The following are industry abbreviations for plastic materials:
 1. PE: Polyethylene plastic.
 2. PVC: Polyvinyl chloride plastic.
- G. The following are industry abbreviations for rubber materials:
 1. EPDM: Ethylene-propylene-diene terpolymer rubber.
 2. NBR: Acrylonitrile-butadiene rubber.

1.3 SUBMITTALS

- A. Welding certificates.

1.4 QUALITY ASSURANCE

- A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."
- B. Electrical Characteristics for mechanical Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

1.5 COORDINATION

- A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for mechanical installations.
- B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 GROUT

- A. Description: ASTM C 1107, Grade B, non-shrink and non-metallic, dry hydraulic-cement grout.
 - 1. Characteristics: Post-hardening, volume-adjusting, non-staining, non-corrosive, non-gaseous, and recommended for interior and exterior applications.
 - 2. Design Mix: 5000-psi, 28-day compressive strength.
 - 3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.
- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- C. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- D. Install equipment to allow right of way for piping installed at required slope.

3.2 CONCRETE BASES

- A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.
 - 1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
 - 2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 12-inch centers around the full perimeter of the base.
 - 3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
 - 4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 5. Install anchor bolts to elevations required for proper attachment to supported equipment.

6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
7. Use 3000-psi 28-day compressive-strength concrete and reinforcement as specified in Division 3.

3.3 GROUTING

- A. Mix and install grout for mechanical equipment base bearing surfaces, pump and other equipment base plates, and anchors.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placement of grout.
- E. Place grout, completely filling equipment bases.
- F. Place grout on concrete bases and provide smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout.

END OF SECTION

SECTION 23 05 53 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 1. Equipment labels.
 2. Warning signs and labels.
 3. Warning tags.

1.2 COORDINATION

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing ceilings or other concealment.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

- A. Metal Labels for Equipment:
 1. Material and Thickness: Brass, 0.032-inch, Stainless steel, 0.025-inch, Aluminum, 0.032-inch, or anodized aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
 2. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
 3. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
 4. Fasteners: Stainless-steel rivets or self-tapping screws.
 5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- B. Plastic Labels for Equipment:
 1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
 2. Letter Color: White.
 3. Background Color: Black.
 4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
 5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
 6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
 7. Fasteners: Stainless-steel rivets or self-tapping screws.
 8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- C. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules).

2.2 WARNING SIGNS AND LABELS

- A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
- B. Letter Color: Black.
- C. Background Color: Yellow.
- D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- G. Fasteners: Stainless-steel rivets or self-tapping screws.
- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- I. Label Content: Include caution and warning information, plus emergency notification instructions.

2.3 WARNING TAGS

- A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.
 - 1. Size: 3 by 5-1/4 inches minimum.
 - 2. Fasteners: Brass grommet and wire.
 - 3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
 - 4. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

- A. Install or permanently fasten labels on each major item of mechanical equipment.
- B. Locate equipment labels where accessible and visible.

3.3 WARNING-TAG INSTALLATION

- A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION

SECTION 23 05 93 - TESTING, ADJUSTING, AND BALANCING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Balancing Air Systems:
 - a. Ducted heating/cooling HVAC systems.
 - b. Exhaust fans.

1.2 DEFINITIONS

- A. AABC: Associated Air Balance Council.
- B. NEBB: National Environmental Balancing Bureau.
- C. TAB: Testing, adjusting, and balancing.
- D. TABB: Testing, Adjusting, and Balancing Bureau.
- E. TAB Specialist: An entity engaged to perform TAB Work.

1.3 SUBMITTALS

- A. Certified TAB reports.

1.4 QUALITY ASSURANCE

- A. TAB Contractor Qualifications: Engage a TAB entity certified by AABC NEBB or TABB.
- B. TAB Report Forms: Use standard TAB contractor's forms approved by Owner.
- C. Instrumentation Type, Quantity, Accuracy, and Calibration: As described in ASHRAE 111, Section 5, "Instrumentation."

1.5 COORDINATION

- A. Perform TAB after leakage and pressure tests on air distribution systems have been satisfactorily completed.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.
- B. Examine systems for installed balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are accessible.
- C. Examine the approved submittals for HVAC systems and equipment.

- D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.
- E. Examine equipment performance data including fan curves.
 - 1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
 - 2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.
- F. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- G. Examine test reports specified in individual system and equipment Sections.
- H. Examine HVAC equipment and filters and verify that bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.
- I. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- J. Examine operating safety interlocks and controls on HVAC equipment.
- K. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

- A. Prepare a TAB plan that includes strategies and step-by-step procedures.
- B. Complete system-readiness checks and prepare reports. Verify the following:
 - 1. Permanent electrical-power wiring is complete.
 - 2. Automatic temperature-control systems are operational.
 - 3. Equipment and duct access doors are securely closed.
 - 4. Balance, smoke, and fire dampers are open.
 - 5. Isolating and balancing valves are open and control valves are operational.
 - 6. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
 - 7. Windows and doors can be closed so indicated conditions for system operations can be met.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system according to the procedures contained in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and in this Section.
- B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
 - 1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.

2. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Division 23 Section "HVAC Insulation."
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.
- B. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- C. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.
- D. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- E. Verify that motor starters are equipped with properly sized thermal protection.
- F. Check dampers for proper position to achieve desired airflow path.
- G. Check for airflow blockages.
- H. Check condensate drains for proper connections and functioning.
- I. Check for proper sealing of air-handling-unit components.
- J. Verify that air duct system is sealed as specified in Division 23 Section 23 31 13 "Metal Ducts".

3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

- A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.
 1. Measure total airflow.
 - a. Where sufficient space in ducts is unavailable for Pilot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow.
 2. Measure fan static pressures as follows to determine actual static pressure:
 - a. Measure outlet static pressure as far downstream from the fan as practical and upstream from restrictions in ducts such as elbows and transitions.
 - b. Measure static pressure directly at the fan outlet or through the flexible connection.
 - c. Measure inlet static pressure of single-inlet fans in the inlet duct as near the fan as possible, upstream from the flexible connection, and downstream from duct restrictions.
 - d. Measure inlet static pressure of double-inlet fans through the wall of the plenum that houses the fan.
 - e. For non-ducted fans, install temporary duct at fan inlet.
 3. Measure static pressure across each component that makes up an air-handling unit, rooftop unit, and other air-handling and treating equipment.
 - a. Report the cleanliness status of filters and the time static pressures are measured.

4. Measure static pressures entering and leaving other devices, such as sound traps, heat-recovery equipment, and air washers, under final balanced conditions.
 5. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
 6. Obtain approval from Engineer for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in Division 23 Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
 7. Do not make fan speed adjustments that result in motor overload. Consult equipment manufacturers about fan speed safety factors. Modulate dampers and measure fan motor amperage to ensure that no overload will occur. Measure amperage in full cooling, full heating, economizer and any other operating mode to determine the maximum required brake horsepower.
- B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows within specified tolerances.
1. Measure airflow of submain and branch ducts.
 - a. Where sufficient space in submain and branch ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow for that zone.
 2. Measure static pressure at a point downstream from the balancing damper, and adjust volume dampers until the proper static pressure is achieved.
 3. Re-measure each submain and branch duct after all have been adjusted. Continue to adjust submain and branch ducts to indicated airflows within specified tolerances.
- C. Measure air outlets and inlets without making adjustments.
1. Measure terminal outlets using a direct-reading hood or outlet manufacturer's written instructions and calculating factors.
- D. Adjust air outlets and inlets for each space to indicated airflows within specified tolerances of indicated values. Make adjustments using branch volume dampers rather than extractors and the dampers at air terminals.
1. Adjust each outlet in same room or space to within specified tolerances of indicated quantities without generating noise levels above the limitations prescribed by the Contract Documents.
 2. Adjust patterns of adjustable outlets for proper distribution without drafts.
- 3.6 PROCEDURES FOR MOTORS
- A. Motors, 1/2 HP and Larger: Test at final balanced conditions and record the following data:
1. Manufacturer's name, model number, and serial number.
 2. Motor horsepower rating.
 3. Motor rpm.
 4. Efficiency rating.
 5. Nameplate and measured voltage, each phase.
 6. Nameplate and measured amperage, each phase.
 7. Starter thermal-protection-element rating.
- 3.7 PROCEDURES FOR CONDENSING UNITS
- A. Verify proper rotation of fans.
- B. Measure entering- and leaving-air temperatures.

- C. Record compressor electrical data.

3.8 TOLERANCES

- A. Set HVAC system's air flow rates within the following tolerances:
 1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 5 percent.
 2. Air Outlets and Inlets: Plus or minus 10 percent.

3.9 FINAL REPORT

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.
 1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 2. Include a list of instruments used for procedures, along with proof of calibration.
- B. Final Report Contents: In addition to certified field-report data, include the following:
 1. Fan curves.
 2. Manufacturers' test data.
 3. Field test reports prepared by system and equipment installers.
 4. Other information relative to equipment performance; do not include Shop Drawings and product data.
- C. General Report Data: In addition to form titles and entries, include the following data:
 1. Title page.
 2. Name and address of the TAB contractor.
 3. Project name.
 4. Project location.
 5. Engineer's name and address.
 6. Contractor's name and address.
 7. Report date.
 8. Signature of TAB supervisor who certifies the report.
 9. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
 10. Summary of contents including the following:
 - a. Indicated versus final performance.
 - b. Notable characteristics of systems.
 - c. Description of system operation sequence if it varies from the Contract Documents.
 11. Nomenclature sheets for each item of equipment.
 12. Data for terminal units, including manufacturer's name, type, size, and fittings.
 13. Notes to explain why certain final data in the body of reports vary from indicated values.
 14. Test conditions for fans performance forms including the following:
 - a. Settings for outdoor, return, and exhaust-air dampers.
 - b. Conditions of filters.
 - c. Cooling coil, wet and dry bulb conditions.
 - d. Face and bypass damper settings at coils.
 - e. Fan drive settings including settings and percentage of maximum pitch diameter.
 - f. Inlet vane settings for variable air-volume systems.
 - g. Settings for supply-air, static-pressure controller.
 - h. Other system operating conditions that affect performance.
- D. Air-Handling-Unit Test Reports: For air-handling units with coils, include the following:
 1. Unit Data:
 - a. Unit identification.
 - b. Location.
 - c. Make and type.

- d. Model number and unit size.
 - e. Manufacturer's serial number.
 - f. Unit arrangement and class.
 - g. Discharge arrangement.
 - h. Sheave make, size in inches, and bore.
 - i. Center-to-center dimensions of sheave, and amount of adjustments in inches.
 - j. Number, make, and size of belts.
 - k. Number, type, and size of filters.
 - 2. Motor Data:
 - a. Motor make, and frame type and size.
 - b. Horsepower and rpm.
 - c. Volts, phase, and hertz.
 - d. Full-load amperage and service factor.
 - e. Sheave make, size in inches, and bore.
 - f. Center-to-center dimensions of sheave, and amount of adjustments in inches.
 - 3. Test Data (Indicated and Actual Values):
 - a. Total air flow rate in cfm.
 - b. Total system static pressure in inches wg.
 - c. Fan rpm.
 - d. Discharge static pressure in inches wg.
 - e. Filter static-pressure differential in inches wg.
 - f. Preheat-coil static-pressure differential in inches wg.
 - g. Cooling-coil static-pressure differential in inches wg.
 - h. Heating-coil static-pressure differential in inches wg.
 - i. Outdoor airflow in cfm.
 - j. Return airflow in cfm.
 - k. Outdoor-air damper position.
 - l. Return-air damper position.
 - m. Vortex damper position.
- E. Fan Test Reports: For supply, return, and exhaust fans, include the following:
- 1. Fan Data:
 - a. System identification.
 - b. Location.
 - c. Make and type.
 - d. Model number and size.
 - e. Manufacturer's serial number.
 - f. Arrangement and class.
 - g. Sheave make, size in inches, and bore.
 - h. Center-to-center dimensions of sheave, and amount of adjustments in inches.
 - 2. Motor Data:
 - a. Motor make, and frame type and size.
 - b. Horsepower and rpm.
 - c. Volts, phase, and hertz.
 - d. Full-load amperage and service factor.
 - e. Sheave make, size in inches, and bore.
 - f. Center-to-center dimensions of sheave, and amount of adjustments in inches.
 - g. Number, make, and size of belts.
 - 3. Test Data (Indicated and Actual Values):
 - a. Total airflow rate in cfm.
 - b. Total system static pressure in inches wg.
 - c. Fan rpm.
 - d. Discharge static pressure in inches wg.
 - e. Suction static pressure in inches wg.

F. Instrument Calibration Reports:

1. Report Data:
 - a. Instrument type and make.
 - b. Serial number.
 - c. Application.
 - d. Dates of use.
 - e. Dates of calibration.

3.10 INSPECTIONS

- A. Initial Inspection:
 1. After testing and balancing are complete, operate each system and randomly check measurements to verify that the system is operating according to the final test and balance readings documented in the final report.
 2. Check the following for each system:
 - a. Measure airflow of at least 10 percent of air outlets.
 - b. Measure room temperature at each thermostat/temperature sensor. Compare the reading to the set point.
 - c. Verify that balancing devices are marked with final balance position.
 - d. Note deviations from the Contract Documents in the final report.
- B. TAB Work will be considered defective if it does not pass inspections. If TAB Work fails, proceed as follows:
 1. Recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes; resubmit the final report and request a second final inspection.
 2. If the second final inspection also fails, Owner may contract the services of another TAB contractor to complete TAB Work according to the Contract Documents and deduct the cost of the services from the original TAB contractor's final payment.
- C. Prepare test and inspection reports.

END OF SECTION

SECTION 23 07 00 - DUCT INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: furnishing all labor, equipment, materials and accessories, and performing all operations required, for the correct fabrication and installation of thermal or acoustic insulation applied to the following systems, piping, equipment, and ductwork.

1.2 DEFINITIONS

- A. Exposed piping and ductwork is that which can be seen when the building is complete without opening or removing access door panels, or ceilings tiles. This also includes all mechanical equipment rooms and pipe tunnels.
- B. Concealed piping and ductwork are those elements above ceilings, in chases, interstitial space and pipe spaces. Other piping and ductwork is considered to be exposed.
- C. Exterior piping and ductwork is that which is exposed to the weather and/or outside the building envelope. Piping and ductwork protected by overhangs, areaways, etc., exterior to the building envelope are considered exterior.
- D. ASJ: All service jacket, white finish facing or jacket.
- E. Air conditioned space: Space directly supplied with heated or cooled air.
- F. Cold: Equipment, ductwork or piping handling media at design temperature of 60 degrees F or below.
- G. FRK: Foil reinforced kraft facing.
- H. FSK: Foil-scrim-kraft facing.
- I. Hot: Ductwork handling air at design temperature above 60 degrees F; equipment or piping handling media above 105 degrees F.
- J. Pcf: Density, pounds per cubic foot.
- K. Run-out: Branch pipe connection up to one inch nominal size to a one terminal piece of equipment (fan coil, terminal box).
- L. Thermal conductance: Heat flow rate through materials.
 - 1. Flat surface: BTU per hour per square foot.
 - 2. Pipe or cylinder: BTU per hour per linear foot.
 - 3. Thermal conductivity (k): BTU per inch thickness, per hour, per square foot, per degree Fahrenheit temperature difference.

1.3 QUALITY ASSURANCE

- A. Products of the manufacturers, herein, will be acceptable for use for the specific functions noted. All materials shall be compatible with the materials to which they are applied, and shall not corrode, soften or otherwise attack such materials in either the wet or dry state.

- B. Materials shall be applied subject to their temperature limits. Any methods of application of insulation materials or finishes not specified in detail herein shall be in accordance with the particular manufacturer's published recommendations.
- C. Insulation shall be applied by experienced workers regularly employed for this type work.

1.4 RATING

- A. All insulation shall have composite surface burning characteristic rating as tested by ASTM E 84, UL 723, or NFPA 255 not exceeding:

Flame Spread	25
Smoke Developed	50

- B. Composite shall include insulation, jacketing and adhesive used to secure jacketing or facing. All accessory items such as PVC jacketing and fittings, adhesive, mastic, cement, tape and cloth shall have the same component rating as specified above.

1.5 STANDARDS

- A. ASHRAE Standard 90.1 - 2007 "Energy Standard for Buildings Except Low-Rise Residential Buildings".
- B. Midwest Insulation Contractors Association "Commercial and Industrial Insulation Standards" - Third Edition.

1.6 SUBMITTALS

- A. Submittals shall include all materials used, including:
 1. Insulation
 2. Jacketing
 3. Tapes
 4. Hardware
 5. Mastics
 6. Adhesives
- B. Submittals shall be formatted to include a list of materials for each service
- C. Submittals shall use pages from Midwest Insulation Contractors Association – "Commercial and Industrial Insulation Standards" for defining how insulation materials will be applied.

PART 2 - PRODUCTS

2.1 INSULATION

- A. Interior Ductwork (Insulation):
 1. Unless otherwise noted, insulation shall be 250 deg. F rated as manufactured by Owens Corning, Manville, Knauf, or Certainteed.
 2. Duct Wrap: 2 in. thick, 1.0 PCF with aluminum or FRK facing, having a maximum vapor transmission of .02 perms. Minimum installed "R" value shall be 5.6 with 25% compression.
 3. Insulation Board: 2 in. thick 3 PCF with FRK facing. Minimum installed "R" value 6.
 4. Commercial Duct-wrap: 2-1/2 in. thick 3 PCF semi-rigid, flexible board type with FRK facing. Minimum installed "R" value 6.0.

- B. Exterior Ductwork (Insulation):
 - 1. Insulation shall be rigid 2" thick polyisocyanurate. Minimum R-value = 11.
 - a. Flame spread less than 25.
 - b. Moisture Vapor Transmission less than 0.3 in accordance with ASTM E96.
 - c. Compressive Strength Grade 3 in accordance with ASTM C1289.
 - d. Water Absorption less than 1% by volume in accordance with ASTM C209.
 - e. Service temperatures -100 degrees F to 250 degrees F.

2.2 FINISHES

- A. Metal jacketing, smooth .016 in. thick, type T 3003 aluminum with laminated moisture barrier. Jacketing shall be Childers, aluminum roll jacketing with Polykraft moisture barrier. Jacketing shall be embossed "No Asbestos" on a 6 inch spacing.
- B. Metal fitting covers shall be two-piece aluminum. Covers shall be Ell-Jac.
- C. Foil scrim kraft (FSK) jacket, flame retardant vapor barrier. Jacket shall be Alpha Temp 10651, all service jackets.

2.3 MISCELLANEOUS

- A. Adhesives:
 - 1. Glass & Mineral Fiber - Foster 85-20 / Vimasco 795.
 - 2. Polyurethane - Foster 81-33.
 - 3. Polyisocyanurate - Foster CP-85.
 - 4. Cellular Glass - Pittcote 300 / Childers CP-30.
 - 5. Polystyrene - Foster 97-13 / Childers CP-96.
- B. Mastic (Weather Barrier):
 - 1. Foster 35-00 Mastic / Vimasco.
 - 2. Childers Vi-Cryl CP10/11.
 - 3. Vimasco WC-5.
- C. Coatings:
 - 1. Foster - Monolar Coating / Vimasco
 - 2. Foster Sealfas 30-36 / Vimasco
 - 3. Foster Tite-Fit 30-56 / Vimasco
 - 4. Pittcote 300
- D. Vapor Barrier Sealant: Foster Flextra 95-50
- E. FSK tape 3 in. wide, equal to Nashua FSK.
- F. Insulation Pins:
 - 1. Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, length to suit depth of insulation indicated.
 - 2. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- (0.41-mm-) thick, galvanized-steel aluminum or stainless-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches (38 mm) in diameter.
 - a. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.
- G. Roll on Corner bead (2 in. x 2 in., 26 ga. galvanized steel).

- H. Fiber reinforced tape - Nashua 357, or 398.
- I. Insulation protection shields - Grinnell fig 167.
- J. Rigid insulation inserts - Hamfab.
- K. Reinforcing Cloth - Vimasco, Elastafab 894, conforming to ASTM D1668.
- L. Bands - .020 in., aluminum, 2 in. wide, embossed continuously with the legend "No Asbestos".
- M. Hexagonal Wire Netting - One inch mesh, 22 ga. galvanized steel.

PART 3 - EXECUTION

3.1 GENERAL

- A. Insulation shall be applied to clean and dry surfaces after tests and approvals required by this specification have been completed.
- B. On cold surfaces where a vapor barrier must be maintained, insulation shall be applied with a continuous, unbroken moisture and vapor seal. All hangers, supports, anchors, or other projections that are secured to cold surfaces shall be insulated and vapor sealed to prevent condensation.
- C. All surface finishes shall be extended in such a manner as to protect all raw edges, ends and surfaces of insulation.
- D. All duct insulation shall be continuous through walls, ceiling or floor openings, or sleeves; except where fire stop or fire safeing materials are required.
- E. Metal shields shall be installed between hangers or supports and the piping insulation. Rigid insulation inserts shall be installed as required between the pipe and the insulation shields. Inserts shall be of equal thickness to the adjacent insulation and shall be vapor sealed as required.
- F. Size insulation to cover electric heat tracing on piping where it is specified.
- G. All clevis type pipe supports shall be sized to fit the outside diameter of the insulation.
- H. Insulate valves, fittings, flanges etc. with the same thickness of insulation as specified for piping.
- I. Install longitudinal jacketing laps to shed rainwater.
- J. Insulate items mounted in ductwork with the same thickness of insulation as specified for ductwork: including air measuring stations, smoke dampers, and automatic dampers.
- K. Repair insulation damaged by work under this contract to match existing work or replace damaged portion with insulation specified for new work.
- L. Standing seams and other projections in ductwork or casings shall have insulation applied so that at least 2" of insulation will cover such projections.
- M. Where ductwork is lined, no thermal insulation is required.
- N. Where unlined duct and lined duct connect, the insulation shall overlap lined section at least 6".

- O. Piping and ductwork covered with metal or P.V.C. jacketing systems shall have the joints made to shed water. Laps shall be positioned in the bottom quadrant on horizontal pipe and ductwork.

3.2 HVAC SYSTEMS

A. Concealed Ductwork:

1. Apply jacketed duct wrap to all concealed ductwork providing conditioned air, or outside air. Insulate return ductwork in non-conditioned spaces and in ceiling spaces below a roof.
2. Pull insulation snug, but do not compress insulation more than 1/4 inch.
3. Secure duct wrap insulation to ductwork using adhesive. Secure insulation on bottom on sides of horizontal ductwork and all sides of vertical ductwork with insul pins welded to duct on 12 to 18 inch centers and with clips slipped over the pins. Apply clips without compressing insulation. Make joints by lapping the facing a minimum of 2 inch and stapling with T-5 flared staples. Vapor - seal with Childers CP-30 Low Odor at all staples, clip locations and other penetrations. Seal joints with 3 inch wide FSK tape.
4. Insulation Thickness:
 - a. Inside Thermal Envelope:
 - i. Supply ductwork - 2 in. thick
 - ii. Outside air ductwork - 2 in. thick
 - iii. Return air ductwork - 2 in. thick
 - b. Outside Thermal Envelope (Attic/Crawlspace):
 - i. Supply ductwork - 4 in. thick - 2 layers
 - ii. Return air ductwork - 4 in. thick - 2 layers
 - iii. Exhaust ductwork - 2 in. thick - 1 layer
 - iv. Outside air - 2 in. thick - 1 layer

B. Exposed Interior Ductwork (Rectangular):

1. Apply insulation board with FRK facing to all exposed ductwork providing conditioned air, or outside air. Insulate return ductwork.
2. Secure insulation with insul pins (all surfaces) welded to duct on 12 to 18 in. centers and with clips slipped over pins. Seams and joints shall be vapor sealed with 3 in. wide FSK tape. Corners and edges of ductwork shall be reinforced with roll-on corner bead.
3. Seal all break and punctures with vapor barrier sealant and FSK tape.
4. Insulation Thickness:
 - a. Inside Thermal Envelope:
 - i. Supply ductwork - 2 in. thick
 - ii. Outside air ductwork - 2 in. thick
 - iii. Return air ductwork - 2 in. thick

C. Exposed Interior Ductwork (Round):

1. Apply commercial semi-rigid flexible board insulation with FRK facing to all exposed ductwork providing conditioned air or outside air.
2. Secure insulation to ductwork using adhesive. Tightly butt insulation sections together. Longitudinal joint shall be lapped 2 in., stapled and taped. Tape circumferential joints with FSK tape at a 50 percent overlap. Tape entire girth at mid-point between joints.
3. Secure insulation with pins on vertical ductwork and the bottom surface of ductwork. Pins shall be spaced on 12 to 18 in. centers with clips slipped over the pins.
4. Insulation Thickness:
 - a. Inside Thermal Envelope:
 - i. Supply ductwork - 2-1/2 in. thick
 - ii. Outside air ductwork - 2-1/2 in. thick
 - iii. Return air ductwork - 2-1/2 in. thick

D. Exposed Exterior Ductwork:

1. Apply commercial rigid polyisocyanurate board insulation to all exposed ductwork providing conditioned air or outside air.
 2. Secure insulation to ductwork using adhesive. Tightly butt insulation sections together. Longitudinal joint shall be lapped 2 in., stapled and taped. Tape circumferential joints with FSK tape at a 50 percent overlap. Tape entire girth at mid-point between joints.
 3. Secure insulation with pins on vertical ductwork and the bottom surface of ductwork. Pins shall be spaced on 12 to 18 in. centers with clips slipped over the pins.
 4. Insulation Thickness:
 - a. Outside Thermal Envelope:
 - i. Supply ductwork - 2 in. thick
 - ii. Outside air ductwork - 2 in. thick
 - iii. Return air ductwork - 2 in. thick
- E. Finishes:
1. Metal Jacketing (Aluminum):
 - a. Insulated ductwork installed outdoors and insulated ductwork within 8 ft. of the finished floor in a mechanical room shall be covered with 0.016 in. thick aluminum. Covering shall be hemmed, and flanged. Secure with self tapping screws on eight inch centers. Do not puncture vapor barrier.

END OF SECTION

SECTION 23 09 13 - HEATING, VENTILATING, AND AIR CONDITIONING CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Controls for Heating, Ventilating, and Air Conditioning (HVAC) Systems:
 - 1. Thermostats.
 - 2. Airflow switches.
 - 3. Duct mounted smoke detectors.
 - 4. HVAC control descriptions.
 - 5. HVAC control panels.
- B. Related sections:
 - 1. Section 23 05 93 – HVAC Systems Testing, Adjusting, and Balancing
 - 2. Section 23 31 13 – Metal Ductwork
 - 3. Section 23 34 23 – Fans
 - 4. Section 23 74 13 – Packaged Air Conditioning Units
 - 5. Section 23 81 27 – Mini Split Air Conditioning Units
 - 6. Section 23 83 01 – Heating Units

1.2 REFERENCES

- A. National Electrical Manufacturers Association (NEMA).
 - 1. 250 - Enclosures for Electrical Equipment (1,000 Volts Maximum).
- B. National Fire Protection Association (NFPA):
 - 1. 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.
 - 2. 70 - National Electrical Code (NEC).
- C. Underwriters' Laboratories, Inc. (UL).
 - 1. 1479 - Fire Tests of Through-Penetration Firestops.

1.3 SYSTEM DESCRIPTION

- A. General requirements:
 - 1. All electrical components shall be UL listed and meet the design and installation requirements of the NEC.
 - 2. Complete, functional system: Provide all necessary electrical power and control systems, components, and wiring to make a complete functioning system.
 - 3. Comply with electrical Sections for electrical power and control systems.
 - 4. System control functions to perform as described in Products.
 - 5. Materials: New, free from defects, and of the quality specified.
 - 6. Common manufacturer: Provide components, component accessories, and devices, as much as possible, by the same manufacturer throughout the work.
 - 7. Mounting: Mount control components and devices in accessible locations for maintenance and as recommended by the manufacturer; provide necessary manufacturer approved mounting and configuration hardware for mounting and operation of control components and devices.
- B. Fire detection system design requirements:
 - 1. Provide all supply and exhaust fans greater than 2,000 cubic feet per minute with a smoke control system including the following minimum components.
 - a. Fan unit to shut down upon smoke detection.

1.4 SUBMITTALS

- A. Shop drawings:
 - 1. Manufacturer's information including:
 - a. Catalog information clearly marked to show specific products, models, and sizes being furnished.
 - b. Component cut sheets.
 - 2. Control diagrams showing the interconnection of control components including wiring terminal strip diagrams.
 - 3. Detail drawings showing control panel layout and dimensions including control panel terminal strips for wiring to outside control devices and panels.
- B. Operations and Maintenance Data.

1.5 QUALITY ASSURANCE

- A. The control system shall be designed to conform to UL and CSA standards.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. The system control products shall be stored and handled per manufacturer's recommendations.

1.7 SITE CONDITIONS

- A. Ambient conditions and design temperatures are as follows:
 - 1. Design temperatures are:
 - a. Outdoor temperatures: 0 to 105 degrees Fahrenheit.
 - b. Indoor temperatures for the following buildings:
 - 1). Process areas: 55 to 105 degrees Fahrenheit.
 - 2). Electrical rooms: 75 to 85 degrees Fahrenheit.

1.8 WARRANTY

- A. Special warranties: Warranty period begins at date of Substantial Completion:
 - 1. 2 years: Parts and on-site labor for components, systems, and programming.

PART 2 - PRODUCTS

2.1 THERMOSTATS

- A. General:
 - 1. Thermostat types: Thermostat types are called out on the drawings by the letter T followed by a number; this designation refers to the specified thermostat types given in this Section; where no type is called out, provide 1 of the specified types that will match the controlled equipment requirements and provide a functioning system.
 - 2. Manufacturers: One of the following:
 - a. Johnson Controls, model as specified with each type.
 - b. Honeywell, Tradeline, equivalent models.
- B. T-1, Type 1 Thermostat, Heating Only, Line Voltage:
 - 1. Johnson Controls Model:
 - a. Dry locations (no hose bibs or open water processes in room): Model A19BAC-1 in NEMA 1 enclosure.
 - b. Wet Locations (hose bibs or open water processes in room): Model A19PRC-1 in NEMA 4X enclosure.

2. Switch action: Single pole double throw, open on rising temperature.
 3. Sensing element: Coiled bulb and capillary.
 4. Setpoint: 30 to 110 degrees Fahrenheit with knob adjuster and visible scale.
 5. Electrical ratings: 16 amps alternating current at 120 volts, 9.2 amps alternating current at 208 volts.
- C. T-2, Type 2 Thermostat, Cooling Only, Line Voltage:
1. Johnson Controls Model:
 - a. Dry locations (no hose bibs or open water processes in room): Model A19BBC-2 in NEMA 1 enclosure.
 - b. Wet locations (hose bibs or open water processes in room): Model A19KNC-1 in rain and dusttight enclosure.
 2. Switch action: Single pole double throw, close on rising temperature.
 3. Sensing element: Coiled bulb and capillary.
 4. Setpoint: 30 to 110 degrees Fahrenheit with knob adjuster and visible scale.
 5. Electrical ratings: 16 amps alternating current at 120 volts, 9.2 amps alternating current at 208 volts.
 6. Differential range: For dry locations, 3 to 12 degrees Fahrenheit adjustable; for wet locations, 5 degrees Fahrenheit fixed.
- D. T-3, Type 3 Thermostat, Heating And Cooling, Line Voltage, Single Stage for MCC Room or Office Environments:
1. Johnson Controls Model:
 - a. Dry locations (no hose bibs or open water processes in room): Model T22TFB-1 in high impact plastic enclosure.
 2. Switch action: Single pole double throw, open on rising temperature in heat mode, close on rising temperature in cooling mode.
 3. Sensing element: Liquid charged sensing with diaphragm and lever.
 4. Setpoint: 40 to 90 degrees Fahrenheit with knob adjuster and visible scale; provide local ambient temperature indicator in degrees Fahrenheit.
 5. Selector switch: Heat-Off-Cool.
 6. Electrical ratings: 16 amps alternating current at 120 volts, 9.2 amps alternating current at 208 volts.
- E. T-4, Type 4 Thermostat, Electronic, Heating and Cooling, Low Voltage, Proportional:
1. Johnson Controls Model:
 - a. Model TC-6500 with T-4000 - 2142 plastic enclosure.
 2. Sensing element: Resistance temperature element.
 3. Setpoint: 55 to 85 degrees Fahrenheit with adjuster and visible scale; provide local ambient temperature indicator in degrees Fahrenheit.
 4. Electrical ratings:
 - a. Input: 21 volts direct current.
 - b. Output: 1 to 18 volt direct current, proportional to temperature change from setpoint; direct acting above setpoint and reverse acting below set point; 1 to 2-degree Fahrenheit deadband.
 5. Cover: Provide plastic cover with thermometer and setpoint window.
- F. T-5, Type 5 Thermostat, Electronic Controller:
1. Johnson Controls Model:
 - a. Model A350P with Y350R transformer, D350 display module and SETA99BC-25C sensor.
 2. Electronic unit with proportional plus integral temperature control with 3 selectable integration constants plus integration off position.
 3. Output: Selectable, direct or reverse acting, 0 to 10 volts direct current or 4 to 20-milliamp output signal.

4. Input power: 120-volt alternating current with transformer to supply 24-volt direct current as required.
5. Setpoint range: Minus 30 to 130 degrees Fahrenheit, adjustable by face-mounted dial.
6. Sensor: positive temperature coefficient silicon sensor with wall mounting bracket.
7. Display module: Digital, 3 digit, Fahrenheit scale, LCD display, selectable to display room temperature or setpoint temperature.
8. Mounting: Provide wall-mounting bracket for mounting modules together as 1 unit; provide interconnecting cables as necessary.
9. Field selectable heat or cool mode.
10. Module cases: High impact plastic cases.

G. T-6, Type 6 Thermostat: Electronic, with Night Setback.

2.2 AIR FLOW SWITCHES

A. Paddle type:

1. Manufacturers: The following:
 - a. McDonnell & Miller Division of ITT, Model AF1-S. When normal airflow velocities are below 500 feet per minute, provide McDonnell & Miller Model AF3 with similar features as specified.
2. Characteristics and features:
 - a. Provide 7.25-inch stainless steel paddle suitable for 8-inch and larger ducts (6-inch with trimmed paddle).
 - b. Provide anti-corrosion treatment of exposed parts.
 - c. Provide field adjustable switch setting from 480 to 1,335 feet per minute in horizontal duct applications and 910 to 1,610 feet per minute in vertical duct applications; paddle can be trimmed to 5 inches with correspondingly higher velocity ranges.
 - d. Provide single pole double throw (SPDT) snap switch rated at 7.4 full load amps at 120 volts alternating current.
 - e. Provide adjustable time delay relay to prevent momentary low flows from tripping the flow switch output.
 - f. Provide weather protected general purpose exterior switch component enclosure.

B. Thermal dispersion type:

1. Manufacturers: One of the following:
 - a. Fluid Components International (FCI), Model FLT93-F.
 - b. Similar product by Kurz.
2. Characteristics and features:
 - a. Process connection: 0.75-inch male National Pipe Thread threaded with 4-inch long probe for air duct mounting.
 - b. Materials: Process exposed or wetted surfaces of Type 316 stainless steel, all welded construction.
 - c. Temperature range: Ambient from minus 40 to 140 degrees Fahrenheit.
 - d. Operating pressure: Designed for up to 100 pounds per square inch gauge minimum.
 - e. Flow range in air: 0.25 to 120 feet per second at standard conditions.
 - f. Alarm response time: 2 alarms adjustable down to 0.5 seconds.
 - g. Input power: 120-volt alternating current.
 - h. Outputs: Dual SPDT relays rated for 6 amperes at 115 volts alternating current.
 - i. Enclosure: Factory Mutual approved and suitable for National Electric Code Class 1, Division 1, Group D locations.

2.3 DUCT MOUNTED SMOKE DETECTORS

A. Manufacturers: The following or equal:

1. System Sensor Series D4120.

- B. General:
1. Provide duct mounted smoke detectors downstream of fans and ahead of branch connections in air supply ducting with flows greater than 2,000 cubic feet per minute whether or not smoke detectors are indicated on the Drawings.
 2. Smoke detectors shall be UL listed for use in air distribution systems and shall comply with NFPA 90A.
 3. Connect the smoke detector to:
 - a. Fan control circuit to shut down supply fan upon detection of smoke.
 - b. Damper control circuits to close supply air dampers to prevent spread of smoke.
- C. Characteristics:
1. Photoelectric type.
 2. Operating temperature range of 32 degrees Fahrenheit to 150 degrees Fahrenheit.
 3. Operate at airflow velocities of 100 to 4,000 feet per minute.
 4. Power supply voltage 24 volts direct current.
 5. Capable of mounting to rectangular or round ducts.
 6. Integral filter to reduce dust.
- D. Accessories:
1. Provide metal sampling tube and end cap to match duct width. Sampling tube shall be able to be installed without use of tools.
 2. Provide mounting base and hardware.
 3. Provide duct access door as specified in Section 23 31 13. Provide similar for nonmetallic ducting.
 4. Provide a 120 volt 10 amp DPDT auxiliary contact and a 30 VDC 10 amp DPDT auxiliary contact.
 5. Provide remote annunciator with alarm and power LEDs.
 6. Provide remote test station.

2.4 HVAC CONTROL DESCRIPTIONS

- A. General: Provide control systems that will maintain room or area comfort under changing ambient conditions and varying use; descriptions in this Section are general in nature and do not cover every mode of operation.
- B. Celina Road Pump Station Electrical Building HVAC Control Description:
1. References:
 - a. Process area: CR (Celina Road)
 - b. HVAC drawings: CR-BM181.
 2. Mechanical equipment:

Tag Number	Equipment Name
CR-RTU01	Packaged Rooftop Unit (RTU)

3. Controls at equipment:
 - a. Packaged Air Conditioning Unit CR-RTU01:
 - 1). Provide disconnect switch for packaged air conditioning unit.
4. Zone controls:
 - a. Packaged Air Conditioning Unit CR-RTU01:
 - 1). Air conditioning unit CR-RTU01 operates automatically to meet cooling requirements.
 - 2). Temperature controls shall maintain adjustable set point temperature at the thermostat within room (initial setting: 75 degrees Fahrenheit cooling).
 - 3). Room mounted type T-2 thermostat or as required by air conditioning manufacturer for proper operation of equipment.

C. Downtown Pump Station and Electrical Room HVAC Control Descriptions:

1. References:
 - a. Process area: DT (Downtown)
 - b. HVAC drawings: DT-BM181.
2. Mechanical equipment:

Tag Number	Equipment Name
DT-RTU01	Electrical Room Packaged Rooftop Unit (RTU)
DT-HP01	Office/Restroom Mini Split Heat Pump
DT-EV01	Office/Restroom Mini Split Evaporator
DT-EF01	Pump Room Exhaust Fan
DT-EF02	Pump Room Exhaust Fan
DT-EF03	Restroom Exhaust Fan
DT-UH01	Pump Room Unit Heater
DT-UH02	Pump Room Unit Heater
DT-UH03	Pump Room Unit Heater

3. Controls at equipment:
 - a. Packaged Air Conditioning Unit DT-RTU01:
 - 1). Provide disconnect switch for packaged air conditioning unit.
 - b. Mini Split DT-HP01 and DT-EV01:
 - 1). Provide disconnect switch for heat pump.
 - c. Exhaust Fans DT-EF01 and DT-EF02:
 - 1). Provide disconnect switch for exhaust fans.
 - d. Exhaust Fans DT-EF03:
 - 1). Provide plug style disconnect switch for exhaust fan.
 - e. Unit Heaters DT-UH01, DT-UH02, and DT-UH03:
 - 1). Provide disconnect kit for unit heaters.
4. Zone controls:
 - a. Packaged Air Conditioning Unit DT-RTU01:
 - 1). Air conditioning unit CR-RTU01 operates automatically to meet cooling requirements.
 - 2). Temperature controls shall maintain adjustable set point temperature at the thermostat within room. Initial setting to be 75 degrees Fahrenheit (cooling).
 - 3). Room mounted type T-2 thermostat or as required by air conditioning manufacturer for proper operation of equipment.
 - b. Mini Split Evaporator DT-EV01:
 - 1). Unit mounted temperature controls with remote controller. Temperature controls shall maintain adjustable setpoint temperature (initial setting, 75 degrees Fahrenheit).
 - c. Exhaust Fans DT-EF01 and DT-EF02:
 - 1). Exhaust fan DT-EF01 operates based on room temperature to provide ventilation cooling as needed. DT-EF01 is interlocked with intake louver DT-LV01. Exhaust fan to run when temperature meets or exceeds 85 degrees Fahrenheit (adjustable).
 - 2). Exhaust fan DT-EF02 operates based on room temperature to provide ventilation cooling as needed. DT-EF02 is interlocked with intake louver DT-LV02. Exhaust fan to run when temperature meets or exceeds 90 degrees Fahrenheit (adjustable).
 - d. Exhaust Fan DT-EF03:
 - 1). Exhaust fan DT-EF03 operates by ON/OFF wall switch.

- e. Unit Heaters DT-UH01, DT-UH02, and DT-UH03:
 - 1). DT-UH01, DT-UH02, and DT-UH03 operates based on room temperature. Unit heaters to run when temperature reaches or drops below 55 degrees Fahrenheit (adjustable). Heater operation shall be in accordance with heater manufacturer's recommendations. Room mounted type T-1 thermostat.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine and verify that Work is in condition to receive installation specified in this Section.
- B. Take measurements and verify dimensions to ascertain fit of installation.
- C. Ascertain structural sufficiency to support installation.
- D. Ascertain that supports and openings are correctly located; cut new openings where required.
 - 1. Submit details of proposed cutting and patching.

3.2 PREPARATION

- A. Before installation, remove dust and debris from equipment and accessories.
- B. During installation and until equipment is operated, protect equipment and accessories from dust and debris.

3.3 INSTALLATION

- A. Install as indicated on the Drawings, in accordance with NFPA 90A, and per the manufacturer's written instructions.
- B. Coordinate installation of HVAC control systems with other trades.
 - 1. Prior to installation, coordinate wiring and conduit requirements with electrical subcontractor.
- C. Mount remote annunciator and test station on wall near smoke detector.
 - 1. Devices shall be easily accessible from floor level.
 - 2. Label annunciator and test station.
- D. Provide all electrical work to support smoke detector.
 - 1. Coordinate with electrical subcontractor.
- E. Sensor and control station mounting:
 - 1. Where not otherwise indicated, mount 5 feet above floor or walking level.
 - 2. Provide insulating back plates when mounting is on an exterior wall or a wall adjoining an unconditioned space.
 - 3. Shield outside thermostats or sensors from the sun; provide thermostats with remote bulb and compensated capillary.
 - 4. Install locking covers where indicated on the Drawings.

3.4 FIELD QUALITY CONTROL

- A. Test each control system and provide written, signed, and dated test report.
 - 1. Test individual control components and accessories to comply with the Specifications.

2. Test functions of each control system as a complete system to comply with the Specifications.
- B. Test each control component and system as part of HVAC system testing, adjusting, and balancing as specified in Section 23 05 93.

END OF SECTION

SECTION 23 31 13 - METAL DUCTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Rectangular ducts and fittings.
 - 2. Sheet metal materials.
 - 3. Duct liner.
 - 4. Sealants and gaskets.
 - 5. Hangers and supports.
- B. Related Sections:
 - 1. Section 23 05 93 - Testing, Adjusting, and Balancing
 - 2. Section 23 33 00 - Air Duct Accessories.

1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.
- B. Flanged duct and duct fitting shall comply with SMACNA's "HVAC Duct Construction Standards – Metal and Flexible".
- C. Structural Performance: Duct hangers and supports shall withstand the effects of gravity loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible".
- D. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2007.

1.3 SUBMITTALS

- A. Product Data: For each type of the following products:
 - 1. Liners and adhesives.
 - 2. Sealants and gaskets.
 - 3. Flanged joint type.

PART 2 - PRODUCTS

2.1 RECTANGULAR DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on maximum static-pressure class based on fan total static pressure unless otherwise indicated.
- B. Rectangular ducts and fittings shall use flange style connectors with neoprene gasket material in accordance with SMACNA's "HVAC Duct Construction Standards – Metal and Flexible".
- C. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 1-4, "Transverse (Girth) Joints," for static-

pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

- D. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 1-5, "Longitudinal Seams - Rectangular Ducts," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- E. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 2, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- F. In accordance with SMACNA Manual for gauge of sheet metal, joint types, reinforcement, bracing, hangers and supports, fabrication, and installation.
 - 1. Sheet metal thicknesses: The greater of that thickness required to in accordance with SMACNA for the design pressure specified and the following minimum thicknesses:

Diameter or Largest Dimension of Rectangular Duct (Inches)	Minimum Sheet Thickness, Inches (B&S Gauge)
Up to 12	0.025 (22)
13 to 30	0.032 (20)
Larger than 31	0.040 (18)

2.2 SHEET METAL MATERIALS

- A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- B. Ducts: Aluminum alloy 3003 H14 in accordance with ASTM B 209.
- C. Flexible connectors: As specified in Section 23 33 00.
- D. Turning vanes: Match duct material.
- E. Reinforcing: Formed or extruded aluminum angles.
- F. Ductwork insulation: As specified in Section 23 07 00.
- G. Tie Rods: Aluminum, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.3 DUCT LINER

- A. Flexible Elastomeric Duct Liner: Preformed, cellular, closed-cell, sheet materials complying with ASTM C 534, Type II, Grade 1; and with NFPA 90A or NFPA 90B.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Aeroflex USA Inc.
 - b. Armacell LLC.

- c. Rubatex International, LLC
 2. Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
 3. Liner Adhesive: As recommended by insulation manufacturer and complying with NFPA 90A or NFPA 90B.
 - a. Use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Insulation Pins and Washers:
1. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer.
- C. Shop Application of Duct Liner: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-19, "Flexible Duct Liner Installation."
1. Adhere a single layer of indicated thickness of duct liner with at least 90 percent adhesive coverage at liner contact surface area. Attaining indicated thickness with multiple layers of duct liner is prohibited.
 2. Apply adhesive to transverse edges of liner facing upstream that do not receive metal nosing.
 3. Butt transverse joints without gaps, and coat joint with adhesive.
 4. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure butted-edge overlapping.
 5. Do not apply liner in rectangular ducts with longitudinal joints, except at corners of ducts, unless duct size and dimensions of standard liner make longitudinal joints necessary.
 6. Apply adhesive coating on longitudinal seams in ducts with air velocity of 2500 fpm.
 7. Secure liner with mechanical fasteners 4 inches from corners and at intervals not exceeding 12 inches transversely; at 3 inches from transverse joints and at intervals not exceeding 18 inches longitudinally.
 8. Secure transversely oriented liner edges facing the airstream with metal nosings that have either channel or "Z" profiles or are integrally formed from duct wall. Fabricate edge facings at the following locations:
 - a. Fan discharges.
 - b. Intervals of lined duct preceding unlined duct.
 - c. Upstream edges of transverse joints in ducts where air velocities are higher than 2500 fpm or where indicated.
 9. Terminate inner ducts with buildouts attached to fire-damper sleeves, dampers, turning vane assemblies, or other devices. Fabricated buildouts (metal hat sections) or other buildout means are optional; when used, secure buildouts to duct walls with bolts, screws, rivets, or welds.
- 2.4 SEALANT AND GASKETS
- A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
- B. Water-Based Joint and Seam Sealant:
1. Application Method: Brush on.
 2. Solids Content: Minimum 65 percent.
 3. Shore A Hardness: Minimum 20.
 4. Water resistant.
 5. Mold and mildew resistant.
 6. VOC: Maximum 75 g/L (less water).
 7. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
 8. Service: Indoor or outdoor.

9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.
- C. Flanged Joint Sealant: Comply with ASTM C 920.
 1. General: Single-component, acid-curing, silicone, elastomeric.
 2. Type: S.
 3. Grade: NS.
 4. Class: 25.
 5. Use: O.
 6. For indoor applications, use sealant that has a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- D. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

2.5 HANGERS AND SUPPORTS

- A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.
- B. Hanger Rods for Corrosive Environments: Electrogalvanized, rods threaded on each end (no all thread) or galvanized rods with threads painted with zinc-chromate primer after installation.
- C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 4-1, "Rectangular Duct Hangers Minimum Size," and Table 4-2, "Minimum Hanger Sizes for Round Duct."
- D. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- E. Trapeze and Riser Supports:
 1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
 2. Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates.
 3. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.
- B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.
- C. Install ducts with fewest possible joints.
- D. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- E. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.

- F. Install ducts as high as practical, close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- G. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.
- H. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.
- I. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.
- J. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements of the local code for fire and smoke dampers.
- K. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "Duct Cleanliness for New Construction Guidelines."

3.2 INSTALLATION OF EXPOSED DUCTWORK

- A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged; furnish ductwork free of visual imperfections, ready for field applied painting.
- B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use tape sealing system.
- C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.
- D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.
- E. Repair or replace damaged sections and finished work that does not comply with these requirements.

3.3 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- B. Seal ducts to the pressure classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":
 - 1. Ductwork in conditioned spaces (including return air plenums):
 - a. Supply air ducts: seal traverse joints and duct wall penetrations.
 - b. Return air ducts: seal traverse joints and duct wall penetrations.
 - c. Exhaust air ducts: seal traverse joints, longitudinal seams, and duct wall penetrations.
 - d. Outside air ducts: seal traverse joints and duct wall penetrations.
 - 2. Ductwork in unconditioned spaces:
 - a. Supply air ducts: seal traverse joints, longitudinal seams, and duct wall penetrations.
 - b. Return air ducts: seal traverse joints, longitudinal seams, and duct wall penetrations.
 - c. Exhaust air ducts: seal traverse joints, longitudinal seams, and duct wall penetrations.

- d. Outside air ducts: seal traverse joints, longitudinal seams, and duct wall penetrations.
- 3. Ductwork located outdoors:
 - a. Supply air ducts: seal traverse joints, longitudinal seams, and duct wall penetrations.
 - b. Return air ducts: seal traverse joints, longitudinal seams, and duct wall penetrations.
 - c. Exhaust air ducts: seal traverse joints, longitudinal seams, and duct wall penetrations.
 - d. Outside air ducts: seal traverse joints, longitudinal seams, and duct wall penetrations.

3.4 HANGER AND SUPPORT INSTALLATION

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Hangers and Supports."
- B. Building Attachments: Structural-steel fasteners appropriate for construction materials to which hangers are being attached.
 - 1. Where practical, install concrete inserts before placing concrete.
- C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 4-1, "Rectangular Duct Hangers Minimum Size," and Table 4-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.
- D. Hangers Exposed to View: Threaded rod and angle or channel supports. Install swiveling attachment devices or field fabricated attachments to provide threaded rods vertical installation.
- E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.
- F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.5 CONNECTIONS

- A. Make connections to equipment with flexible connectors.
- B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.6 DUCT CLEANING

- A. Clean duct systems before testing, adjusting, and balancing.
- B. Use service openings for entry and inspection.
 - 1. Create new openings and install access panels appropriate for duct static-pressure class if required for cleaning access. Provide insulated panels for insulated or lined duct. Patch insulation and liner as recommended by duct liner manufacturer.
 - 2. Disconnect and reconnect flexible ducts as needed for cleaning and inspection.
 - 3. Remove and reinstall ceiling to gain access during the cleaning process.
- C. Clean the following components by removing surface contaminants and deposits:
 - 1. Air outlets and inlets (registers, grilles, and diffusers).

2. Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.
3. Air-handling unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
4. Coils and related components.
5. Return-air ducts, dampers, actuators, and turning vanes except in ceiling plenums and mechanical equipment rooms.
6. Supply-air ducts, dampers, actuators, and turning vanes.
7. Dedicated exhaust and ventilation components and makeup air systems.

D. Mechanical Cleaning Methodology:

1. Clean metal duct systems using mechanical cleaning methods that extract contaminants from within duct systems and remove contaminants from building.
2. Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
3. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner, or duct accessories.
4. Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet. Replace fibrous-glass duct liner that is damaged, deteriorated, or delaminated or that has friable material, mold, or fungus growth.
5. Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.
6. Provide drainage and cleanup for wash-down procedures.
7. Antimicrobial Agents and Coatings: Apply EPA-registered antimicrobial agents if fungus is present. Apply antimicrobial agents according to manufacturer's written instructions after removal of surface deposits and debris.

3.7 START UP

- A. Air Balance: Comply with requirements in Section 23 05 93.

3.8 DUCT SCHEDULE

- A. Fabricate ducts with aluminum sheet except as otherwise indicated.
- B. Flanged Construction:
1. Provide flanged duct construction unless otherwise indicated.
- C. Elbow Configuration:
1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Elbows."
 - a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
 - b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
 - c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-3, "Vanes and Vane Runners," and Figure 2-4, "Vane Support in Elbows."
- D. Branch Configuration:
1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-6, "Branch Connections."
 - a. Rectangular Main to Rectangular Branch: 45-degree entry.
 - b. Rectangular Main to Round Branch: 45-degree lead in.

2. Round and Flat Oval: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "90 Degree Tees and Laterals," and Figure 3-5, "Conical Tees." Saddle taps are permitted in existing duct.
 - a. 45 degree lateral.

END OF SECTION

SECTION 23 33 00 - AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 1. Manual volume dampers.
 2. Flange connectors.
 3. Turning vanes.
 4. Flexible connectors.
 5. Flexible ducts.
 6. Duct accessory hardware.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Operation and Maintenance Data: For air duct accessories to include in operation and maintenance manuals.

1.3 QUALITY ASSURANCE

- A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."
- B. Comply with AMCA 500-D testing for damper rating.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 1. Galvanized Coating Designation: G90.
 2. Exposed-Surface Finish: Mill phosphatized.
- C. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304, and having a No. 2 finish for concealed ducts and exposed ducts.
- D. Aluminum Sheets: Comply with ASTM B 209 (ASTM B 209M), Alloy 3003, Temper H14; with mill finish for concealed ducts and standard, 1-side bright finish for exposed ducts.
- E. Extruded Aluminum: Comply with ASTM B 221 (ASTM B 221M), Alloy 6063, Temper T6.
- F. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
- G. Tie Rods: Galvanized steel, 1/4-inch (6-mm) minimum diameter for lengths 36 inches (900 mm) or less; 3/8-inch (10-mm) minimum diameter for lengths longer than 36 inches (900 mm).

2.2 MANUAL VOLUME DAMPERS

- A. Standard, Steel, Manual Volume Dampers:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Air Balance Inc.; a division of Mestek, Inc.
 - b. American Warming and Ventilating; a division of Mestek, Inc.
 - c. Flexmaster U.S.A., Inc.
 - d. McGill AirFlow LLC.
 - e. METALAIRE, Inc.
 - f. Nailor Industries Inc.
 - g. Pottorff; a division of PCI Industries, Inc.
 - h. Ruskin Company.
 - i. Trox USA Inc.
 - j. Vent Products Company, Inc.
 - 2. Standard leakage rating.
 - 3. Suitable for horizontal or vertical applications.
 - 4. Frames:
 - a. Hat-shaped, galvanized-steel channels, 0.064-inch (1.62-mm) minimum thickness.
 - b. Mitered and welded corners.
 - c. Flanges for attaching to walls and flangeless frames for installing in ducts.
 - 5. Blades:
 - a. Multiple or single blade.
 - b. Parallel- or opposed-blade design.
 - c. Stiffen damper blades for stability. Galvanized-steel, 0.064 inch thick.
 - 6. Blade Axles: Galvanized steel.
 - 7. Bearings: Oil-impregnated bronze.
 - a. Dampers in ducts with pressure classes of 3-inch wg (750 Pa) or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
 - 8. Tie Bars and Brackets: Galvanized steel.

2.3 FLANGE CONNECTORS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Ductmate Industries, Inc.
 - 2. Nexus PDQ; Division of Shilco Holdings Inc.
 - 3. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Description: Factory-fabricated, slide-on transverse flange connectors, gaskets, and components.
- C. Material: Aluminum.
- D. Gage and Shape: Match connecting ductwork.

2.4 TURNING VANES

- A. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 4-3, "Vanes and Vane Runners," and 4-4, "Vane Support in Elbows."
- B. Vane Construction: Single wall for ducts up to [48 inches (1200 mm)] wide and double wall for larger dimensions.

2.5 DUCT-MOUNTED ACCESS DOORS

- A. Duct-Mounted Access Doors: Fabricate access panels according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figure 7-2, "Duct Access Doors and Panels," and 7-3, "Access Doors - Round Duct."
 - 1. Door:
 - a. Double wall, rectangular.
 - b. Aluminum sheet metal with insulation fill and thickness as indicated for duct pressure class.
 - c. Vision panel.
 - d. Hinges and Latches: 1-by-1-inch (25-by-25-mm) butt or piano hinge and cam latches.
 - e. Fabricate doors airtight and suitable for duct pressure class.
 - 2. Frame: Aluminum, with bend-over tabs and foam gaskets.
 - 3. Number of Hinges and Locks:
 - a. Access Doors Less Than 12 Inches (300 mm) Square: No hinges and two sash locks.
 - b. Access Doors up to 18 Inches (460 mm) Square: Two hinges and two sash locks.
 - c. Access Doors up to 24 by 48 Inches (600 by 1200 mm): Three hinges and two compression latches with outside and inside handles.
 - d. Access Doors Larger Than 24 by 48 Inches (600 by 1200 mm): Four hinges and two compression latches with outside and inside handles.

2.6 FLEXIBLE CONNECTORS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Ductmate Industries, Inc.
 - 2. Duro Dyne Inc.
 - 3. Ventfabrics, Inc.
 - 4. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Materials: Flame-retardant or noncombustible fabrics.
- C. Coatings and Adhesives: Comply with UL 181, Class 1.
- D. Metal-Edged Connectors: Factory fabricated with a fabric strip [3-1/2 inches (89 mm)] [5-3/4 inches (146 mm)] wide attached to 2 strips of 2-3/4-inch- (70-mm-) wide, 0.028-inch- (0.7-mm-) thick, galvanized sheet steel or 0.032-inch- (0.8-mm-) thick aluminum sheets. Provide metal compatible with connected ducts.

2.7 FLEXIBLE DUCTS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Flexmaster U.S.A., Inc.
 - 2. McGill AirFlow LLC.
 - 3. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Insulated, Flexible Duct: UL 181, Class 1, 2-ply vinyl film supported by helically wound, spring-steel wire; fibrous-glass insulation; aluminized vapor-barrier film.
 - 1. Pressure Rating: 10-inch wg (2500 Pa) positive and 1.0-inch wg (250 Pa) negative.
 - 2. Maximum Air Velocity: 4000 fpm (20 m/s).
 - 3. Temperature Range: Minus 10 to plus 160 deg F (Minus 23 to plus 71 deg C).
 - 4. Insulation R-value: Comply with ASHRAE/IESNA 90.1.

- C. Flexible Duct Connectors:
 1. Clamps: Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action in sizes 3 through 18 inches (75 through 460 mm), to suit duct size.
 2. Non-Clamp Connectors: Adhesive plus sheet metal screws.

2.8 DUCT ACCESSORY HARDWARE

- A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct-insulation thickness.
- B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.
- B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.
- C. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.
 1. Install steel volume dampers in steel ducts.
- D. Set dampers to fully open position before testing, adjusting, and balancing.
- E. Install test holes at fan inlets and outlets and elsewhere as indicated.
- F. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:
 1. On both sides of duct coils.
 2. Upstream from filters.
 3. At outdoor-air intakes and mixed-air plenums.
 4. Elsewhere as indicated.
- G. Install access doors with swing against duct static pressure.
- H. Access Door Sizes:
 1. One-Hand or Inspection Access: 8 by 5 inches (200 by 125 mm).
 2. Two-Hand Access: 12 by 6 inches (300 by 150 mm).
 3. Head and Hand Access: 18 by 10 inches (460 by 250 mm).
 4. Head and Shoulders Access: 21 by 14 inches (530 by 355 mm).
- I. Label access doors according to Division 23 Section "Identification for HVAC Piping and Equipment" to indicate the purpose of access door.
- J. Install flexible connectors to connect ducts to equipment.

- K. For fans developing static pressures of 5-inch wg (1250 Pa) and more, cover flexible connectors with loaded vinyl sheet held in place with metal straps.
- L. Connect flexible ducts to metal ducts with adhesive plus sheet metal screws.
- M. Install duct test holes where required for testing and balancing purposes.

3.2 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. Operate dampers to verify full range of movement.
 - 2. Inspect locations of access doors and verify that purpose of access door can be performed.
 - 3. Inspect turning vanes for proper and secure installation.

END OF SECTION

SECTION 23 34 23 - FANS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 1. Type 2 - Up-blast centrifugal roof exhausters.

1.2 REFERENCES

- A. American Bearing Manufacturers Association (ABMA):
 1. 9, Load Ratings and Fatigue Life for Ball Bearings.
 2. 11, Load Ratings and Fatigue Life for Roller Bearings.
- B. Air Movement and Control Association International, Inc. (AMCA):
 1. 210, Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating.
 2. 211, Certified Rating Program- Product Rating Manual for Fan Air Performance.
 3. 300, Reverberant Room Method for Sound Testing of Fan.
 4. 301, Methods for Calculating Fan Sound Ratings from Laboratory Test Data.
- C. American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE):
 1. 52.1 - Gravimetric and Dust Spot Procedures for Testing Air-Cleaning Devices Used in General Ventilation for Removing Particle Matter.
 2. 68 - Laboratory Methods of Testing to Determine Sound Power in a Duct.
- D. ASTM International (ASTM):
 1. A 108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
 2. D 4167 - Standard Specification for Fiber Reinforced Plastic Fans and Blowers.
 3. E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. National Electrical Code (NEC).
- F. National Electrical Manufacturers Association (NEMA):
 1. 250 – Enclosures for Electrical Equipment (1000 V Maximum).
- G. National Fire Protection Association (NFPA):
 1. 90A - Standard for Installation of Air Conditioning and Ventilating Systems.
 2. 820 - Standard for Fire Protection in Wastewater Treatment and Collection Facilities.
- H. National Roofing Contractors Association (NRCA).
- I. Occupational Safety and Health Administration (OSHA).
- J. Underwriters' Laboratories, Inc. (UL).

1.3 SYSTEM DESCRIPTION

- A. Design requirements:
 1. Provide fans that have sharply rising pressure characteristics which extend throughout the operating range and continue to rise beyond the efficiency peak.
 2. Provide fans that peak as close as possible to the maximum efficiency and whose operating range is within the normal fan selection range.

3. When scheduled, provide guided vibration isolator for fans, so that not more than 10 percent of the vibration amplitude of the fan and motor is transmitted to the supporting structure.
 4. Design fan inner scroll and air stream surfaces to maintain smoothness for entire fan service life.
 5. Seismic supports: Seismic design criteria as specified in Section 01 81 02.
 6. Wind supports for exterior units: Wind design criteria as specified in Section 01 81 04.
 7. Electrical components: UL listed and meeting the design and installation requirements of the NEC.
 8. Motors supplied with fans: Manufacturer's standard when type not scheduled; provide motor voltage phases and speed as scheduled; motor not to be overloaded at any point on the fan curve including belt losses.
 9. Roof curbs: Designed in accordance with NRCA standards.
 10. Insulation and adhesives: Meet NFPA 90A requirements for flame spread and smoke generation.
 11. Belt drive systems: Adjustable for minimum within 5 percent speed change, rated for 1.5 times maximum horsepower motor available for the scheduled fan size or model.
 12. Screens: Provide bird or insect screen as specified with the fan type or as listed on the Fan Schedule:
 13. Bird screen: Stainless steel; 0.5-inch mesh 18 gauge.
 14. Insect screen: Stainless steel mesh and frame.
 15. Finishes: When not specified with fan type, coat ferrous metals as specified in Section 09 90 00.
 16. Accessories: Provide accessories specified and those scheduled.
 17. Provide fans with fire/smoke control system as specified under paragraph Fire/Smoke Control System Design Requirements.
- B. Performance requirements:
1. Performance requirements are included in the Fan Schedule.
 2. Fan performance: Rated and licensed to bear the AMCA label in accordance with AMCA 210 and AMCA 211.
 3. Total sound power levels in the 8 octave band range as measured in accordance with ASHRAE 68, AMCA 301, or AMCA 300 as appropriate for each fan: Not to exceed the lesser of the following or the Sones levels on the Fan Schedule.
- | Sound Power Level, decibel levels referenced to 10-12 watts | | | | | | | | |
|---|-----|-----|-----|-----|-------|-------|-------|-------|
| Frequency, Hz | 63 | 125 | 250 | 500 | 1,000 | 2,000 | 4,000 | 8,000 |
| General | 100 | 98 | 94 | 88 | 84 | 84 | 78 | 75 |
4. Air filters supplied with fans: 25 to 30 percent dust spot efficiency when rated per ASHRAE Testing Standard 52.1.
 5. Bearings: Rated per ABMA 9 or 11 for a L10 life rating of not less than 50,000 hours; provide greater life when specified with each fan type.
- C. Electrical and control system design:
1. Design and supply necessary electrical power and control systems, components, and wiring to make a complete functioning system. Design to perform the system ventilating functions with the control systems.
 2. Comply with requirements as specified in Division 26.
- D. Fire control system design requirements:

1. Provide all supply, exhaust, and odor control fans greater than or equal to 2,000 cubic feet per minute with smoke control system including the following minimum components.
 - a. Duct or fan mounted smoke detector.
 - b. Fan interlock to shut down fan upon smoke detection.
 - c. Signals for fans and smoke detectors to and from local fire alarm control panel if a fire alarm control panel is part of project design.
 - d. Provide all wire, conduit, end of line resistors, and other electrical equipment for complete functioning smoke control system. Provide in conformance with the electrical, mechanical, and instrumentation Drawings. When no electrical design for smoke control system is indicated, CONTRACTOR shall provide design and installation of the smoke control system.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. Also include the following:
 1. Certified fan performance curves with system operating conditions indicated.
 2. Certified fan sound-power ratings.
 3. Motor ratings and electrical characteristics, plus motor and electrical accessories.
 4. Material thickness and finishes, including color charts.
 5. Dampers, including housings, linkages, and operators.
 6. Roof curbs.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. AMCA Compliance: Fans shall have AMCA-Certified performance ratings and shall bear the AMCA-Certified Ratings Seal.
- C. UL Standards: Power ventilators shall comply with UL 705. Power ventilators used for restaurant kitchen exhaust shall also comply with UL 762.

1.6 COORDINATION

- A. Coordinate size and location of structural-steel support members.
- B. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.
- C. Coordinate sizes and locations of wall openings and equipment supports with actual equipment provided.

1.7 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Belts: One set(s) for each belt-driven unit.
 2. Provide two (2) extra sets (3 total) of filters per installed fan for fans specified with filters.

PART 2 - PRODUCTS

2.1 TYPE 2, UP-BLAST CENTRIFUGAL ROOF EXHAUSTERS

- A. Manufacturers: One of the following or equal:
 1. Greenheck, Model CUBE.
 2. Loren Cook, Model ACRU.
 3. Penn Ventilator, Model Fumex.
- B. Characteristics:
 1. Roof-mounted, upblast circular exhaust fan unit.
 2. Backward inclined centrifugal fan wheel with Venturi inlet; performance as scheduled.
 3. Materials: Aluminum fan, housing, roof curb, and accessories.
 4. Fan bearings: Permanently lubricated ball bearing type.
 5. Belt drive rated for 150 percent of motor horsepower.
 6. Motor characteristics: As scheduled.
 7. Finishes: Provide Kynar paint coating over compatible primer on all steel surfaces.
 8. Provide roof curb and duct adapter.
 9. Provide other accessories as scheduled.
- C. Accessories:
 1. Mounting brackets: Necessary for installation.
 2. Roof curb:
 - a. Factory fabricated of 16-gauge aluminum with wood nailer strip and gaskets.
 - b. Capable of supporting entire unit weight.
 - c. Suitable for installing and connecting ductwork to curb.
 - d. In accordance with NRCA Standards.
 - e. Extend a minimum of 8 inches above top of built up roofing, but no less than 14 inches high.
 - f. Flashing: In accordance with NRCA Standards.
 3. Bird screen: Provide bird screen if no screen is listed on the Fan Schedule.

2.2 TYPE 5, CENTRIFUGAL CEILING EXHAUST FANS

- A. Manufacturers: One of the following or equal:
 1. Greenheck, Model SP, CSP.
 2. Cook, Gemini series.
 3. Penn, Zephyr.
- B. Characteristics:
 1. Type: Cabinet type centrifugal fan.
 2. Fan: Steel, forward-curved, squirrel-cage type wheel.
 3. Housing: Heavy gauge carbon steel housing.
 4. Access: Removable access panel.
- C. Accessories:
 1. Exhaust grille, eggcrate pattern, aluminum, or PVC construction.
 2. Factory installed backdraft damper on discharge of fan.
 3. Finish: Galvanized fan, housing, and damper.

2.3 MOTORS

- A. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Division 26 Sections.
 1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.

2. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Division 26 Sections.

B. Enclosure Type: Totally enclosed, fan cooled.

2.4 SOURCE QUALITY CONTROL

- A. Certify sound-power level ratings according to AMCA 301, "Methods for Calculating Fan Sound Ratings from Laboratory Test Data." Factory test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Label fans with the AMCA-Certified Ratings Seal.
- B. Certify fan performance ratings, including flow rate, pressure, power, air density, speed of rotation, and efficiency by factory tests according to AMCA 210, "Laboratory Methods of Testing Fans for Aerodynamic Performance Rating." Label fans with the AMCA-Certified Ratings Seal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine and verify that Work is in condition to receive installation specified in this Section.
- B. Take measurements and verify dimensions to ascertain fit of installation.
- C. Ascertain support and openings are correctly located.

3.2 PREPARATION

- A. Before installation, remove dust and debris from equipment and ducts.
- B. During installation and until equipment is operated, protect equipment and ducts from dust and debris by covering openings with tape or plastic.

3.3 INSTALLATION

- A. Observe applicable installation requirements as specified.
- B. Anchoring and support:
 1. Provide anchoring and support for fans and appurtenances.
 2. Provide anchoring to sustain seismic and wind forces as specified in Sections 01 81 02 and 01 81 04.
- C. Adjust alignment of ducts where necessary to resolve conflicts with architectural features or to resolve conflicts with the work of other trades.
- D. Install flexible connections to fans.
- E. Install roof curb and fan as recommended by fan manufacturer.
- F. For fan housings with threaded water trap drain, provide drain piped from fan housing to the nearest drain channel, floor drain, or sump.
- G. Install fans level and plumb.
- H. Secure roof-mounted fans to roof curbs with cadmium-plated hardware.

- I. Install units with clearances for service and maintenance.
- J. Label units with permanent labels.

3.4 CONNECTIONS

- A. Ground equipment according to Division 26.
- B. Connect wiring according to Division 26.

3.5 FIELD QUALITY CONTROL

- A. 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.
- B. Tests and Inspections:
 - 1. Verify that shipping, blocking, and bracing are removed.
 - 2. Verify that unit is secure on mountings and supporting devices and that connections to ducts and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters, and disconnect switches.
 - 3. Verify that cleaning and adjusting are complete.
 - 4. Disconnect fan drive from motor, verify proper motor rotation direction, and verify fan wheel free rotation and smooth bearing operation. Reconnect fan drive system, align and adjust belts, and install belt guards.
 - 5. Adjust belt tension.
 - 6. Adjust damper linkages for proper damper operation.
 - 7. Verify lubrication for bearings and other moving parts.
 - 8. Verify that manual and automatic volume control and fire and smoke dampers in connected ductwork systems are in fully open position.
 - 9. Disable automatic temperature-control operators, energize motor and adjust fan to indicated rpm, and measure and record motor voltage and amperage.
 - 10. Shut unit down and reconnect automatic temperature-control operators.
 - 11. Remove and replace malfunctioning units and retest as specified above.
- C. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Prepare test and inspection reports.

3.6 ADJUSTING

- A. Adjust damper linkages for proper damper operation.
- B. Adjust belt tension.
- C. Replace fan and motor pulleys as required to achieve design airflow.
- D. Lubricate bearings.

END OF SECTION

SECTION 23 37 13 - AIR OUTLETS AND INLETS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the air distribution outlets, exhaust and return air devices, and the accessories required for complete installation.
- B. The work of this section is subject to the requirements of Section 23 05 00, Common Work Results for Mechanical.

1.2 CODES AND STANDARDS

- A. Sheet Metal and Air Conditioning Contractors National Association
 - 1. HVAC Duct Construction Standards - Metal and Flexible
- B. American Society of Heating, Refrigerating and Air Conditioning Engineers
 - 1. Fundamentals - Handbook Latest Edition
 - 2. ANSI/ASHRAE 70-1991 Method of Testing For Rating the Performance of Air Outlets and Inlets.
 - 3. ASHRAE 113-1990 Method of Testing For Room Air Diffusion.
- C. Air Conditioning and Refrigeration Institute
 - 1. ARI 890-1994 Rating of Air Diffusers and Air Diffuser Assemblies
 - 2. ARI 885-1990 Procedure for Estimating Occupied Space Sound Levels in the Application of Air Terminals and Air Outlets
- D. International Organization for Standardization (ISO)
 - 1. ISO 5219-1984 Air Distribution and Air Diffusion -- Laboratory Aerodynamic Testing and Rating of Air Terminal Devices
 - 2. ISO 5135-1984 Acoustics -- Determination of Sound Power Levels of Noise from Air Terminal Devices, High/Low Velocity/Pressure Assemblies, Dampers and Valves by Measurement in a Reverberation Room.
 - 3. ISO 3741-1988 Acoustics -- Determination of Sound Power Levels of Noise Sources -- Precision Methods for Broad-Band Sources in Reverberation Rooms.
 - 4. ISO 7244-1984 Air Distribution and Air Diffusion -- Aerodynamic Testing of Dampers and Valves.
 - 5. ISO 7730-1994 Moderate Thermal Environments -- Determination of the PMV and PPL Indices and Specification of the Conditions for Thermal Comfort.

1.3 SUBMITTALS

- A. Submittals shall include manufacturers technical literature for performance (sound pressure loss, throw) pictorial literature, and schedule shall be submitted indicating the style and size of each diffuser or grille, location by room number, CFM of unit, throw, noise level, (NC rating) method of mounting and finish.

1.4 ACCEPTABLE MANUFACTURERS

- A. Acceptable Manufacturers shall be Titus, Price, and Tuttle & Bailey.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Product performance data shall be taken from tests conducted in accordance with ISO Standard 3741, ISO Standard 5135, ISO Standard 5219, ISO Standard 5279, ISO Standard 7244, ISO Standard 7730-7794, ANSI/ASHRAE 70, and ARI-890.
- B. Exhaust grilles and registers including volume controllers for toilet rooms and janitors' closets, shall be constructed entirely of aluminum. Except where aluminum is specified, remainder of diffusers, grilles and registers may be constructed of steel including volume controllers.
- C. Unless otherwise specified on drawings, grilles and frames constructed of aluminum shall have a 60 minute anodized aluminum finish. All other grilles and diffusers shall have a white flo-coat finish suitable as a finish coat or for field painting.
- D. Refer to architectural drawings for the various types of ceilings, i.e., mineral tile or plaster to assure that air devices have the correct type of mounting. Refer to drawings of reflected ceiling plans for location of ceiling diffusers and grilles.
- E. Supplier shall also check all air distribution and return air devices for proper performance, noise and accessories. Any device exceeding noise level herein specified shall be brought to the attention of the Engineers.
- F. Contractor shall coordinate openings in hard ceilings, furred walls, masonry walls, and floors.
- G. The nominal or duct connection size of grilles (not overall dimensions) is given on plans.
- H. Devices are defined in the following manner in this section.

<u>Device</u>	<u>Abbreviation used on the Drawings</u>
Supply Grilles/ Diffuser	S0#
Return Grilles	R0#

- I. A third letter following these abbreviations refers to the type of device which is defined herein.

2.2 SUPPLY DIFFUSER (CEILING)

- A. Unless otherwise called for on drawings and schedule the supply diffuser shall be Square and Rectangular Louvered Face - 1-4 way, shall be Titus model TDC-Type 1 (surface) or TDC-Type 3 (lay-in). Removable core, square or rectangular neck, with air pattern shown on the drawings. Diffusers shall be furnished with AG-95 opposed blade damper and EGS equalizing grids.

2.3 RETURN/EXHAUST GRILLES

- A. Unless otherwise called for on drawings and schedule the return grilles shall be the following:
 1. Type A - Titus model 50F, 1/2 inch aluminum grid for. Register shall include an AG-35 opposed blade damper. Scheduled grilles take precedence.
 2. Type B – Titus model 60FL, industrial style aluminum bar grilles. Scheduled grilles take precedence.

2.4 SUPPLY GRILLES

- A. Type A - Titus model DL - High capacity supply louver. Scheduled grilles take precedence.

- B. Type B – Titus model 272FL – Aeroblade double deflection supply grilles. Grilles shall include an opposed blade damper. AG35AA or equal. Scheduled grilles take precedence.

PART 3 - INSTALLATION

- A. Provide air devices as indicated on the drawings. Mount each device securely to avoid rattling and vibration.
- B. Devices shall be parallel to the plane of the surfaces they are mounted on.
- C. Continuous linear devices shall be aligned, parallel to walls, with no perceptible distortion.

END OF SECTION

SECTION 23 74 13 - PACKAGED AIR CONDITIONING UNITS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes all work necessary for a complete installation of packaged rooftop air conditioning units.
- B. The work of this section is subject to the requirements of Section 23 05 00, Common Work Results for Mechanical.

1.2 SUBMITTALS

- A. Shop drawings shall include complete data on compressors, electric heating components electric motors, V-belt drives, coils, casing construction, vibration isolation, economizer cycle, and air filters.
- B. Fan data shall include: capacity, fan curve, RPM brake horsepower, fly wheel effect (WK2), class, arrangement, sound power levels for each octave band.
- C. Unit data shall include total and sensible cooling capacities and heating inputs and outputs.
- D. Curb data.
- E. Unit configuration.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. ASHRAE Compliance:
 - 1. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Standard for Refrigeration Systems."
- C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2007.

1.4 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of packaged rooftop air-conditioning units that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period:
 - a. For Compressor: Five year(s) from date of Substantial Completion.
 - b. For Parts and labor: One year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Packaged rooftop air conditioning units shall be completely factory assembled including compressors coils, electric heating section, gas heating section, refrigerant circuits, condensate drain pan, fans, motor(s), starters, filters and controls in an insulated weather resistant casing.

Units shall be rated and tested in accordance with ARI standard 360. Units shall be UL listed and labeled and classified in accordance with ANSI Z21.47 and UL 465.

- B. Casing:
 - 1. Unit casing shall be constructed of zinc coated, minimum 22 gauge, ASTM A527 G90 galvanized steel. Exterior surfaces shall be cleaned, phosphatized and finished with a weather-resistant baked enamel finish. Seams shall be gasket sealed to be water tight.
 - 2. The air handling portions of the casing shall be completely insulated with coated, fire retardant glass fiber insulation, minimum 1-1/2 inches thick. Service panels with lifting handles and air tight seal shall provide access to all sections of the unit for maintenance. The base of the unit shall be suitable for mounting on a roof curb and shall have provisions for lifting by crane.
 - 3. Supply and discharge duct connections shall be for a horizontal installation. Duct connections shall not connect into the bottom of the unit.
- C. Compressors:
 - 1. Compressors shall be high efficiency, sealed hermetic rotary (scroll) or reciprocating type mounted on spring vibration isolators within the unit. Compressors shall be equipped with internal overcurrent and temperature protection as well as high and low pressure protection. Each refrigerant circuit shall have independent capillary expansion devices, service pressure ports and refrigerant line filter driers.
- D. Coils:
 - 1. Evaporator and condenser coils shall be seamless copper tube type with mechanically bonded aluminum fins. Coils shall be factory leak tested to 200 psig and pressure tested to 450 psig.
- E. R410A Refrigerant
- F. Fans and Blowers:
 - 1. Evaporator fan shall be forward curved blade centrifugal type statically and dynamically balanced with adjustable V-belt drive or direct drive. High efficiency motors shall be thermally protected. Fan and motor assemblies shall be spring isolated from the rest of the unit.
 - 2. Condenser fans shall be direct drive, vertical discharge propeller type, statically and dynamically balanced. Fan motors shall be permanently lubricated with built-in thermal overload protection.
- G. Operation and Safety Controls:
 - 1. Manual reset, high pressure cutout switches.
 - 2. Automatic reset, low pressure cutout switches.
 - 3. Low oil pressure cutout switch.
 - 4. Compressor winding cutout switch.
 - 5. Excessive cycling protection.
- H. Filters:
 - 1. Units shall be equipped with 2 inch thick, 30 percent efficient, pleated media type throw-away filters.
- I. Energy efficiency equal to or greater than prescribed by ASHRAE 90.1.
- J. Condensate Drain Pan:
 - 1. Condensate drain pan shall be stainless steel or double wall galvanized steel with bituminous corrosion resistant coating. Pans shall be insulated on bottom side to prevent condensation.

- K. Acceptable manufacturers shall include Trane, Carrier, Daikin, and York.

PART 3 - EXECUTION

- A. Install unit in accordance with manufacturers' instructions. Unit to be installed level and plumb, and firmly anchored to structure.
- B. Install trapped condensate drain piping from unit to discharge into roof drain or gutter (refer to detail on the drawings).
- C. Turn units over to Owner with a clean set of filters.

END OF SECTION

SECTION 23 81 27 - MINI-SPLIT-SYSTEM AIR-CONDITIONING UNITS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes ductless mini-split-system air-conditioning and heat pump units consisting of separate evaporator-fan and compressor-condenser components. Units are designed for exposed or concealed mounting, and may be connected to ducts.

1.2 SUBMITTALS

- A. Product Data: Include rated capacities, furnished specialties, and accessories for each type of product indicated. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.
- B. Shop Drawings: Diagram power, signal, and control wiring.
- C. Operation and Maintenance Data: For split-system air-conditioning units to include in emergency, operation, and maintenance manuals.
- D. Warranty: Special warranty specified in this Section.

1.3 QUALITY ASSURANCE

- A. Product Options: Drawings indicate size, profiles, and dimensional requirements of split-system units and are based on the specific system indicated.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2004, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
- D. ASHRAE/IESNA 90.1-2004 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6 - "Heating, Ventilating, and Air-Conditioning."

1.4 COORDINATION

- A. Coordinate size and location of concrete bases for outside units. Cast anchor-bolt inserts into bases.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of ductless mini-split-system air-conditioning units that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Mitsubishi
 - 2. Sanyo
 - 3. EMI
 - 4. Daikin

2.2 CONCEALED EVAPORATOR-FAN COMPONENTS

- A. Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on back of panel.
 - 1. Insulation: Faced, glass-fiber duct liner.
 - 2. Drain Pans: Galvanized steel, with connection for drain; insulated.
 - 3. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.
- B. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with thermal-expansion valve.
- C. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements with refractory ceramic support bushings; automatic-reset thermal cutout; built-in magnetic contactors; manual-reset thermal cutout; airflow proving device; and one-time fuses in terminal box for overcurrent protection.
- D. Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor.
- E. Fan Motors: Comply with requirements in Section 26 05 15 – Electric Motors.
 - 1. Special Motor Features: Multi-tapped, multispeed with internal thermal protection and permanent lubrication.
- F. Disposable Filters: 1 inch thick, in fiberboard frames.
- G. Wiring Terminations: Connect motor to chassis wiring with plug connection.
- H. Condensate Pump: furnish condensate pump.

2.3 WALL-MOUNTING, EVAPORATOR-FAN COMPONENTS

- A. Cabinet: Enameled steel with removable panels on front and ends in color selected by Architect, and discharge drain pans with drain connection.
 - 1. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.
 - 2. Drain Pan and Drain Connection: Comply with ASHRAE 62.1-2004.
- B. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with thermal-expansion valve.

- C. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements with refractory ceramic support bushings; automatic-reset thermal cutout; built-in magnetic contactors; manual-reset thermal cutout; airflow proving device; and one-time fuses in terminal box for overcurrent protection.
- D. Fan: Direct drive, centrifugal fan.
- E. Fan Motors: Comply with requirements in Section 26 05 15 – Electric Motors.
 - 1. Special Motor Features: Multi-tapped, multispeed with internal thermal protection and permanent lubrication.
- F. Filters: Permanent, cleanable.
- G. Condensate Pump: Furnish condensate pump.

2.4 CEILING RECESSED, EVAPORATOR-FAN COMPONENTS

- A. Cabinet: Enameled steel with removable panels on front and ends in color selected by Architect, and discharge drain pans with drain connection.
 - 1. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.
 - 2. Drain Pan and Drain Connection: Comply with ASHRAE 62.1-2004.
- B. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with thermal-expansion valve.
- C. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements with refractory ceramic support bushings; automatic-reset thermal cutout; built-in magnetic contactors; manual-reset thermal cutout; airflow proving device; and one-time fuses in terminal box for overcurrent protection.
- D. Fan: Direct drive, centrifugal fan.
- E. Fan Motors: Comply with requirements in Section 26 05 15 – Electric Motors.
 - 1. Special Motor Features: Multi-tapped, multispeed with internal thermal protection and permanent lubrication.
- F. Filters: Permanent, cleanable.
- G. Condensate Pump: Furnish condensate pump.

2.5 AIR-COOLED, COMPRESSOR-CONDENSER COMPONENTS

- A. Casing: Steel, finished with baked enamel in color selected by Architect, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
- B. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
 - 1. Compressor Type: Reciprocating or Scroll.
 - 2. Manual-reset high-pressure switch and automatic-reset low-pressure switch.
 - 3. Refrigerant: R-410A.

- C. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with liquid subcooler.
- D. Heat Pump Components: Reversing valve and low-temperature air cut-off thermostat for heat pump units.
- E. Fan: Aluminum-propeller type, directly connected to motor.
- F. Motor: Permanently lubricated, with integral thermal-overload protection.
- G. Low Ambient Kit: Permits operation down to 35 deg F.
- H. Mounting Base: Polyethylene.
- I. Minimum Energy Efficiency: Comply with ASHRAE/IESNA 90.1-2004, "Energy Standard for Buildings except Low-Rise Residential Buildings."

2.6 ACCESSORIES

- A. Thermostat: Wired, low voltage with subbase to control compressor and evaporator fan.
- B. Automatic-reset timer to prevent rapid cycling of compressor.
- C. Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.
 - 1. Minimum Suction Line Insulation Thickness: 1/2 inch thick closed cell unicellular or preformed fiberglass.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units level and plumb.
- B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.
- C. Install ground-mounting, compressor-condenser components on 8-inch-thick, reinforced concrete base; 4 inches larger on each side than unit, 4-inches above finished grade.
- D. Install and connect pre-charged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit. Adhere to manufacturers' installation instructions for line sizes and maximum lengths; do not install units or piping if adverse conditions exist.
- E. Insulate refrigerant suction lines and condensate drain lines.

3.2 CONNECTIONS

- A. Install piping adjacent to unit to allow service and maintenance.
- B. Duct Connections: Duct installation requirements are specified in Section 23 31 13 – Metal Ducts. Drawings indicate the general arrangement of ducts.

- C. Electrical Connections: Comply with requirements in Division 26 Sections for power wiring, switches, and motor controls. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including connections.
- B. Perform the following field tests and inspections and prepare test reports:
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Remove and replace malfunctioning units and retest as specified above.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units.

END OF SECTION

SECTION 23 83 01 – HEATING UNITS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Electric unit heaters.
 - 2. Thermostats for unit heater.
- B. Related sections:
 - 1. Section 01 41 00 - Regulatory Requirements.
 - 2. Section 01 81 02 - Seismic Design Criteria.
 - 3. Section 01 81 04 - Wind Design Criteria.
 - 4. Section 23 09 13 - HVAC Controls.
 - 5. Section 23 05 93 - Testing, Adjusting, and Balancing.
 - 6. Section 26 05 15 - Electric Motors.

1.2 REFERENCES

- A. Air Movement and Control Association International, Inc. (AMCA):
 - 1. 302 - Application of Sone Ratings for Non-Ducted Air Moving Devices.
- B. American Gas Association (AGA).
- C. National Electric Code (NEC).
- D. National Fire Protection Association (NFPA):
 - 1. 54 - National Fuel Gas Code.
- E. National Electrical Manufacturers Association (NEMA):
 - 1. 250 - Enclosures for Electrical Equipment (100 V Maximum).
- F. Underwriters' Laboratories, Inc. (UL).
- G. International Fuel and Gas Code (IFGC).
- H. International Mechanical Code (IMC).

1.3 DEFINITIONS

- A. NEMA Type 3R enclosure in accordance with NEMA 250.

1.4 SYSTEM DESCRIPTION

- A. Design requirements:
 - 1. Provide seismic and wind supports meeting the seismic design criteria as specified in Section 01 81 02 and wind design criteria for exterior units as specified in Section 01 81 04.
 - 2. Electrical components: UL listed and meeting the design and installation requirements of the NEC.
 - 3. Hot water piping, gas piping, drains, venting, and other appurtenances of unit heaters: Install in accordance with building code, mechanical code, and plumbing code as specified in Section 01 41 00, and the NFPA.

4. Noise levels for unit heaters installed in offices, hallways, or entry areas: Not to exceed 10 Sones as measured in accordance with AMCA Publication 302.
5. Motors supplied with heating units: As specified in Section 26 05 15.

B. Performance requirements are included in the Heating Unit Schedules in the drawings.

C. Design and supply necessary electrical power and control systems, components, and wiring to make a complete functioning system.

1. Comply with referenced electrical Sections and design to perform system heating functions as specified in Section 23 09 13.

1.5 SUBMITTALS

A. Shop drawings:

1. System layout, mechanical, electrical power, and control diagrams.
2. Materials.
3. Supports and seismic bracing calculations and details.
4. Cut sheets on primary and ancillary equipment.
5. Sound ratings of fans in Sones in accordance with AMCA Publication 302.

B. Certificates: Successful testing of burners used in gas unit heaters.

C. Operation and Maintenance Data.

D. Warranties.

1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2004, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."

C. ASHRAE/IESNA 90.1-2004 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6 - "Heating, Ventilating, and Air-Conditioning."

D. Provide heating units and controls that are listed by UL.

1.7 WARRANTY

A. Warranty period shall begin on the date of Final Acceptance.

B. Two-year manufacturer's warranty on all components, except heating elements and coils.

C. Heating elements and coils: 10-year warranty.

PART 2 - PRODUCTS

2.1 ELECTRIC UNIT HEATERS

A. Manufacturers: One of the following or equal.

1. Trane, Type UHEC.
2. Markel, Series 5100.

3. Chromalox, Type LUH or VUH.
- B. Fan type: Aluminum axial flow:
 1. Provide fan guards.
 2. Dynamically balance.
 3. Fan designed for quiet operation.
 4. Permanently lubricated ball bearings.
 5. Automatic reset thermal overload protection.
- C. Heating element characteristics:
 1. Rated capacity at entering air temperature of 65 degrees Fahrenheit.
 2. Fin type, steel plated heater elements, with elements brazed to common fins, designed for maximum strength and maximum heat transfer.
 3. 3-phase designed for balanced phases.
 4. Over temperature cutout with automatic reset.
- D. Features:
 1. Built-in magnetic contactors.
 2. Control transformer for 24 or 120-volt control as indicated in the Heating Unit Schedules.
 3. Required mounting brackets.
 4. Individually adjustable outlet louvers.
 5. Cabinet formed of minimum thickness 18-gauge steel with steel stiffeners.
 6. Controls:
 - a. Provide thermostat as specified in this Section.
 - b. Provide control transformer suitable for 24-volt or 120-volt control as indicated in the Heating Unit Schedules.
- E. Finishes:
 1. Casing finish backed enamel in manufacturer's standard color.

2.2 THERMOSTATS FOR UNIT HEATERS

- A. General:
 1. Thermostat types: Thermostat types are called out on the drawings by the letter T followed by a number; this designation refers to the specified thermostat types given in this Section and/or Section 23 09 13; where no type is called out, provide 1 of the specified types that will match the controlled equipment requirements and provide a functioning system.
 2. Manufacturers: One of the following:
 - a. Johnson Controls, model as specified with each type.
 - b. Honeywell, Tradeline, equivalent models.
- B. T-1, Type 1 Thermostat, Heating Only, Line Voltage:
 1. Johnson Controls Model:
 - a. Dry locations (no hose bibs or open water processes in room): Model A19BAC-1 in NEMA 1 enclosure unless otherwise indicated.
 - b. Wet Locations (hose bibs or open water processes in room): Model A19PRC-1 in NEMA 4X enclosure.
 2. Switch action: Single pole double throw, open on rising temperature.
 3. Sensing element: Coiled bulb and capillary.
 4. Setpoint: 30 to 110 degrees Fahrenheit with knob adjuster and visible scale.
 5. Electrical ratings: 16 amps alternating current at 120 volts, 9.2 amps alternating current at 208 volts.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine and verify that Work is in condition to receive installation specified in this Section.
 - 1. Take measurements and verify dimensions to ascertain fit of installation.
 - 2. Verify structural sufficiency to support installation.
 - 3. Verify that chassis, shafts, and openings are correctly located.
 - a. Otherwise cut new openings where required.
 - 4. Confirm specified thermostat and other controls are compatible with specified equipment.
- B. Examine and verify structural details and sections indicated on the Drawings, ascertain adequacy, and determine possible conflicts in dimensions and clearances.

3.2 PREPARATION

- A. Before installation, remove dust and debris from equipment and ducts.
- B. During installation and until equipment is operated, protect equipment and ducts from dust and debris by covering openings with tape or plastic.

3.3 INSTALLATION

- A. Anchoring and support: Install anchoring for seismic and wind forces to meet the design criteria specified in Sections 01 81 02 and 01 81 04.
- B. Alignment: Adjust ductwork alignment when necessary to resolve conflicts with architectural and structural features or to resolve conflicts with work of other trades.
- C. Install and wire heating units and thermostats in accordance with manufacturer's recommendations.
 - 1. Provide disconnect switches at the heating units wherever indicated on the Drawings, specified in this Section, scheduled and wherever required by code.
- D. Adjust heater units with louvers for optimum air circulation.
- E. Provide gas unit heater venting in accordance with mechanical code and plumbing code as specified in Section 01 41 00 and in accordance with NFPA 54.

3.4 FIELD QUALITY CONTROL

- A. Test equipment and installation to verify operation is within manufacturer's standards and that noise levels do not exceed levels specified.
- B. Test equipment performance and balance equipment as specified in Section 23 05 93.

END OF SECTION

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)



3010 Gaylord Parkway
Suite 190
Frisco, TX 75034

TEL 972.377.7480
FAX 972.377.8380

www.GarverUSA.com

ADDENDUM NO. 1

Date: November 30th, 2017
Project Name: Celina Booster Pump Stations Improvements
Garver Project No. 17088075

This addendum shall be a part of the Plans, Contract Documents and Specifications to the same extent as though it were originally included therein, and it shall supersede anything contained in the Plans, Contract Documents, and Specifications with which it might conflict. This Addendum No. 1, including all attachments shall become part of the Contract and all provisions of the Contract shall apply thereto. The time provided for completion of the Contract has not been changed as noted in this addendum. Acknowledgement of receipt of this Addendum must be noted in the appropriate section of the Bid Form and included with the Contract Documents.

A. SPECIFICATIONS

1. Remove the following specifications section in its entirety, and replace with the same, attached hereto:
 - a. Section 3 of the Front End Documents, PROPOSAL. The List of Manufacturers has been updated and is now required to be submitted within one hour of bid opening.
2. Revise Specification Section 44 42 57– Vertical Split Case Centrifugal Pumps as follows:
 - a. Section 1.5 Quality Control, delete Subpart B. The pumps will not be required to be factory tested with the actual motors and control panels that will be furnished. This will be accomplished in the field. However, factory testing is required with factory calibrated motors.
3. Revise Specification Section 44 42 57.1 – Vertical Split Case Centrifugal Pumps Data Sheet as follows:
 - a. Revise Primary Flow Rate from “3,800 gpm” to “3,700 gpm”
 - b. Delete “Secondary Design Flow Rate: 4,400 gpm”
 - c. Delete “Secondary Design TDH: 240 ft”
4. Revise Specification Section 44 44 16 – Chlorinator Equipment and Shelter as follows:
 - a. Part 3.1.C., amend as follows: “The automatic gas feeder system shall be Wallace & Tiernan, Superior Chlorinators, or approved equal...”
5. Revise Specification Section 40 23.39.1 – Supplement Process Piping Schedule as follows:
 - a. Revise Remark 3 from “Heat trace and insulate all outside exposed piping.” To “Heat trace and insulate all outside exposed piping <12”.”

B. DRAWINGS

1. To Drawing Number DT-C103, Sheet 58, add the following General Note: “Note: Existing fire hydrant to be relocated to the south edge of new pavement if paving alternative is selected. If paving alternative is not selected, the existing fire hydrant is to remain in place.”
2. To Drawing Number CR-S132, Sheet 023, add the following General Note: “Note: Contractor responsible for relocating existing overhead light and conduit outside of proposed hatch area.”

C. ADDITIONAL INFORMATION

3. Drawing Number CR-M301, Sheet 20 Callout #14 is correct. An 8" pump control valve is required where an 8" 90 degree elbow appears to be depicted.

By:

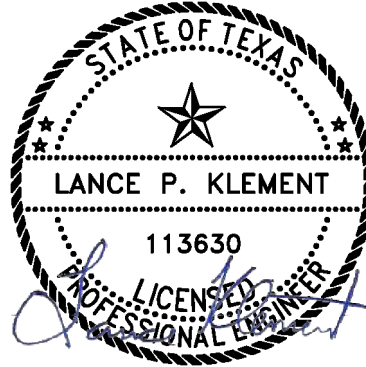


Lance Klement, P.E.
Project Manager

Attachments:

1. Section 3 – PROPOSAL

END OF ADDENDUM NO. 1



Digitally Signed 11/30/2017

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

SECTION 3

PROPOSAL TO CITY OF CELINA, TEXAS (OWNER)

For CELINA PUMP STATIONS IMPROVEMENTS

The undersigned, as bidder, declares that the only persons or parties interested in this proposal as principals are those named herein; that this proposal is made without collusion with any other person, firm, or corporation; that the bidder has carefully examined the form of contract, notice to CONTRACTORS, specifications, and the plans therein referred to; that the bidder has carefully examined the locations, conditions, and classes of materials of the proposed work, apparatus, and other items incidental to construction; and that the bidder will do all work and furnish all materials called for in the contract and specifications in the manner prescribed therein and according to the requirements of the ENGINEER as therein set forth.

It is understood that the quantities of work to be performed at unit prices are approximate and are intended principally to serve as a guide in evaluating bids.

The OWNER reserves the right to make changes in the quantities of the work, as may be considered necessary or desirable, and such changes shall not be considered as waiving or invalidating any conditions or provisions of the contract or bonds. The CONTRACTOR shall perform the work as altered, whether increased or decreased, and no allowances shall be made for anticipated profits.

It is further agreed that the quantities of work to be performed at unit prices; or materials to be furnished, may be increased or decreased as deemed necessary by the ENGINEER to fully complete the work as planned. The OWNER reserves the right to increase or decrease the amount of work to be performed by an amount not to exceed twenty-five (25) percent of the original bid. In the event the increase pertains to items not in the original bid, the CONTRACTOR shall submit a bid in writing for the ENGINEER'S review.

It is further agreed that lump sum prices for individual bid items may be increased to cover additional work ordered by the ENGINEER but not shown on the plans or required by the specifications, in accordance with the provision of the general conditions. Similarly, they may be decreased to cover deletion of work so ordered.

The OWNER reserves the right to decrease the work under this contract. Payment to the CONTRACTOR for the contract items shall be made for the actual quantities of work performed and material furnished at the unit prices set forth in the contract, except as provided below.

In the event the twenty-five (25%) percent increase or decrease in quantity of work or material under any major bid item is exceeded, either party to the contract, upon demand, shall be entitled to negotiate for revised consideration of the exceeded portion.

Any revised consideration shall be paid for as is hereinafter provided under Section 9, Item 6.04 of the General Conditions of Agreement. The foregoing notwithstanding, the total original Contract amount shall not be increased more than twenty-five (25%) percent. The CONTRACTOR, by submission of a bid and execution of the Contract, is deemed to consent to the OWNER'S right to reduce the total by up to 25% of the original Contract. A final reconciliation accounting shall be performed to reflect the final quantities and total dollars for the subject project.

Accompanying this proposal is a bidder's bond on a form supplied by the OWNER, a certified check, or a cashier's check payable to the OWNER in the amount of (5% of amount of Bid dollars) (Written Amount) (\$_____). The bid security accompanying this proposal shall be returned to the bidder unless the bidder fails to execute the contract and obtain a Performance bond within fifteen (15) days of contract award by the OWNER. In such case, the bid security shall become the property of the OWNER and shall be considered as payment for damages due to delay and other inconveniences suffered by the OWNER on account of such failure by the bidder. It is understood that the OWNER reserves the right to reject any and all bids.

PREPARATION OF PROPOSAL: The bidder shall submit the proposal on forms furnished by the City. The bidder shall fill in the blanks for the "Unit Price" and the "Extended Price" written in ink or by computer printer in numerals. Such prices shall be distinctly legible and the "Unit Price" shall govern. The bidder shall state on the Proposal Summary; **Total and Grand Total** prices, written in ink both in numerals and words, for which he proposes to do the work contemplated or furnish the materials required. In case of discrepancies between prices written in words and numerical prices, **the numerical price shall govern.** If an individual submits the proposal, the individual or a duly authorized agent must sign the proposal. If a firm, association, or partnership submits the proposal, the name and address of each principal or member must be given. If a company or a corporation submits the proposal, the company or corporate name and business address must be given and the proposal signed by an official or duly authorized agent. Powers of Attorney authorizing agents or others to sign proposals must be properly certified and must be in writing and submitted with the proposal.

COMPUTER-GENERATED PROPOSAL USE: Computer-generated pages of the proposal may be used in lieu of the proposal form in this section. This option is provided for the convenience of the Bidder.

The computer-generated pages shall be on 8 ½ inches x 11 inches sheets as prescribed on the Excel format provided by the City of Celina. The form can be obtained from the City upon request. The computer generated proposal shall be in this format.

The use by the bidder of computer-generated proposal pages is an option for the convenience of the bidder, and shall not contain added wording intended to modify or amend the wording in the City's form bid proposal, or the provisions of the Contract Documents, including the Details, Specifications, or Special Provisions. All bid items, bid amounts (unit bids and extended totals), subtotals, total amounts for each schedule, and the bid schedule summary page (with the total amount for each schedule and for all schedules) must be submitted, and the risk of error, omission, or failure to include each in accordance with, and matching, the City's final published proposal form shall be borne solely by the bidder; and in the event of error, omission, or failure, the bid shall be declared non-responsive. Bidders are, therefore, strongly advised to check with the City of Celina, Engineering, to ascertain that the bidder has the correct and final published proposal form and all addenda affecting same. The prices in the proposal shall be full compensation for all materials, labor, equipment, testing, and incidental items required to complete the project ready for use. The costs of all material, labor, equipment, and incidental work required to complete the project ready for use must be included in the unit prices for the bid items provided in the proposal, and no direct compensation will be made for any other work.

The bidder shall provide the certification on the computer-generated proposal; otherwise, the bid will be considered non-responsive and rejected.

Bid Tabulation:

Bid tabulations will be disbursed to bidders via email addresses provided at the Bid Opening within 48 hours after the bid letting date.

Basis of Bid:

Bidder will complete the Work in accordance with the Contract Documents for the prices written in the following Bid Schedule. Bidder is responsible for completing all items in order for the bid to be considered responsive.

Bidder shall 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 added to 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 additive alternatives as selected by the Owner.

Discrepancies between words and figures will be resolved in favor of the figures.

CELINA PUMP STATIONS IMPROVEMENTS					
BASE BID SCHEDULE AND SUMMARY					
ITEM NO.	EST. QTY.	UNIT	ITEM DESCRIPTION AND UNIT PRICE (FILL IN SCRIPT)	UNIT PRICE	TOTAL AMOUNT
BASE BID - 'B' ITEMS					
B.1	1	LS	CELINA ROAD PUMP STATION IMPROVEMENTS, in accordance with specifications and drawings, complete in place, the sum of, _____ Dollars and _____ Cents per LUMP SUM	\$ / LS	\$
B.2	1	LS	DOWNTOWN PUMP STATION IMPROVEMENTS, in accordance with specifications and drawings, complete in place, the sum of, _____ Dollars and _____ Cents per LUMP SUM	\$ / LS	\$
GENERAL REQUIREMENTS - 'G' ITEMS					
G.1	1	LS	STORMWATER POLLUTION PREVENTION PLAN (SWPPP), in accordance with specifications and drawings, complete in place, the sum of, _____ Dollars and _____ Cents per LUMP SUM	\$ / LS	\$
G.2	1	LS	POWER COORDINATION STUDY, in accordance with specifications, the sum of, _____ Dollars and _____ Cents per LUMP SUM	\$ / LS	\$
MISCELLANEOUS - 'M' ITEMS					
M.1	1	LS	INDEPENDENT TESTING ALLOWANCE complete in place, the sum of, Twenty Thousand _____ Dollars and Zero _____ Cents per LUMP SUM	\$ 20,000.00 / LS	\$ 20,000.00
M.2	1	LS	WORK CHANGE DIRECTIVES ALLOWANCE complete in place, the sum of, One Hundred Thousand _____ Dollars and Zero _____ Cents per LUMP SUM	\$ 100,000.00 / LS	\$ 100,000.00
TOTAL AMOUNT BASE BID		_____ Dollars and _____ Cents			\$
TOTAL BID AMOUNT					
BASE BID _____ Dollars and _____ Cents \$					

ADDITIVE ALTERNATE - 'A' ITEMS					
A.1	1	LS	CELINA ROAD BACK-UP POWER complete in place, the sum of, _____ Dollars and _____ Cents per LUMP SUM	\$ / LS	\$
A.2	1	LS	DOWNTOWN BACK-UP POWER complete in place, the sum of, _____ Dollars and _____ Cents per LUMP SUM	\$ / LS	\$
A.3	1	LS	PAVED DRIVEWAYS, at both Celina Road and Downtown locations, complete in place, the sum of, _____ Dollars and _____ Cents per LUMP SUM	\$ / LS	\$

NOTES:

1. The successful Bidder will be required to hold his Bid Prices for a period of ninety (90) days. This Contract is issued by an organization, which qualifies for exemption pursuant to the provisions of Article 20.04 [F] of the Texas Limited Sales, Excise and Use Tax. All equipment and materials not consumed by or incorporated into the project construction are subject to State Sales Tax under House Bill 11, enacted on August 15, 1991. All such taxes shall be included in the various amounts on the proposal form. The Bidder shall submit a breakdown between labor and material costs, as set up in the Proposal [Section 3].

NOTE: The City qualifies for exemption from State and Local Sales Tax pursuant to the provisions of the Texas Limited Sales, Excise and Use Tax Act. The CONTRACTOR performing this contract may purchase, rent or lease all materials, supplies, equipment used or consumed in the performance of this contract by issuing to his suppliers an exemption certificate in lieu of the tax. Any such exemption certificate issued by the CONTRACTOR in lieu of the tax shall be subject to the provisions of the State Comptroller and any other applicable state regulation or laws.

2. Bidder is required to submit bids for all Sections of the Project for his/her bid to be considered.

The Bidder is cautioned that the State Law regarding tax exemption for Capital Improvement Projects has been revised. The CONTRACTOR shall be responsible for obtaining the latest information from the State Comptroller's Office and bid accordingly.

The CONTRACTOR shall agree to the number of calendar days specified, submit the Bidders Qualification Statement, a Bid Bond with the completed Bid Items, including all bids, and all addenda in the bid documents; otherwise the bid will be considered non-responsive and will be rejected. The CONTRACTOR shall supply the List of Manufacturers within one (1) hour of the bid opening. The CONTRACTOR shall provide the OWNER with a signed contract to include all the specified bonds and insurance, within ten (10) working days following the City Council award date.

If the CONTRACTOR is required to perform any additional work above the original approved contract, the CONTRACTOR may request, in writing, additional calendar days for the completion of the extra work. Hence, all additional calendar day requests shall be submitted in writing. Review of such request shall be provided under Section 9, Item 4.02 (Extension of Time). In the event of the award of the contract to the undersigned, the undersigned will furnish a performance bond for the full amount of contract to secure proper compliance with the terms and provisions of the contract and to insure and to guarantee the work until final completion and acceptance and to guarantee payment of all lawful claims for labor performed and materials furnished in the fulfillment of the contract. The proposed work shall be accepted when fully completed and finished in accordance with the plans and specifications to the satisfaction of the ENGINEER.

LIST OF MANUFACTURERS

Specification Section	Equipment	Base Bid Equipment Manufacturer (Circle One)
13 34 19	Metal Building Systems	1. Alliance Steel, Inc. 2. Butler Manufacturing Company; a BlueScope Steel company. 3. Ceco Building Systems; Division of NCI Building Systems, L.P. 4. Kirby Building Systems; Nucor Company. 5. Metallic Building Company; Division of NCI Building Systems, L.P. 6. Nucor Building Systems. 7. Pinnacle Structures, Inc. 8. VP Buildings; a Division of BlueScope Buildings.
23 74 13	Packaged Air Conditioning Units	1. Trane 2. Carrier 3. Daikin 4. York
23 81 27	Mini-Split-System Air-Conditioning Units	1. Mitsubishi 2. Sanyo 3. EMI 4. Daikin
26 22 00	Low Voltage Transformers	1. Eaton Electrical Inc.; Cutler-Hammer Products. 2. Siemens Energy & Automation, Inc. 3. Square D; Schneider Electric.
26 24 16	Panelboards	1. Eaton Electrical Inc.; Cutler-Hammer Products. 2. Siemens Energy & Automation, Inc. 3. Square D; Schneider Electric
26 24 19	Motor Control Centers	1. Square D; Schneider Electric
26 29 23	Variable Frequency Motor Controllers	1. Rockwell Automation – Allen Bradley; PowerFlex series 2. Schneider Electric – Square D 3. Eaton; SPX series ABB 4. Or Approved Equal. Identify: _____
26 32 13	Engine Generators	1. Caterpillar: Engine Div. 2. Onan/Cummins Power Generation; Industrial Business Group 3. Kohler Co.; Generator Division
26 90 10	Process and Analytical Instruments	1. HACH 2. Or Approved Equal. Identify: _____

Attachment: Felix Construction Contract Documents (Pump Stations Improvement Project)

Specification Section	Equipment	Base Bid Equipment Manufacturer (Circle One)
26 90 20	Programmable Logic Controllers	1. Allen-Bradley CompactLogix
44 42 56.19	Horizontal Split-Case Pumps	1. Paco 2. Or Approved Equal. Identify: _____
44 42 57.1	Vertical Split-Case Pumps	1. Paco 2. Peerless 3. Fairbanks Morse 4. Or Approved Equal. Identify: _____
44 44 16	FRP Shelter	1. MEKCO Manufacturing, Inc. 2. Plasti-Fab, Inc. 3. Warminster Fiberglass 4. Or Approved Equal. Identify: _____
44 44 16	Chlorinators	1. Wallance and Tiernan 2. Superior Chlorinators 3. Or Approved Equal. Identify: _____

The undersigned certifies that the bid prices contained in this proposal have been carefully checked and are submitted as correct and final.

Receipt is hereby acknowledged of the following addenda to the contract documents. Bid Item Changes in Addenda shall also be reflected in an updated Computer Generated Proposal available for Download with each Addendum issued.

Addendum No. 1 Dated _____ Received _____

Addendum No. 2 Dated _____ Received _____

Addendum No. 3 Dated _____ Received _____

Addendum No. 4 Dated _____ Received _____

Addendum No. 5 Dated _____ Received _____

Addendum No. 6 Dated _____ Received _____

Printed Name _____

Signed _____

By _____
Title

Address _____

City _____ State _____ Zip Code _____

() _____
Phone Number



Engineering
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Swapna Konda, Engineer
CC: Vicki Faulkner, City Secretary
Date: December 12, 2017
Re: 12 Oaks Agreement

Action Requested:

Consider and act to authorize the city manager to execute an agreement by and between the City of Celina and Centurion to pay the City \$162,075.31 for regional sewer. (Johnson)

Background Information:

This agreement will allow the City to recover costs for the regional sewer line that serves the northern portion of Light Farms and the Centurion tract that is north of Light Farms and just south of the future Outer Loop. Existing agreements with Light Farms has the City paying a total of \$199,302.50. Centurion will pay the City \$162,075.31 (81%) of the costs for this sewer line.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

The City Attorney will review the agreement for content and form.

Supporting Documents:

Agreement

Staff Recommendation:

Approve



Engineering
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Swapna Konda, Engineer
 CC: Vicki Faulkner, City Secretary
 Date: December 12, 2017
 Re:

Action Requested:

Consider and act to authorize the city manager to execute an agreement by and between the City of Celina and Light Farms for the City to pay \$112,809.65 for regional sewer construction. (Johnson)

Background Information:

The City has requested that LFC revise the construction plans to upsize the sanitary sewer line from 10" to 15" in order to accommodate the anticipated usage of the landowner to the north of the Subdivision. LFC has received a bid for the Sewer Upsize. Including associated engineering design and bonds the total cost of the Sewer Upsize is \$112,809.65. This is in addition to the previous agreement to cover additional expenses associated with the project.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

The City to pay LFC \$112,809.65 for regional sewer construction from the water and sewer balance. Centurion will be reimbursing the City for \$162,075.31 to cover all of the original Light Farms payment of \$86,492.85 and 67% of the \$112,809.65. The actual cost of the regional sewer line not being covered by Centurion is \$37,227.19.

Legal Review:

The City Attorney will review the agreement for content and form.

Supporting Documents:

Agreement

Staff Recommendation:

Approve



Public Works
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Alan Fourmentin, Director of Public Works
CC: Jason Laumer, City Manager
Date: December 12, 2017
Re: Community Integrity and Landscape Fund Resolution

Action Requested:

Consider and act upon a resolution dedicating funds received from Ground and Tower Lease Agreements to a Community Integrity and Landscape Fund. (Laumer)

Background Information:

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

Funding will be allocated and set aside to begin fiscal year 2018-19.

Legal Review:

Attorney has reviewed

Supporting Documents:

Resolution

Staff Recommendation:

Approve

CITY OF CELINA

RESOLUTION NO. 2017-__

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS, CREATING A COMMUNITY INTEGRITY AND LANDSCAPE FUND AND PROVIDING FOR FUNDING THEREOF; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City of Celina is a Home Rule Municipality located in Collin County 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 Constitution of the State of Texas; and

WHEREAS, the City has entered into a certain Ground and Tower Lease Agreement (hereinafter "Agreement"), with New Cingular Wireless, PCS, LLC; and

WHEREAS, said Agreement will generate fixed revenue over its term;

WHEREAS, the City desires to use such revenue to fund certain improvements related to beautification and landscape and in furtherance of such objective desires to create a Community Integrity and Landscape Fund.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Celina, Texas:

Section 1: That the City hereby creates a designated budget line item to be named the Community Integrity and Landscape Fund.

Section 2: That the revenue from the Agreement be designated for such fund.

Section 3: That the City Manager is authorized to make expenditures in furtherance of the purposes set forth herein.

Section 4. That this Resolution shall take effect immediately upon its passage.

PASSED AND APPROVED by the City Council of the City of Celina, Texas this ____ day of December, 2017.

SEAN TERRY, Mayor

ATTEST:

Vicki Faulkner, City Secretary

RESOLUTION _____

APPROVED AS TO FORM:

Lance Vanzant, City Attorney

RESOLUTION _____



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: December 12, 2017
Re: <Insert Subject/RE Here>

Action Requested:

Consider and act to authorize the City Manager to negotiate and execute a Professional Services Agreement by and between the City of Celina and LW's Towing for Wrecker Services. (Wrecker Service Agreement) (DeBuff)

Background Information:

This proposal allows the City to enter into an agreement with LW's Towing for the occasional removal of vehicles which are parked or stored in violation of City ordinances and state law. The agreement extends automatically for additional one (1) year periods.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

All wrecker service costs are billed to vehicle owners.

Legal Review:

This agreement has been reviewed by the City Attorney.

Supporting Documents:

- Proposed agreement

Staff Recommendation:

Staff recommends approval.

AGREEMENT FOR WRECKER SERVICE

THIS AGREEMENT is entered into this ____ day of _____, 20____, by and between the City of Celina, Texas ("City") and _____ ("Operator").

WITNESSETH:

WHEREAS, the City is a home rule municipality with the power of authority to regulate the storage, parking and towing of vehicles within its corporate limits; and

WHEREAS, the City desires to enter into an agreement with a wrecker service to remove, at the request of the City, vehicles which violate City ordinances and state law; and

WHEREAS, this Agreement is exempted from competitive bidding requirements since no municipal funds will be expended as a result of entering into this Agreement; and

WHEREAS, the Operator maintains all required licenses and certifications of any kind in connection with commercial towing and vehicle storage, and shall, during the term of this Agreement, meet any additional license or certification requirements for commercial towing and/ or storage companies that may be imposed by federal, state or local authority.

NOW, THEREFORE, for and in consideration of the mutual covenants and agreements as set forth herein, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

ARTICLE I

The City hereby grants to Operator, for a period of one (1) year from the date hereof, the right to tow and remove, upon request from the city, all vehicles required by the City to be removed from their stationary location. This Agreement shall be automatically extended for additional one (1) year periods, subjects to the termination provisions provided Article VI herein below.

ARTICLE II DUTIES OF OPERATOR

2.01 Operator shall respond to all calls by the city for light or medium duty wrecker service, as hereinafter denied, within thirty five (35) minutes from the time the call for such services is received by Operator. Response time for heavy- duty wrecker services shall not exceed forty five (45) minutes from the time the call for such services is received by the Operator.

2.02 Operator shall maintain at all times, twenty four (24) hours per day, seven (7) days a week, personnel on duty who shall be able to respond to a City request for wrecker service, as required by this Agreement, and to requests for release of vehicles stored and

parked on Operator's property. Failure of Operator to maintain such personnel shall constitute a cause for termination of this Agreement by the City.

2.03 Operator shall maintain and operate a place for the storage of vehicles towed pursuant to this Agreement (the "storage facility"), said storage facility to be a minimum of one (1) acre, with storage capacity for a minimum 150 vehicles, and shall be maintained and kept in good condition, including paving, fencing, lighting, and security as follows:

(a) The storage facility shall be completely enclosed by a fence of at least six (6) feet in height, with a gate which is locked at all times Operator is not at the storage facility;

(b) The storage facility shall have an all- weather surface, such as concrete, asphalt, blacktop, stone, macadam, limestone, iron ore, gravel, shell or caliche that makes delivery and release of vehicles feasible in all weather conditions;

(c) The storage facility shall have a sign at its main entrance, clearly visible and readable from adjacent roadways, which shall include the street address, telephone number, the hours vehicles will be released to vehicle owners, and the State license number of the storage facility;

(d) The storage facility shall have an operable telephone, which must be publicly listed, where Operator can be contacted. If at any time, the telephone number is changed from the number in use on the date of this Agreement, Operator shall give written notice of the same and the new telephone number to the city, prior to the date the new number is used;

(e) For nighttime release of vehicles, Operator shall maintain adequate illumination at the storage facility, which shall not be less than one (1) foot - candle where the vehicles are maintained; five (5) foot- candles in the traffic lanes; and five (5) foot- candles at the entrance.

2.04 Operator shall have the right to continue to provide wrecker and towing services to persons other than the City; provided, however, the calls and request for wrecker service made by the City shall have immediate and absolute priority over any other calls received.

2.05 Operator shall tow, park, and store all vehicles in a safe and secure manner. Vehicle storage shall be conducted in accordance with the following requirements:

(a) All vehicles shall be kept inside the fenced area of the vehicle storage facility at all time;

(b) No stored vehicle shall be used by Operator, its agents or employees for personal or business use;

(c) A vehicle stored pursuant to this Agreement shall be secured, such as doors, windows, and/or hatchbacks closed, convertibles covered or tops raised, without additional charge. Wrecked vehicles which cannot be secured are excepted from this requirement; and

(d) A vehicle stored pursuant to this Agreement shall not be repaired, altered or parts removed without the consent of the vehicle's owner or authorized representative.

2.06 Vehicles shall be accepted for storage by owners as follows:

(a) When Operator accepts for storage a vehicle towed without the consent of the vehicle owner, Operator shall inspect the vehicle and note, as an addition on the wrecker slip or wrecker ticket, any differences from the information previously set out thereon, but shall not write over, or deface in any manner, any prior number on the wrecker slip, Operator shall note in its records the correct number, and notify every previously advised person(s) within 48 hours of current information.

(b) When storing a vehicle pursuant to this Agreement, Operation shall notify, within twenty four hours (24), by certified or registered mail (return receipt requested), the registered owner and /or record lien holder of the vehicle that the vehicle is in possession of Operator.

1. the location where the motor vehicle is located, as required by this Agreement, and the hours the vehicle can be released to the vehicle owner from the storage facility;

2. the amount of fees which must be paid before the vehicle is released;

3. the date on which the vehicle will be moved from the vehicle storage facility, if it is not recovered by the vehicle owner prior to that date;

4. from where, when, by whom the vehicle was authorized to be towed.

2.07 Operator shall not release any vehicle impounded for evidentiary reasons with a hold placed on it, except upon written direction from the Chief of Police of the City, or his designated representative. Whenever a person claims ownership or right of possession to a motor vehicle located on the vehicle storage facility, such person shall be entitled to inspect the wrecker slip or wrecker ticket. The registered vehicle owner, or authorized representative, shall have access to and be allowed to remove any personal belongings in the vehicle, unless otherwise directed by a peace officer.

2.08 Operator shall maintain current records during the term of this Agreement and shall make the same available for review by the City Manager, Chief of Police, or their duly designated representative, which shall be available upon one (1) days' notice. Such records shall include, but not limited to, the following.

(a) Date and time call or request for service was received by Operator;

(b) Date and time of arrival at location of vehicle to be towed and located of vehicle to be towed;

(c) Date and time of arrival at storage area after vehicle was towed;

(d) Name of wrecker driver and the wrecker license plate numbers; the name of the wrecker driver shall be available only to the Texas Department of Labor and Standards or other appropriate law enforcement agency, the Celina Chief of Police, the Collin County Sheriff, and the Texas Department of Public Safety Officials;

(e) Make, model, year and color of vehicle;

(f) License plate number of the vehicle, state issuing the license, and correct vehicle and any damage to the body of the vehicle or missing equipment;

(g) A general description of the vehicle, including overall conditions of the vehicle and any damage to the body of the vehicle or missing equipment;

(h) Date, time and place of vehicle inventory search;

(i) The date the vehicle was released and the name of the individual to whom the vehicle was released;

(j) If the vehicle ownership has been transferred due to any action of the Operator, or if the vehicle has been disposed of or demolished, a copy of the certificate of title issued after the vehicle came into the Operator's possession, the certificate of authority to demolish, a police auction sales receipt, or transfer document issued by the state of Texas for the vehicle; and

(k) All amounts charged for the storage of the vehicle.

The records required by this subsection may be kept in the form of wrecker tickets and slips, so long as all information required herein is kept on the tickets and slips. Each record required to be kept by this Agreement shall be kept for two (2) years from the date of the last transaction shown in the record under Operator's care and custody.

In addition to these record keeping requirements, the Chief of Police of the City shall have the right to prescribe such other record keeping requirements as he deems appropriate to effectuate the terms of this Agreement.

2.09 Operator shall provide the opportunity for the owners of the vehicles stored by Operator to remove items of personal property from their vehicle, unless otherwise directed by a peace officer, and for appraisals and photographs by insurance agents and body shop specialists. Operator shall not dismantle or remove any part or parts from any impounded vehicles.

2.10 Operator shall maintain the minimum amount of equipment and apparatus, as follows:

(a) One (1) light- duty wrecker with a minimum towing capacity of 4,000 pounds;

(b) Four (4) medium-duty flatbed wreckers with a minimum towing capacity of 10,000 pounds;

(c) One (1) heavy-duty wrecker with a minimum towing capacity of 40,000 pounds;

(d) A minimum of one (1) hydraulic wheel lift for towing late-model vehicles; Trailer and slings for towing motorcycles;

(e) Trailer and slings for towing motorcycles;

(f) Dollies for towing damaged vehicles;

(g) Other equipment as may be needed from time to time including, but not limited to, vehicle mounted air compressors, portable air tanks, brooms, towing chains and an electric winch.

Each wrecker shall be equipped with both radio receiver and capability with 24 hour dispatch.

2.11 In the event of a motor vehicle accident, Operator shall clean and remove from street, road, highway, alley or other public way all glass or debris resulting from such accident.

2.12 Operator shall not solicit personal or private business from owners of impounded vehicles which are stored at the located above described.

ARTICLE III FEES

3.01 All towing, storage and other fees shall be collected by Operator. The City shall not participate, in any manner, in the collection of fees.

3.02 Operator hereby agrees that it shall not charge or seek to collect from City, any fees or costs incurred by Operator for the towing of City vehicles, or vehicles seized by the City of Celina.

3.03 The following fees and charges shall apply to all towing, wrecker, and storage services provided by Operator pursuant to this Agreement:

Normal towing charges for vehicles	\$95.00
Accidents requiring additional services (per accident), Arrest, Abandon Vehicles	\$165.00 Tow x 3.00 per mile
Heavy duty wrecker service, per hour	\$450.00 per hour
Storage fees (each 24-hour period, said sum due at the beginning of each of such periods) (per day)	Up to 25' \$20.00 Over 25' \$35.00

Preservation Fee	\$20.00
------------------	---------

3.04 Operator shall provide to the city a current and mutually agreed upon list of all charges assed to vehicle owner.

ARTICLE IV INDEMNIFICATION

4.01 OPERATOR HEREBY RELEASES AND SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS THE CITY AND ITS CITY COUNCIL MEMBERS, OFFICERS, AGENTS, REPRESENTATIVES AND EMPLOYEES FROM AND AGAINST ALL DAMAGES, INJURIES (WHETHER IN CONTRACT OR IN TORT, INCLUDING PERSONAL INJURY AND DEATH), CLAIMS, PROPERTY DAMAGES (INCLUDING LOSS OF USE), LOSSES, DEMANDS, SUITS, ACTIONS, JUDGMENTS, LIENS, COSTS AND EXPENSES, INCLUDING REASONABLE ATTORNEY'S FEES AND EXPENSES (INCLUDING ATTORNEY'S FEES AND EXPENSES INCURRED IN ENFORCING THIS SECTION), THAT IN WHOLE OR IN PART ARISE OUT OF OR ARE CONNECTED WITH GOODS AND/OR SERVICES PROVIDED BY THE OPERATOR, ITS OFFICERS, AGENTS, REPRESENTATIVES, EMPLOYEES, SUBCONTRACTORS, LICENSEES, INVITEES OR ANY OTHER THIRD PARTIES FOR WHOM OPERATOR IS LEGALLY RESPONSIBLE PURSUANT TO THIS AGREEMENT AND/OR THE NEGLIGENT, GROSSLY NEGLIGENT AND/OR INTENTIONAL WRONGFUL ACT AND/OR OMISSION OF OPERATOR IN ITS/THEIR PERFORMANCE OF THIS AGREEMENT, REGARDLESS OF THE JOINT OR CONCURRENT NEGLIGENCE OF THE CITY (COLLECTIVELY, "CLAIMS"). THIS INDEMNIFICATION PROVISION AND THE USE OF THE TERM "CLAIMS" IS ALSO SPECIFICALLY INTENDED TO APPLY TO, BUT IS NOT LIMITED TO, ANY AND ALL CLAIMS, WHETHER CIVIL OR CRIMINAL, BROUGHT AGAINST THE CITY BY ANY GOVERNMENT AUTHORITY OR AGENCY RELATED TO ANY PERSON PROVIDING SERVICES UNDER THIS AGREEMENT THAT ARE BASED ON ANY FEDERAL IMMIGRATION LAW AND ANY AND ALL CLAIMS, DEMANDS, DAMAGES, ACTIONS AND CAUSES OF ACTION OF EVERY KIND AND NATURE, KNOWN AND UNKNOWN, EXISTING OR CLAIMED TO EXIST, RELATING TO OR ARISING OUT OF ANY EMPLOYMENT RELATIONSHIP BETWEEN OPERATOR AND ITS EMPLOYEES OR SUBCONTRACTORS AS A RESULT OF THAT SUBCONTRACTOR'S OR EMPLOYEE'S EMPLOYMENT AND/OR SEPARATION FROM EMPLOYMENT WITH OPERATOR, INCLUDING BUT NOT LIMITED TO ANY DISCRIMINATION CLAIM BASED ON SEX, SEXUAL ORIENTATION OR PREFERENCE, RACE, RELIGION, COLOR, NATIONAL ORIGIN, AGE OR DISABILITY UNDER FEDERAL, STATE OR LOCAL LAW, RULE OR REGULATION, AND/OR ANY CLAIM FOR WRONGFUL TERMINATION, BACK PAY, FUTURE WAGE LOSS, OVERTIME PAY, EMPLOYEE BENEFITS, INJURY SUBJECT TO RELIEF UNDER THE WORKERS' COMPENSATION ACT OR WOULD BE SUBJECT TO RELIEF UNDER ANY POLICY FOR WORKERS COMPENSATION INSURANCE, AND ANY OTHER CLAIM, WHETHER IN TORT, CONTRACT OR OTHERWISE.

IN ITS SOLE DISCRETION, THE CITY SHALL HAVE THE RIGHT TO APPROVE OR SELECT DEFENSE COUNSEL TO BE RETAINED BY OPERATOR IN FULFILLING ITS OBLIGATION HEREUNDER TO DEFEND AND INDEMNIFY THE CITY, UNLESS SUCH RIGHT IS EXPRESSLY WAIVED BY THE CITY IN WRITING. THE CITY RESERVES THE RIGHT TO PROVIDE A PORTION OR ALL OF ITS OWN DEFENSE; HOWEVER, THE CITY IS UNDER NO OBLIGATION TO DO SO. ANY SUCH ACTION BY THE CITY

IS NOT TO BE CONSTRUED AS A WAIVER OF OPERATOR'S OBLIGATION TO DEFEND THE CITY OR AS A WAIVER OF OPERATOR'S OBLIGATION TO INDEMNIFY THE CITY PURSUANT TO THIS AGREEMENT. OPERATOR SHALL RETAIN CITY-APPROVED DEFENSE COUNSEL WITHIN SEVEN (7) BUSINESS DAYS OF THE CITY'S WRITTEN NOTICE THAT THE CITY IS INVOKING ITS RIGHT TO DEFENSE OR INDEMNIFICATION UNDER THIS AGREEMENT. IF OPERATOR FAILS TO RETAIN COUNSEL WITHIN SUCH TIME PERIOD, THE CITY SHALL HAVE THE RIGHT TO RETAIN DEFENSE COUNSEL ON ITS OWN BEHALF, AND OPERATOR SHALL BE LIABLE FOR ALL COSTS INCURRED BY THE CITY. THE RIGHTS AND OBLIGATIONS CREATED BY THIS SECTION SHALL SURVIVE TERMINATION OF THIS AGREEMENT.

4.02 **Liability.** To the fullest extent permitted by law, Operator shall be fully and solely responsible and liable for its own acts and omissions, including those of its officers, agents, representatives, employees, subcontractors, licensees, invitees and all other parties performing services for or on behalf of Operator under this Agreement, and for any and all damage to Contractor's equipment and other property. The City assumes no such responsibility or liability. The City shall have no such responsibility or liability to either Operator or its officers, agents, representatives, employees, subcontractors, licensees, invitees or other persons.

4.03 **Compliance with State Laws: Standard of Care.** Operator shall comply with all federal, state and local laws, statutes, ordinances, regulations and policies, as they exist, may be amended or in the future arising, applicable to Operator and its work. Operator shall ensure that its officers, agents, representatives, employees, subcontractors, licensees, invitees and other parties performing services for or on behalf of Operator under this Agreement comply with all applicable Laws, statutes, ordinances, regulations and policies. If Operator observes or is notified that the work under this Agreement is at variance with applicable Laws, statutes, ordinances, regulations and policies, Operator shall immediately notify the City in writing. Operator shall perform the services in accordance with the prevailing standard of care by exercising the skill and care ordinarily utilized by professionals performing the same or similar services under the same or similar circumstances in the State of Texas.

ARTICLE V INSURANCE / FIDELITY BOND REQUIRED

5.01 Operator shall carry complete and adequate employer accident policy or comparable, public liability and property damage insurance in the amounts of \$250,000 per individual; \$500,000 per occurrence; and \$250,000 property damage.

5.02 All of Operator's employees shall at all times be covered by a blanket fidelity bond in the amount of \$5,000.

5.03 Operator shall name the City as an additional insured on all policies of insurance.

ARTICLE VI TERMINATION

6.01 Either party may terminate this Agreement upon thirty (30) days written notice.

To the City:	Attn:	City Manager
		City of Celina
		142 N. Ohio
		Celina, Texas 75009
	E-mail:	jlaumer@celina-tx.gov
	Tel:	972-382-2682
	Fax:	972-382-3736
With a Copy to:	Attn:	Lance Vanzant
		Hayes, Berry, White & Vanzant, LLP
		512 W. Hickory, Suite 100
		Denton, Texas 76201
	E-mail:	lvanzant@hbwvlaw.com
	Tel:	940-387-3518
	Fax:	866-580-1744
To the Operator:	Attn:	
	E-mail:	
	Tel:	
	Fax:	
With a Copy to:	Attn:	
	E-mail:	
	Tel:	
	Fax:	

ARTICLE VII MISCELLANEOUS

6.01 Nondiscrimination. As a condition to this Agreement, Operator covenants and agrees that Operator will take all necessary actions to ensure, in connection with work under this Agreement, that Operator, the Operator's associates, subcontractors, or employees, will not discriminate in the treatment or employment of any individual or groups of individuals on the ground of race, color, religion, national origin, age, sex, physical handicap unrelated to job performance, either directly or indirectly or through contractual or

other arrangements. In this regard, Operator shall keep, retain and safeguard all records relating to this Agreement for work performed hereunder for a minimum period of three (3) years from final contract completion, with full access allowed to authorized representatives of the City upon request, for purposes of evaluating compliance with this and other provisions of this Agreement.

6.02 Independent Contractor. By the execution of this Agreement, the City and Operator do not change the independent contractor status of Operator. No term or provision of this Agreement, or any act of Operator in the performance of this Agreement, may be construed as making the Operator the agent or representative of the City.

6.03 Assignment. Operator shall not assign any of its rights and duties under this Agreement, except upon prior written approval of the City.

6.04 Governing Law. This Agreement shall be governed by and construed in accordance with the Laws of the State of Texas. Venue shall be in Collin County, Texas.

6.05 Entire Agreement. This Agreement shall constitute the entire agreement and understanding between the City and Operator. Any modification, change or amendment to this Agreement shall be writing and approved by both parties.

6.06 Severability. In the event any article, section, subsection, paragraph, sentence, phrase or word herein is held invalid, illegal or unconstitutional, the balance of this Agreement, shall be enforceable and shall be enforced as if the parties intended at all times to delete said invalid article, section, subsection, paragraph, sentence, phrase, or word; and such invalid, illegal, unconstitutional or unenforceable article, section, subsection, paragraph, sentence, phrase or word shall be substituted by an article, section, subsection, paragraph, sentence, phrase or word as near in substance thereto as may be valid, legal, constitutional and enforceable.

6.07 Chapter 2270 Certification. In accordance with Chapter 2270 of the Texas Government Code, Owner hereby certifies that Owner (a) does not boycott Israel and (b) will not boycott Israel during the term of this or any contract with the City.

6.08 Recitals. The recitals to this Agreement are found to be true and correct and are incorporated herein by reference.

EXECUTED on the this the ____ date of _____, 2017.

CITY OF CELINA, TEXAS

By: _____
Sean Terry, Mayor

Attachment: Wrecker Service Agreement 11.29.17 (Wrecker Service Agreement)

ATTEST:

By: _____
Vicki Faulkner, City Secretary

By: _____

Its: _____

Attachment: Wrecker Service Agreement_11.29.17 (Wrecker Service Agreement)



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: December 12, 2017
Re: <Insert Subject/RE Here>

Action Requested:

Consider and act to authorize the City Manager to negotiate and execute a Professional Services Agreement by and between the City of Celina and VAI Architects, Inc. for Architectural Services in an amount not to exceed \$33,000. (VAI Architectural) (DeBuff)

Background Information:

On November 30th, 2017, Council was briefed on the need to update and renovate City facilities as need for staffing space as well as compliance with Federal, state and local code continues to grow. This item proposes an architectural agreement to briefly study space planning possibilities and their associated costs in remodeling or renovating the City Annex, City Hall, and EDC/Main Street buildings.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

Architectural fees are not to exceed \$33,000.

Legal Review:

This agreement has been reviewed by the City Attorney.

Supporting Documents:

- Proposed agreement

Staff Recommendation:

Staff recommends approval.



November 29, 2017

Mr. Jason Laumer
City of Celina – City Manager
142 North Ohio Street
Celina, TX 75009

Via email: jlaumer@celina-tx.gov

RE: PRICING PROPOSAL FOR FACILITY ASSESSMENT AND CONCEPTUAL DESIGN SERVICES
CITY OF CELINA: CITY HALL, COUNCIL CHAMBERS, AND ECONOMIC DEVELOPMENT
CORPORATION

Dear Mr. Laumer:

The office of VAI Architects Incorporated (VAI) is pleased to present the following proposal for professional services for the Facility Assessment and Conceptual Design for the City Hall, Council Chambers, and the Economic Development Corporation.

I. PROJECT DEFINITION

The City of Celina is experiencing significant growth and likewise the city services will be expanding to accommodate the growth. The City needs assistance in evaluating its current building assets and planning for future expansion.

An overall description of understanding and desired program for each location is listed below.

1) 112 N. Colorado (Church/Annex/Council Chambers)

Currently, engineering services are in the basement of the Annex building and meetings with the public need to be scheduled so that they can meet in an accessible location. Council Chambers will likely always be in this building.

- Area: Basement = 4,378 SF, 1st Floor = 4,853 SF, 2nd Floor = 4,853 SF
- Chairs are preferred to pews
- Need a Council workshop room
- Meeting rooms are always in need, review locations for additional meeting rooms.

Program:

- Offices: Development Services Director, Planning Manager, Building Official, Engineering Director and Assistant Engineering Director.
- Other spaces: Head Engineering Inspector (regular spot), 2-3 inspectors in a bullpen or share desk area, plan reviewer (regular type spot) with 6 building inspectors maybe a few more in a bullpen shared small spots desk space, 1 code with maybe 2 more or so with shared area, senior planner (regular spot) and planner (regular spot).
- 3 counter spots with a supervisor (regular spot) over them maybe close or behind them.
- Open, inviting entry design
- Break Room

2) 142 N. Ohio (City Hall)

The current City Hall is located between the senior center and the library. The City Hall layout and door configuration needs review as available space for open office work space is needed.

- Area: renovation area approximately 350 SF

3) 302 W. Walnut (Economic Development Corporation building)

The Economic Development Corporation building was the old City Chambers. An elevator addition is not desired.

- Area: 1st Floor = 2,380 SF, 2nd Floor = 1,500 SF

Program:

- Offices located towards the back
- (3) Offices: EDC Director, Gigabit Director, Mainstreet Director
- Meeting Conference room closer to front entry, for board meetings, could double as community center space.
- EDC has 5-7 people on the board
- Mainstreet has about 15 people on the board
- Do the restrooms need to be open to the public?
- There is a safe in the building that would be difficult to remove, this will likely remain.
- Receptionist
- Upstairs: just front side of building, better long term if the stairs connected on the interior to the first floor.

II. SCOPE OF SERVICES

Based on the discussion we had with you on October 30, 2017 and our site walk we understand the proposed project involves the following:

- Evaluate the three properties below to gain a general understanding of their existing conditions and renovation work that will be required.
- Design a space plan for each to efficiently utilize the available space.
- The current priority for renovation is as follows: Council Chambers, City Hall, and Economic Development Corporation.
- Create presentation material for review by City Council.
- Provide budgetary pricing for renovation projects and estimated project schedules.

We propose to provide the following professional design services:

A. Conceptual Design Programing

The following professional services will be provided: Architectural, Structural, Mechanical, Electrical, and Plumbing Engineering

1. Meetings: 1 meeting with City to review layout, 1 meeting with City Council.
2. Create conceptual floor plans based on the project program.
3. Revise layout based on review comments received.
4. Create final conceptual design documents.

Deliverables:

1. 11"x17" package consisting of Site Plan, Floor Plans and interior perspective renderings by VAI. This format is for ease of use by the client and can be enlarged upon request.
2. 8.5"x11" project report document consisting of:
 - Concept Design Narrative and Proposed Building Upgrades
 - Cost Estimate by third party estimator

B. Professional Cost Estimating

Hill & Wilkinson General Contractors will perform cost estimating services for the project.

C. Additional Services

1. Fully Rendered Photorealistic Graphics

As an option for renderings in addition to the 2D and 3D graphics VAI will develop for services A, VAI will provide fully rendered photo realistic project images printed at 24" x 36" and mounted on foam core boards. Digital file will be available as needed for Client's use in other presentation formats.

2. Additional services for this project are those services not identified above and/or not otherwise included in this proposal and shall only be provided if authorized or confirmed in writing by the Client.

D. Design Team

VAI reserves the right to replace current consultants or utilize other design consultants as will best serve the project at any time during the design phase.

Architectural / Interiors / Overall Project Management: VAI Architects, Inc.

Structural Engineering: Dunaway Associates, L.P.

MEP Engineering: JJA, Inc.

Cost Estimating: Hill & Wilkinson General Contractors

III. PROJECT SCHEDULE

VAI will be able to start the project approximately three (3) weeks from the time we receive a signed proposal. We believe the project can be completed in four (4) to six (6) weeks depending on the Owner's availability for meetings.

IV. BASIS OF COMPENSATION FOR PROFESSIONAL SERVICES

The fees described below are the negotiated amounts based on the review meeting on November 21, 2017. To perform the scope of services for all portions of the work described above, VAI Architects proposes the following lump sum fee of \$32,147.50. A more detailed break follows below.

A. Conceptual Design Programing

The proposed professional fee associated with the services described above is calculated on a lump sum fee of \$28,647.50.

B. Professional Cost Estimating

The proposed fee associated with the services for Professional Cost Estimating is calculated on a lump sum fee of \$3,500.

C. Additional services:

Fees associated with the services additional to the Professional Services described above will be provided to the Client only after written authorization from the Client prior to executing any work.

D. Reimbursable Expenses:

Project expenses are additional to the proposed fee and shall be reimbursed at the amount expended by VAI in the interest of the project. For this project, reimbursable expenses are estimated to be no more than \$1,000.00. Reimbursable project expenses include reproduction of documents for design review, printing and mounting of renderings, couriers or special overnight deliveries, and project related travel.

E. Hourly Rates and Payment Provisions

For additional services provided by VAI that are not included in this proposal, the following billable hourly rates will apply:

Principal-In-Charge	\$247.00	Project Coordinator	\$135.00
Project Manager	\$182.50	Architectural Designer	\$120.00
Project Architect	\$150.00	CAD Technician	\$85.00
Staff Architect	\$140.00	Administrative	\$67.50

Other additional consulting services not included in the scope of this proposal shall be reimbursed at one and one-tenth (1.1) times the amount expended by VAI in the interest of the project.

Payment by the Client shall be made to VAI within fifteen (15) days of monthly invoicing, based on percentages of completion of each stage of services.

V. SPECIAL PROVISIONS

Please note that our office has made the following assumptions with respect to this proposal:

1. Preparation of drawings will be on AutoCAD, Revit and /or SketchUp. Digital files of the work will be made available to the Client but the project design remains the property of the Architect.
2. The Client will provide a survey of the existing facilities, boundaries and topography to the Architect.
3. A single point of contact will be designated by the Client and shall be the primary source of Client information and approval

We look forward to working with you on this very important project. Please do not hesitate contacting me should you have any questions or if additional information is required.

Respectfully,

VAI Architects, Inc.



R. Barton Drake, AIA, NCARB
Principal

Please sign below and return if this proposal is acceptable. This will serve as our Notice to Proceed.

APPROVAL:

title

signed

dated

Cc: Russell Himes VAI

Attachment: VAI Agreement_CityOfCelina_Proposal_11-29-2017 (VAI Agreement)



Planning and Zoning Commission
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Ben Rodriguez, Senior Planner
 CC: Jason Laumer, City Manager
 Date: December 12, 2017
 Re: Greenway 63 Zoning

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 land that is ±63.15 acre tract of land located in the I.C. Williams survey, Abstract 943, City of Celina, Collin County, Texas; as PD #87 with a base zoning designation of SF-R. both properties are generally located north of CR 51, east of Dallas Parkway, west of Preston Road, and south of FM 428. (Greenway 63 PD) (Jackson)

Background Information:

The property owners have requested that this property be rezoned from its current zoning of AG, Agriculture, to PD, Planned Development with a base zoning of SF-R, Single-Family Residential. The total acreage of the area to be rezoned is approximately 63.15 acres.

The proposed PD mirrors the ETJ Development Agreement Land Use item that is prior to this item on the agenda. The Development Agreement is necessary to vest the property, but the property owners are moving forward with annexation and zoning immediately.

Land Use

GREENWAY 63 LOT SUMMARY				
Desc.	LOT TYPE 1 (40')	LOT TYPE 2 (50')	LOT TYPE 3 (60')	TOTAL
Max	169	30	116	315
Min	130	15	85	230

Both the 40' and 50' lots will be rear entry only with alleys so that the front facade of the house is more than a garage. One of the unique parts of this development that is unlike some of our other subdivisions is the use of mews streets with the 40' lots. A mews is defined by the Planned Development as being a minimum of 25' of an open space area to serve as a yard for the smaller lot widths. The mews will be owned and maintained by the HOA.

Density

The property will have a maximum of number of 315 single-family units, and will be required to have one acre of open space for every 75 dwelling units.

Open Space

The open space will include a 12' wide hike and bike trail, as well as a 20' landscape buffer with a meandering 10' sidewalk along future Celina Parkway. A minimum of two acres shall be non-floodplain open space, and other amenities may include a community pool, playgrounds, and other landscaped open areas.

Board Review/Citizen Input:

Notice of the public hearing was published in the Celina Record on November 10, 2017. Notices of the public hearing have been sent to all owners of property, as indicated by the most recently approved City of Celina tax rolls, who are located within 200 feet of the subject property.

At the Planning and Zoning Commission meeting on November 28, 2017 the Commission voted to approve the proposed rezoning (7-Yes; 0- No).

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

The City Attorney has reviewed the proposed ordinance.

Supporting Documents:

- Concept Plan
- Development Regulations

Staff Recommendation:

Staff recommends approval as presented.

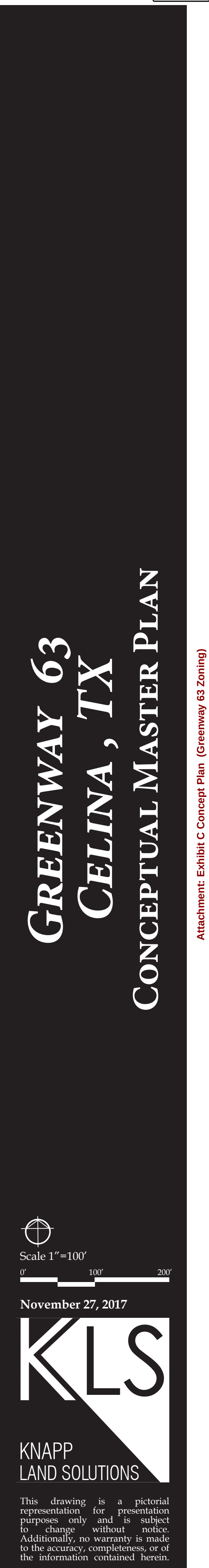


EXHIBIT D

Development Standards

PROJECT LOCATION

The property is located just southeast of the intersection of two major arterial roads. The proposed Planned Development (the “PD”) offers greater flexibility in Single Family detached development. Therefore, to achieve this flexibility and to provide greater housing choices, creating the PD under Section 14.03.031 of the City’s Zoning ordinance is required. Submitted under Section 14.03.031 as a Concept Plan, this PD will provide:

- Increased amount of single family development with an expanded range of housing choices through a diversity of lot sizes ranging from 40-60 feet in width.
- Open space and mews (a row or group of houses built adjacent or around an open space or yard maintained by the HOA) to promote neighborhood community interaction and other physical assets as amenities. Mews shall be minimum twenty-five feet (25’) in width and maximum four hundred feet (400’) in length and include a five foot (5’) wide sidewalk.
- Internal sidewalks will be five feet (5’) wide to allow two people to walk side by side.
- A twelve foot (12’) wide walking trail with at least six (6) benches near streets and trail.
- Mailboxes faced away from the road, but have twelve foot (12’) sidewalk or flagstone from road to cluster boxes.

PROPOSED CONDITIONS

PROPOSED LAND USES

The proposed development is in accordance with the City of Celina Comprehensive Plan dated April, 2013 by increasing Suburban Moderate-High Residential (Suburban Mix) land use category. The following land uses are proposed:

- Base zoning district SF-R
- Suburban Moderate-High Residential (Suburban Mix)
 - Single family detached dwellings with varying lot sizes with a minimum of 4,000 SF.
- Open Space/Park Space
- Amusement and Recreation Services

PROPOSED THOROUGHFARES/ACCESS

The proposed development will utilize the existing Master Thoroughfare Plan Amended October 2017. In addition to the designating Rights of Way according to the Master Thoroughfare Plan, a divided subdivision entrance will be utilized for internal traffic circulation, and street stubs to adjacent property for future connectivity.

CONCEPT PLAN

The Concept Plan locates the proposed land uses outlined within the Property. All land uses shall conform to the SF-R Regulations as they exist at the time of development. The proposed development

should have unified and consistent design elements and provide an integrated development that follows the Comprehensive Plan dated April 2013 and compliments the City of Celina.

DEVELOPMENT REGULATIONS

Tract

Single Family Residential District the intent is to allow a mixture of single family lot sizes provided that the overall density within such SF area shall not exceed five (5) units to the gross acre or 315 lots. For single family lots, the permitted and conditional uses, as well as the regulations, under Section 14.03.008 of the City of Celina’s zoning ordinance shall apply, except as set forth herein, and further defined as Lot Types 1, 2, and 3 below.

SINGLE-FAMILY PERMISSIBLE USES

The following uses shall be allowed:

1. Agricultural Uses – Agricultural uses whose products are grown primarily for home consumption, such as domestic gardening, berry or bush crops, tree crops, flower gardening, orchards, and aviaries.
2. Residential Uses: Single-family detached dwellings
3. Community Facility Uses
 - A. Public and private parks;
 - B. Recreational and open space including but not limited to playgrounds, parkways, greenbelts, ponds and lakes, botanical gardens, pedestrian paths, bicycle paths, equestrian bridle trails, nature centers, bird and wildlife sanctuaries;
 - C. Amenity centers.
4. Temporary structure for storage of building materials and equipment used for initial residential construction, when on the same or adjoining lot, for a period not to exceed the duration of the construction. This shall include temporary trailers for construction and sales activity. Building material storage will be allowed adjacent to temporary trailers or in a lot designated for storage.
5. Manufactured and/or modular homes are prohibited in this PD district.

RESIDENTIAL DESIGN GUIDELINES

I. Lot Type Regulations

The PD will include a variety of lot types in order to achieve the goals established for the district. The lot types and requirements for each shall be as follows:

A. Lot Type 1:

1. Purpose: This lot type is designed to allow single family detached dwellings on lots of not less than four thousand (4,000) square feet, together with the allowed incidental and accessory uses.
2. Height Regulations: No building shall exceed forty-five feet (45') or two and one-half (2-1/2) stories in height to the highest point of its roof.
3. Lot Mix Regulations: There shall be maximum of 169 lots in the district that are Lot Type 1.
4. Area Regulations: The following minimum standards shall be required as measured from property lines:

Lot Size:	Four thousand (4,000) square feet.
Lot Coverage:	The maximum Lot Coverage shall not exceed sixty-five percent (65%) excluding flatwork, i.e. sidewalks and driveways.
Minimum Floor Area:	The minimum square footage of a dwelling unit, exclusive of garages, breezeways and porches, shall be fifteen hundred (1,500) square feet.
Front Yard:	Fifteen feet (15') setback line when garage doors face the alley. Covered Front Porches may extend over the front building setback line up to five feet (5'). Key lots shall have two (2) front yards. The minimum front setback line for lots in this Lot Type that front on a “mews” open space may be reduced to twelve feet (12') at the discretion of, and upon written approval by, the City Manager.
Rear Yard:	Twelve feet (12') minimum main building for rear alley lots and ten feet (10') on front entry lots. Twenty feet (20') minimum garage setback measured from the Right of Way (ROW). This setback, coupled with the alley parkway, shall insure that the alleys are passable at all times.
Side Yard:	Five feet (5') minimum. Fifteen feet (15') minimum when adjacent to street.
Lot Width:	Forty feet typical (40') at building line; thirty-five feet (35') minimum (@ right-of-way) on cul-de-sac and knuckle lots. Lot frontage along alleys shall be fifteen feet (15') minimum.
Lot Depth:	One hundred feet (100') minimum. Eighty-five feet (85') minimum on cul-de-sac and knuckle lots.
Garage Orientation:	Shall face the alley with twenty feet (20') minimum setback.

B. Lot Type 2:

1. Purpose: This lot type is designed to allow single family detached dwellings on lots of not less than five thousand (5,000) square feet, together with the allowed incidental and accessory uses.
2. Height Regulations: No building shall exceed forty-five feet (45') or two and one-half (2-1/2) stories in height to the highest point of its roof.
3. Lot Mix Regulations: There is no maximum or minimum number of lots that are Lot Type 2 in the district.
4. Area Regulations: The following minimum standards shall be required as measured from property lines:

Lot Size:	Five thousand (5,000) square feet.
Lot Coverage:	The maximum Lot Coverage shall not exceed sixty-five percent (65%) excluding flatwork, ie sidewalks and driveways.
Minimum Floor Area:	The minimum square footage of a dwelling unit, exclusive of garages, breezeways and porches, shall be fifteen hundred (1,500) square feet.

Front Yard:	Fifteen feet (15') setback line when garage doors face the alley. Covered Front Porches may extend over the front building setback line up to five feet (5'). Key lots shall have two (2) front yards. The minimum front setback line for lots in this Lot Type that front on a “mews” open space may be reduced to twelve feet (12') at the discretion of, and upon written approval by, the City Manager.
Rear Yard:	Twelve feet (12') minimum main building for rear alley lots and ten feet (10') on front entry lots. Twenty feet (20') minimum garage setback measured from the Right of Way (ROW). This setback, coupled with the alley parkway, shall insure that the alleys are passable at all times.
Side Yard:	Five feet (5') minimum. Fifteen feet (15') minimum when adjacent to street.
Lot Width:	Fifty feet typical (50') at building line; forty feet (40') minimum (@ right-of-way) on cul-de-sac and knuckle lots. Lot frontage along alleys shall be fifteen feet (15') minimum.
Lot Depth:	One hundred feet (100') minimum. Eighty-five feet (85') minimum on cul-de-sac and knuckle lots.
Garage Orientation:	Shall face the alley with twenty feet (20') minimum setback.

C. Lot Type 3:

1. Purpose: This lot type is designed to allow single family detached dwellings on lots of not less than six thousand six hundred (6,600) square feet, together with the allowed incidental and accessory uses.
2. Height Regulations: No building shall exceed forty-five feet (45') or two and one-half (2-1/2) stories in height to the highest point of its roof.
3. Lot Mix Regulations: There must be at least 110 lots that are Lot Type 3.
4. Area Regulations: The following minimum standards shall be required as measured from property lines:

Lot Size:	Six thousand six hundred (6,600) square feet.
Lot Coverage:	The maximum Lot Coverage shall not exceed sixty-five percent (65%) excluding flatwork, i.e. sidewalks and driveways.
Minimum Floor Area:	The minimum square footage of a dwelling unit, exclusive of garages, breezeways and porches, shall be eighteen hundred (1,800) square feet.
Front Yard:	Twenty feet (20') setback line in all instances, however, covered Front Porches may extend over the front building setback line up to five feet (5'), but the garage door must remain at or behind the main structure. Key lots have two (2) front yards.
Rear Yard:	Ten feet (10') minimum.
Side Yard:	Five feet (5') minimum. Fifteen feet (15') minimum when adjacent to street.
Lot Width:	Sixty feet typical (60') at building line; twenty feet (20') minimum (@ right-of-way) on cul-de-sac lots and knuckle lots, flag lots are allowed.
Lot Depth:	One hundred ten feet (110') minimum.

Garage Orientation: Eighty-five feet (85’) minimum on cul-de-sac lots.
May face the street. Front facing garages must be flush or setback to align with the front façade of the house. J-Swing garages are allowed. J-Swing garages can encroach the front setback up to five feet (5’).

CONDITIONAL USES

Uses allowed as conditional uses in the SF-R District (Section 14.03.008) as outlined in the City of Celina Zoning Ordinance No 2017-30, as amended.

DISTRICT REGULATIONS

It is the intent of this Ordinance that all uses permitted by the PD conform to the applicable City of Celina development guidelines as they exist at the time of development.

OTHER DEVELOPMENT REGULATIONS

HOMEOWNERS/PROPERTY OWNERS ASSOCIATION

Homeowner Association(s) will be established as each residential or nonresidential parcel of land is developed. The PD shall contain one or multiple Homeowner/Property Owner Association(s).

OPEN SPACE

The PD will dedicate one acre of open space for every 75 dwelling units. A minimum of 2.0 acres shall be non-floodplain open space. The remaining open space acreage may consist of any pervious areas including publicly accessible detention/drainage facilities (wet ponds included), natural open space areas including floodplain, open spaces with easements passing through, open spaces with walking, hiking, and/or bike trails, and public or private parks. Any detention/drainage areas counted toward the open

space requirement shall be landscaped and amenitized with benches and sidewalks on a minimum of three (3) sides. The Open Space and mews shall be owned and maintained by the Homeowner Association. Trees shall be allowed in side yards on mews lots. The amenities shall include, but are not limited to: community pool, restrooms, playground/children's playscape, hike and bike trail, and landscaped open areas.

CONCEPT PLAN

The Concept Plan demonstrates locations and relationships of the uses permitted under this PD. Because of anticipated development dynamics, it is anticipated that the overall Concept Plan will change from time to time.

An amendment to a concept plan approved as a part of the ordinance establishing the planned development district is a change in zoning district classification and must follow the same procedures set forth in Section 14.02.152, except the director of planning and development may approve minor revisions which do not alter the basic relationship of the proposed development to adjacent property, the uses permitted, increase the density, building height, coverage of site, off street parking ratio, or area regulations as indicated on the approved concept plan.

SCREENING & LANDSCAPE BUFFERS

Screening (6' masonry) shall be required for lots adjacent to County Road 52 (Celina Parkway). Screening (8' board on board fence) shall be required for lots adjacent to the entrance as well as for lots backing to the cemetery property. Black metal tubular fence shall be required on lots adjacent to or backing on open spaces. Landscape buffers shall be required for all lots adjacent to the entrance road and County Road 52 (CR 52). The landscape buffer shall be ten feet (10') in width along the entrance road. The landscape buffer shall be a minimum of twenty feet (20') along CR 52 with a meandering ten foot (10') sidewalk in width along CR 52.

CITY OF CELINA, TEXAS

ORDINANCE 2017-
Greenway 63 PD #87

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 63.15 ACRE TRACT OF LAND LOCATED IN THE I.C. WILLIAMS SURVEY, ABSTRACT 943, CITY OF CELINA, 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 #87; 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 tract comprising 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, #87 on a certain tract of land described in in Exhibit “A” and depicted in Exhibit “B”.

SECTION 4 **ZONING DESIGNATION AND DEVELOPMENT STANDARDS**

4.01 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” Planned Development District #87.

4.02 This ordinance only regulates the uses allowed for the property identified above. All development and construction shall occur in accordance with the requirements of this ordinance; the concept plan set forth in Exhibit “C”; the development standards set forth in Exhibit “D” and all other applicable ordinances, rules, and regulations of the City.

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 ____th day of _____, 2017.

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



Planning and Zoning Commission
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Ben Rodriguez, Senior Planner
 CC: Jason Laumer, City Manager
 Date: December 12, 2017
 Re: Firehouse PD

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, and amending the official zoning map of the city by designating the zoning of land that is $\pm$.32 acre tract of land situated in the Celina Original Donation, lot 17 and 18, block 7, and more specifically defined as 203 W. Pecan and 206 N. Louisiana as PD #88 with a base designation of HD, Historic District. The property is generally located at the northwest corner of North Louisiana Drive and West Pecan St. (Firehouse PD) (Rodriguez)

Background Information:

The property owner has requested that this property be rezoned from its current zoning of HD, Historic Downtown District, to PD, Planned Development with a base zoning of HD to allow for the use of a silk screen printing/T-shirt shop.

The applicant currently owns Firehouse Shirt Company and is looking to expand their business. The applicant stated that they will use the front portion of the building, which fronts Pecan St., for retail with the possibility of a restaurant in the future, and the screen printing would be done in the rear portion of the building within the old auto repair garage.

The property will still be required to go through all processes that are required for the Historic Preservation Commission for any exterior changes to the building including signage or painting schemes.

Conformance with the Comprehensive Plan:

The Historic Downtown is a component of the Urban Center/Mixed use designation. The Urban Center/Mixed classification within the Comprehensive Plan promotes the redevelopment and/or reuse of existing structures.

Board Review/Citizen Input:

Public Notice was published in the Celina Record on November 10, 2017. Notices of the public hearing were also 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 not received any letters of support for the zoning case.

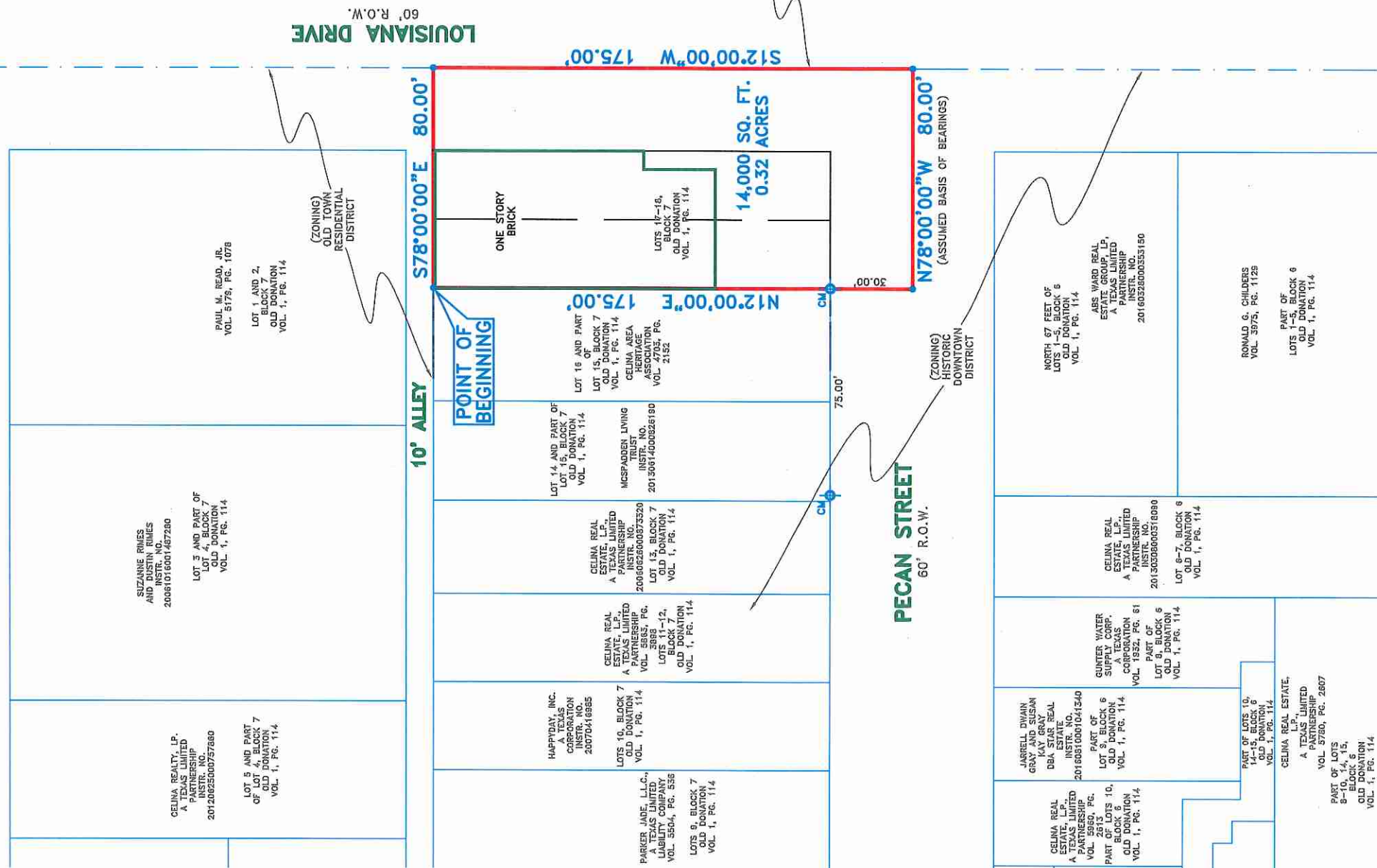
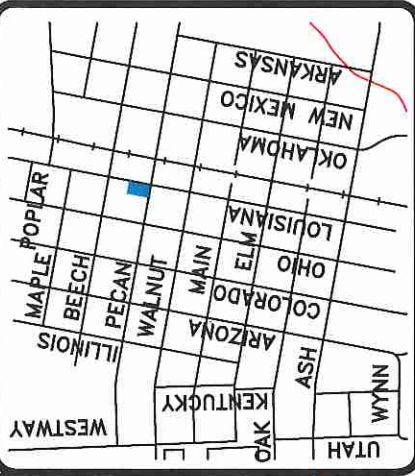
At the Planning and Zoning Commission meeting on November 28, 2017 the Commission voted to approve the proposed rezoning (7-Yes; 0- No).

Supporting Documents:

- Proposed Ordinance

Staff Recommendation:

Staff recommends approval as presented.



BRYAN CONNALLY
R.P.L.S. NO. 5513

CURRENT OWNER

PAUL M. READ, JR.
1195 CARRINGTON GREENS DRIVE
FRISCO, TEXAS, 75034
PHONE NO. _____

EXHIBIT "B"

CASE NO. _____
 LOTS 17 AND 18, IN BLOCK 7
 OFFICIAL AMENDMENT TO THE AMENDED MAP OF
 THE TOWN OF CELINA, COLLIN COUNTY, TEXAS
 2203 W. PECAN STREET & 206 N. LOUISIANA DRIVE
 DATE: 10/02/17, JOB NO. 1720931, SH. 2 OF 2



CBG
SURVEYING INC.

PROFESSIONAL LAND SURVEYORS
10101 West 34th Street - San Antonio, TX 78217
210-491-1800
www.cbgsurvey.com

12025 Shiloh Road, Ste. 230
Dallas, TX 75228
P 214.349.9485
F 214.349.2216
Firm No. 10168800
www.cbgsurvey.com

PD Regulations for Firehouse Zoning

Historic Downtown District Development Regulations:

Unless amended by this Planned Development ordinance, this tract, in its entirety, shall comply with all regulations set forth in the Historic Downtown District in the Celina Code of Ordinances as it exists or may be amended.

Use	Historic Downtown
Silk screen printing/tee shirt shop	P

CITY OF CELINA, TEXAS

ORDINANCE 2017-
Firehouse Planned Development #88

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 .32 ACRE TRACT OF LAND LOCATED IN THE CELINA ORIGINAL DONATION, LOT 17 AND 18, BLOCK 7, CITY OF CELINA, 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 #88; 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 tract comprising 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

Attachment: firehouse PD zoning-88 (Firehouse PD)

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, #88 on a certain tract of land described in in Exhibit “A” and depicted in Exhibit “B”.

SECTION 4 **ZONING DESIGNATION AND DEVELOPMENT STANDARDS**

4.01 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” Planned Development District #88.

4.02 This ordinance only regulates the uses allowed for the property identified above. All development and construction shall occur in accordance with the requirements of this ordinance; the concept plan set forth in Exhibit “C”; the development standards set forth in Exhibit “D” and all other applicable ordinances, rules, and regulations of the City.

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 ____th day of _____, 2017.

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



Planning and Development Services
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Ben Rodriguez, Senior Planner
 CC: Jason Laumer, City Manager
 Date: December 12, 2017
 Re: Pecan Street PD

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, and amending the official zoning map of the city by designating the zoning of land that is ± 1.78 acre tract of land located in the Celina Original Donation, lot 1, block 51, City of Celina, Collin County, Texas. The property is generally located at the southwest corner of East Pecan Street and New Mexico Dr. (Pecan Street PD) (Rodriguez)

Background Information:

The applicant is requesting consideration of a Planned Development to propose a reduction in the City's setbacks within the C-1, retail zoning district.

Previously the City zoned all residential lots alongside East Pecan Street as C-1, Retail to encourage the area to develop as a commercial corridor leading into the downtown area. However, if the lot requirements for the C-1, Retail district as currently written were enforced on the property a pad size approximately 12 feet wide by 80 feet deep would remain. This would render the site undevelopable under the City's current ordinances.

The proposed PD reduces the building setback requirements in order to allow for a 1,100 square foot restaurant.

Additionally, the applicant is requesting a reduction in the front yard landscaping in order to utilize that landscaping in the rear yard. The applicant is proposing to move the current drainage channel onto their property in order to utilize it as an outdoor amenity for their patrons.

Finally, due to the small scale of the development, the staff has been working with the applicant on ways to incorporate on-street parking for the development. The current lot arrangement makes on-site parking difficult to accommodate. The applicant is providing additional right-of-way along New Mexico to accommodate the parking of cars.

Conformance with the Comprehensive Plan:

The proposed rezoning is in conformance with the Comprehensive Plan. The property is designated as Urban Center/Mixed use on the City's Comprehensive Plan. The Urban Center/Mixed Use district encourages a similar character of development as the City's Historic District, (limited setbacks, on street parking etc.)

Board Review/Citizen Input:

A notice of public hearing was published in the Celina Record on November 10, 2017. Notices of the public hearing were sent to all property owners, as indicated by the most recently approved City of Celina Tax Rolls, who are located within 200 feet of the subject property.

At the Planning and Zoning Commission meeting on November 28, 2017 the Commission voted to approve the proposed rezoning (7-Yes; 0- No).

Supporting Documents:

- Proposed Concept Plan
- Proposed Development Regulations

Staff Recommendation:

Staff recommends approval as presented.

CITY OF CELINA, TEXAS

ORDINANCE 2017-
PECAN STREET RESTARUANT #89

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 .178 ACRE TRACT OF LAND LOCATED IN THE CELINA ORIGINAL DONATION, LOT 1, BLOCK 51, CITY OF CELINA, 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 #89; 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 tract comprising 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, #84 on a certain tract of land described in in Exhibit “A” and depicted in Exhibit “B”.

SECTION 4 **ZONING DESIGNATION AND DEVELOPMENT STANDARDS**

4.01 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 “B” attached hereto and incorporated herein, as “PD” Planned Development District #89.

4.02 This ordinance only regulates the uses allowed for the property identified above. All development and construction shall occur in accordance with the requirements of this ordinance; the concept plan set forth in Exhibit “C”; the development standards set forth in Exhibit “D” and all other applicable ordinances, rules, and regulations of the City.

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 ____ day of December, 2017.

Sean Terry, Mayor
City of Celina, Texas

ATTEST:

Vicki Faulkner, City Secretary
City of Celina, Texas

[SEAL]

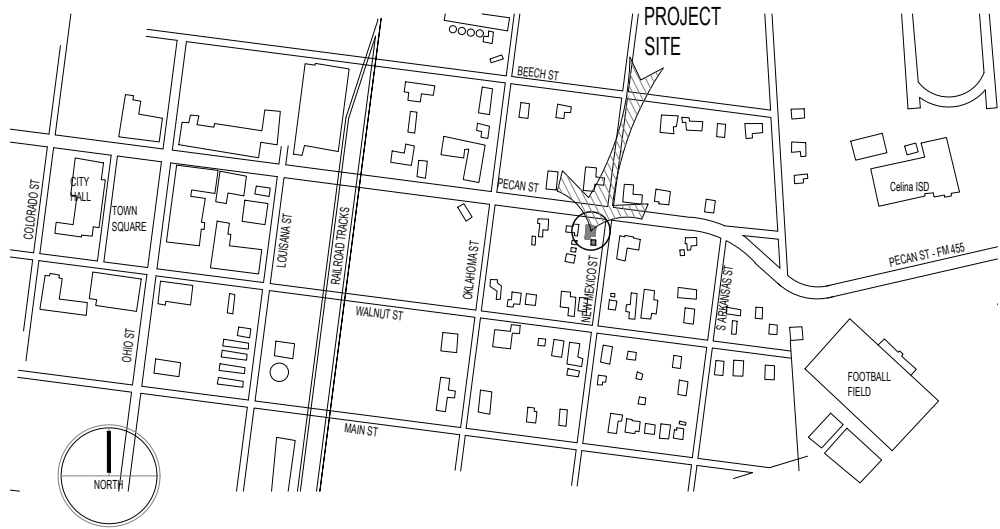
APPROVED AS TO FORM:

City Attorney
City of Celina, Texas

**Exhibit “A”
Property Description**

311 East Pecan Street, Lot 1, Block 51 of Original (Old) Donation, and addition to the City of Celina, Collin County, Texas according to the plat recorded in volume 1, page 114 of the Map Records of Collin County Texas.

Attachment: Pecan Street PD#89 Ordinance (Pecan Street PD)



1 Vicinity Plan
Scale: NTS

SITE DATA:

SITE AREA:	CURRENTLY	7,250 SF OR 0.17 ACRE
	AFTER ROAD WIDENING:	6,750 SF OR 0.15 ACRE
PLANNED DEVELOPMENT AREA (INCLUDING HALF OF PECAN ROW, HALF OF NEW MEXICO ROW AND HALF OF REAR UTILITY ROW):		14,400 SF OR 0.33 ACRE
EXISTING ZONING:	C-1	
CURRENT USE:	SINGLE FAMILY RESIDENCE, (NON-CONFORMING)	
FLOOD ZONING:	PROPERTY IS NOT WITHIN A SPECIAL FLOOD HAZARD ZONE ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD PANEL 48085C0110J. EFFECTIVE DATE JUNE 2, 2009.	
ZONING REQUEST:	A PLANNED DEVELOPMENT TO BUILD A SMALL RESTAURANT ON THIS SITE.	



3 Existing Area Properties & Owners
Scale: 1"= 100'-0"

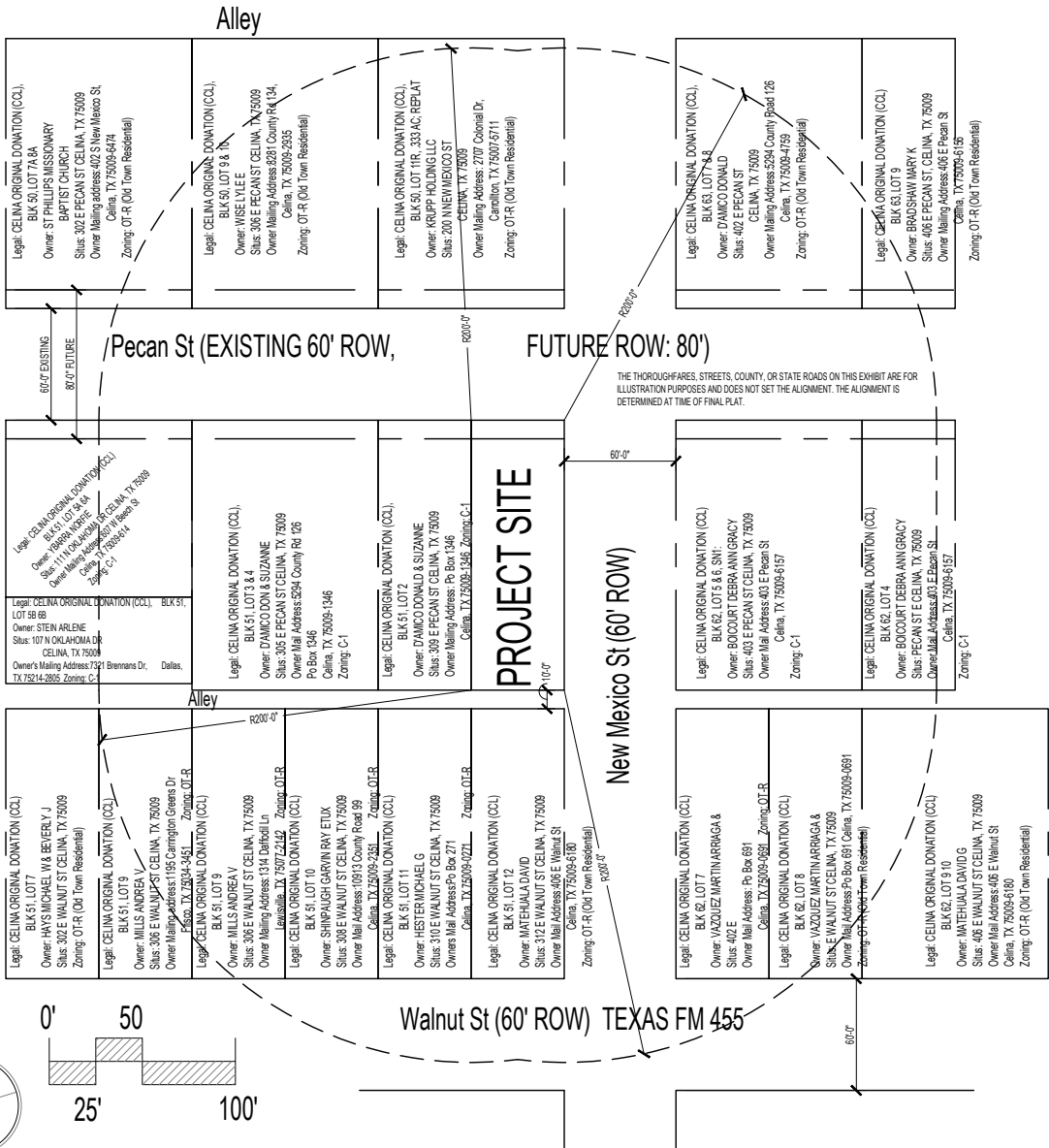


EXHIBIT "C"

Case #:	Date: 11-15-2017
Legal Description:	Celina Original Donation, Blk 51, Lot 1 Property ID: 981343
Owner:	Juan Llamas & Veronica Zapata, Phone: 972-955-6831 406 Mustang Tri, Celina, TX 75009
Applicant:	Amanda Boers, Architect, Phone: 214-727-6707 P.O. Box 595353, Dallas, TX 75359
Surveyor:	Michael Doyle Phone: 972-221-2838 B&D Surveying Inc 1650 Canterbury Lewisville TX75067

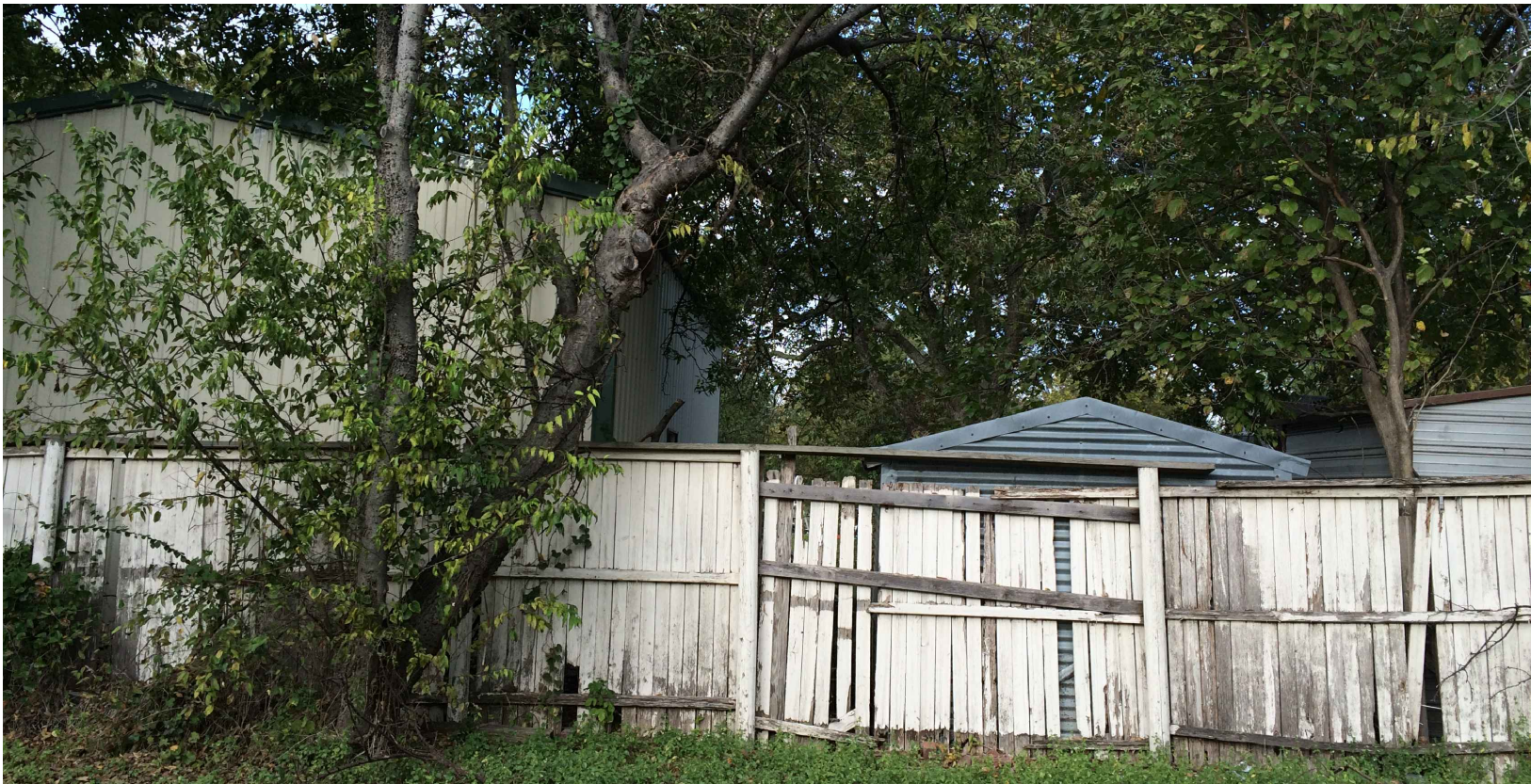
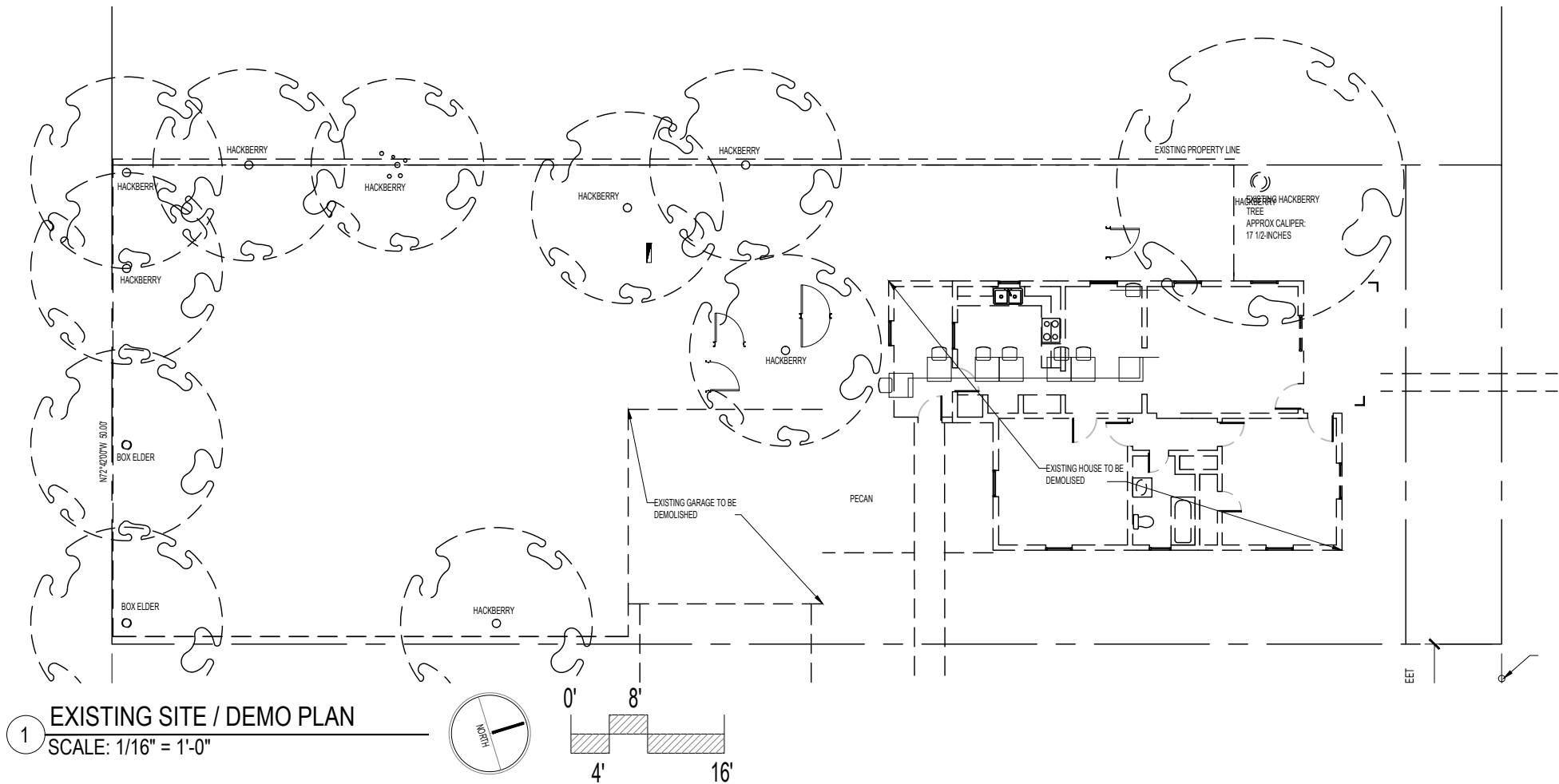
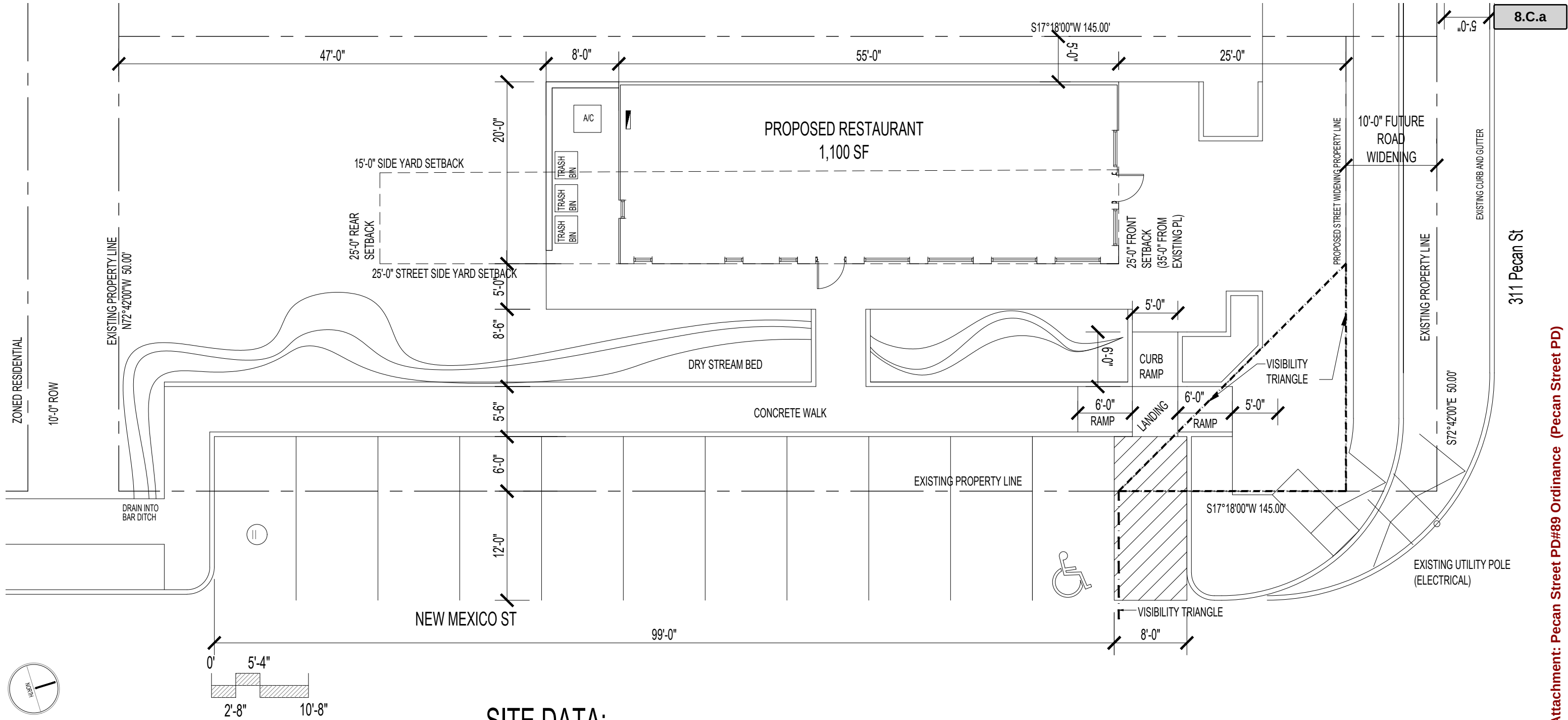


EXHIBIT "C"

Case #:	Date: 11-15-2017
Legal Description:	Celina Original Donation, Blk 51, Lot 1 Property ID: 981343
Owner:	Juan Llamas & Veronica Zapata, Phone: 972-955-6831 406 Mustang Tri, Celina, TX 75009
Applicant:	Amanda Boers, Architect, Phone: 214-727-6707 P.O. Box 595353, Dallas, TX 75359
Surveyor:	Michael Doyle Phone: 972-221-2838 B&D Surveying Inc 1650 Canterbury Lewisville TX75067



1 Site Plan
3/32" = 1'-0"

SITE DATA:

EXISTING ZONING: C-1

SITE LEGAL DESCRIPTION: Celina Original Donation Blk 51, Lot 1

STREET ADDRESS: 311 E. Pecan St

SITE AREA: 7,250 SF

EXISTING IMPROVEMENT: Existing house built in 1930, approx. 1,008 SF (to be demolished)

TOTAL PROPOSED HEATED SPACE: 1,100 SF

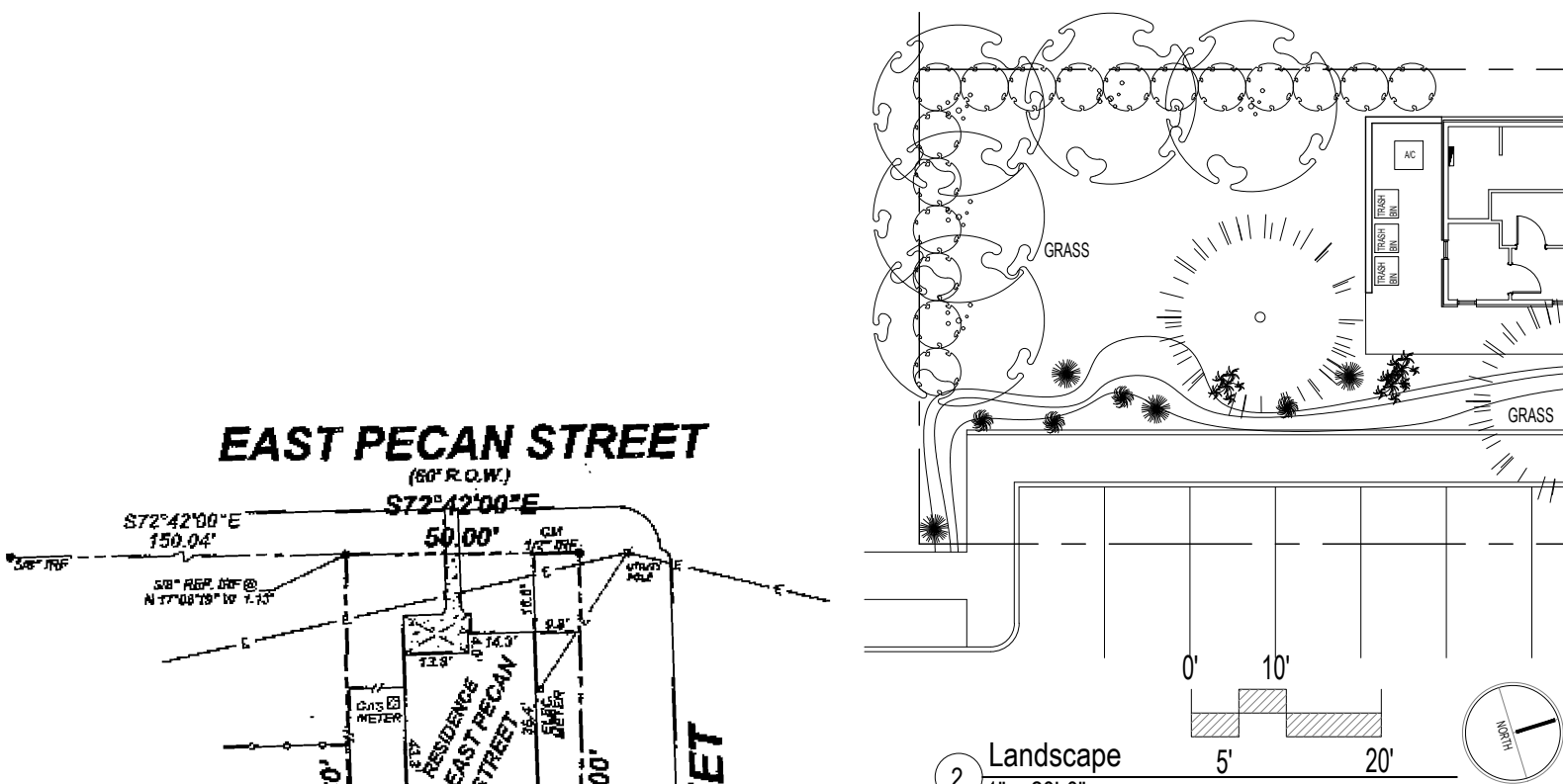
NEW USE: Restaurant

PARKING REQUIRED: 11 stalls

PARKING PROVIDED: 11 stalls

EXHIBIT "C"

Case #:		Date: 11-15-2017
Legal Description:		Celina Original Donation, Blk 51, Lot 1 Property ID: 981343
Owner:	Juan Llamas & Veronica Zapata, Phone: 972-955-6831 406 Mustang Tri, Celina, TX 75009	
Applicant:	Amanda Boers, Architect, Phone: 214-727-6707 P.O. Box 595353, Dallas, TX 75359	
Surveyor:	Michael Doyle Phone: 972-221-2838 B&D Surveying Inc 1650 Canterbury Lewisville TX75067	



2 Landscape
1" = 20'-0"

LANDSCAPE DATA:

AREA OF PROPERTY: 7,250 SF
AREA TO BE CONDEMMED: 500 SF
AREA OF BUILDING: 1,100 SF
AREA OF PARKING LOT / ACCESS AISLE: 645 sf
AREA OF SIDEWALKS 2,146 SF
LANDSCAPE AREAS PROVIDED:

FRONT YARD	208 SF
WEST SIDE	316 SF
EAST SIDE	486 SF
REAR YARD	1,849 SF
TOTAL	2,859 SF

FRONT YARD IS 7% OF ALL LANDSCAPE PROVIDED.

REQUIRED LANDSCAPING IN PARKING AREA (10%): 64.5 SF.
PROVIDED 0 SF

TREE MINIMUM IN PARKING AREA: 645 SF / 400 TREE /SF = 2 TREES
PARKING TREES PROVIDED = 0

PLANT SCHEDULE:

#	TREE COMMON NAME	TREE SCIENTIFIC NAME	SIZE	NOTES:
5	CREPE MYRTLE	Myrica pusilla	3" Caliper	measured 12" from ground
1	OKLAHOMA REDBUD	Cercis canadensis 'Oklahoma'	3" Caliper	measured 12" from ground
3	POND CYPRESS	Taxodium ascendens	3" Caliper	measured 12" from ground
#	SHRUB COMMON NAME	SHRUB SCIENTIFIC NAME	SIZE	NOTES:
21	CARISSA HOLLY	ILEX CORNUTA 'CARISSA'	3-GAL (MIN)	MUST GROW TO 3-FT TALL 3-GAL (MIN) WITHIN 1-YEAR OF PLANTING
#	PLANT COMMON NAME	SHRUB SCIENTIFIC NAME	SIZE	NOTES:
8	LINDHEIMER'S MULHLY GRASS	Muhlenbergia lindeimeri	3-GAL (MIN)	
2	CYPERUS UMBRELLA PLANT	Cyperus alternifolius	3-GAL (MIN)	
8	MEXICAN FEATHERGRASS	Stipa Tenuissima	2-GAL	
#	LAWN GRASS COMMON NAME	SHRUB SCIENTIFIC NAME	SIZE	NOTES:
15	BERMUDA GRASS	Cynodon dactylon	sod	

PROPERTY DESCRIPTION

311 EAST PECAN STREET, LOT 1, BLOCK 51, OF OLD DONATION, AN ADDITION TO THE TOWN OF CELINA, COLLIN COUNTY, TEXAS, ACCORDING TO THE MAP OR MAP THEREOF RECORDED IN VOLUME 533A, PAGE 2 AND REVISED IN VOLUME 1, PAGE 114, OF THE MAP RECORDS OF COLLIN COUNTY, TEXAS.

SURVEYOR'S CERTIFICATION

THE UNDERSIGNED DOES HEREBY CERTIFY THAT THIS SURVEY WAS THIS DAY MADE ON THE GROUND OF THE PROPERTY LEGALLY DESCRIBED HEREON CORRECT AND TO THE BEST OF MY KNOWLEDGE THERE ARE NO VISIBLE DISCREPANCIES, CONFLICTS, SHORTAGES IN AREA, BOUNDARY LINE CONFLICTS, ENCROACHMENTS, OVERLAPPING OF IMPROVEMENTS AND EASEMENTS OF RIGHT-OF-WAY THAT I HAVE BEEN ADVISED OF EXCEPT AS SHOWN HEREON. PROPERTY HAS ACCESS TO AND FROM A DEDICATED ROADWAY.

FLOOD STATEMENT

THE PROPERTY DESCRIBED HEREON IS NOT WITHIN A SPECIAL FLOOD HAZARD AREA ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP PANEL NO. 48060C0116J PRESENT EFFECTIVE DATE OF MAP JUNE 2, 2009, HEREIN PROPERTY SITUATED WITHIN ZONE X (UNSHADED).

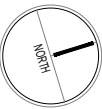
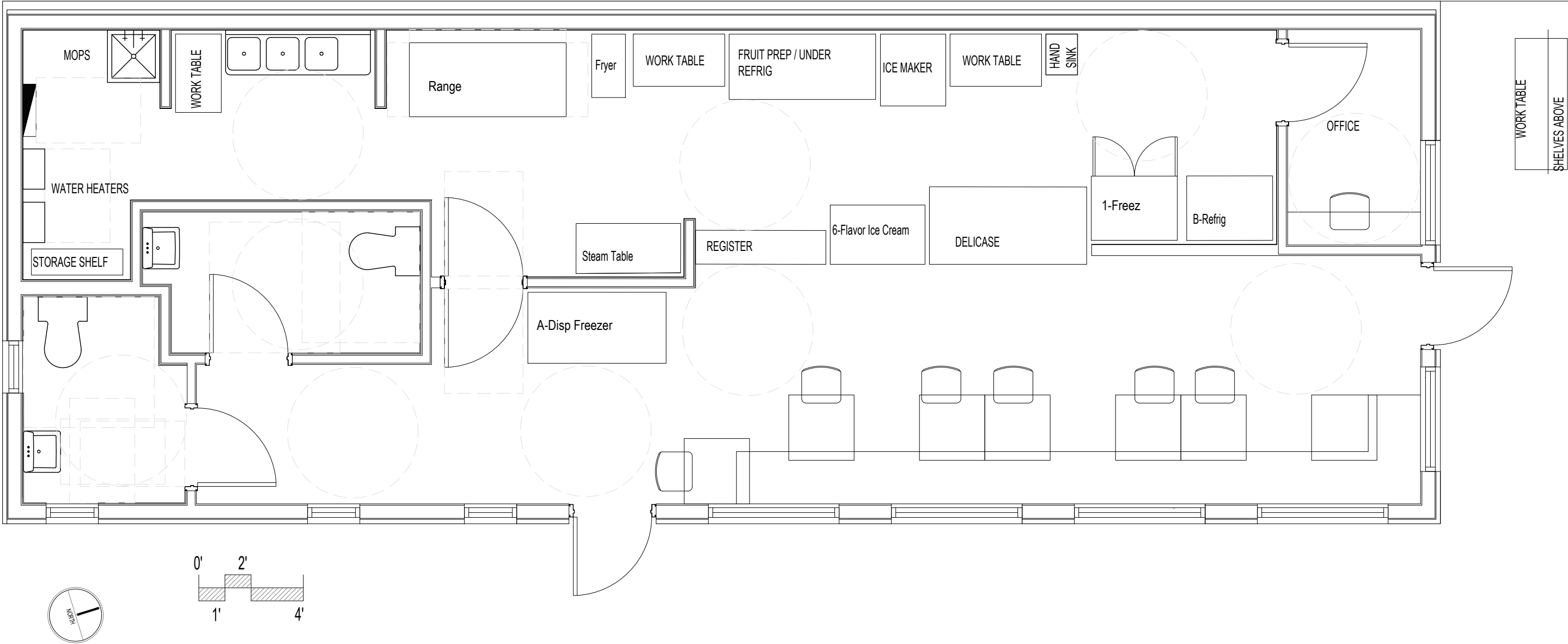
GENERAL NOTES

1.) THE BASIS OF BEARINGS FOR THIS SURVEY WAS DERIVED FROM DATA PROVIDED ON THE RECORDED PLAT.
2.) THERE ARE NO VISIBLE CONFLICTS OR PROTRUSIONS, EXCEPT AS SHOWN.
3.) THIS SURVEY IS FOR THE EXCLUSIVE USE OF THE NAMED CLIENT, MORTGAGE COMPANY, TITLE COMPANY, OR OTHER, AND IS MADE PURSUANT TO THAT ONE CERTAIN TITLE COMMITMENT UNDER THE OF NUMBER LISTED HEREON.
4.) AS OF THIS DATE, ALL EASEMENTS, RIGHTS-OF-WAY OR OTHER LOCATABLE MATTERS OF RECORD SHOWN OR NOTED HEREON WERE DERIVED FROM THE RECORDED PLAT, THE VESTING DEED, OR THE TITLE REPORT AND SUPPORTING DOCUMENTS. ALL SUCH ITEMS WERE OBTAINED DURING THE RESEARCH PHASE OF THIS SURVEY OR PROVIDED BY THE CLIENT/TITLE COMPANY LISTED HEREON. B & D SURVEYING, INC. MAKES NO REPRESENTATION AS TO THE ACCURACY OR COMPLETENESS OF SUCH ITEMS AND HAS MADE NO ATTEMPTS TO OBTAIN OR SHOW ANY ADDITIONAL RESTRICTIONS ON OR NEAR THIS PROPERTY PUT IN PLACE BY LOCAL MUNICIPALITIES OR ASSOCIATIONS.
5.) THIS SURVEY IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.
6.) THE EXISTING UTILITIES DEPICTED HEREON ARE BASED ON FIELD LOCATION OF VISIBLE, ABOVE GROUND EVIDENCE. UNDERGROUND UTILITIES AND OTHER KNOWN IMPROVEMENTS MAY EXIST THAT ARE NOT SHOWN ON THIS SURVEY. B & D SURVEYING, INC. IS NOT RESPONSIBLE FOR THE EXACT LOCATION OF SUBSURFACE UTILITIES, OR FOR ANY DAMAGES BY ANY CONSTRUCTION OR EXCAVATION ON OR NEAR SAID UTILITIES.

FIELD SURVEY DATE: 2/5
THIS SURVEY IS VALID ONLY FOR ORIGINAL RECORDED PLAT/DEED

EXHIBIT "C"

Case #:	Date: 11-15-2017
Legal Description:	Celina Original Donation, Blk 51, Lot 1 Property ID: 981343
Owner:	Juan Llamas & Veronica Zapata, Phone: 972-955-6831 406 Mustang Tri, Celina, TX 75009
Applicant:	Amanda Boers, Architect, Phone: 214-727-6707 P.O. Box 595353, Dallas, TX 75359
Surveyor:	Michael Doyle Phone: 972-221-2838 B&D Surveying Inc 1650 Canterbury Lewisville TX75067

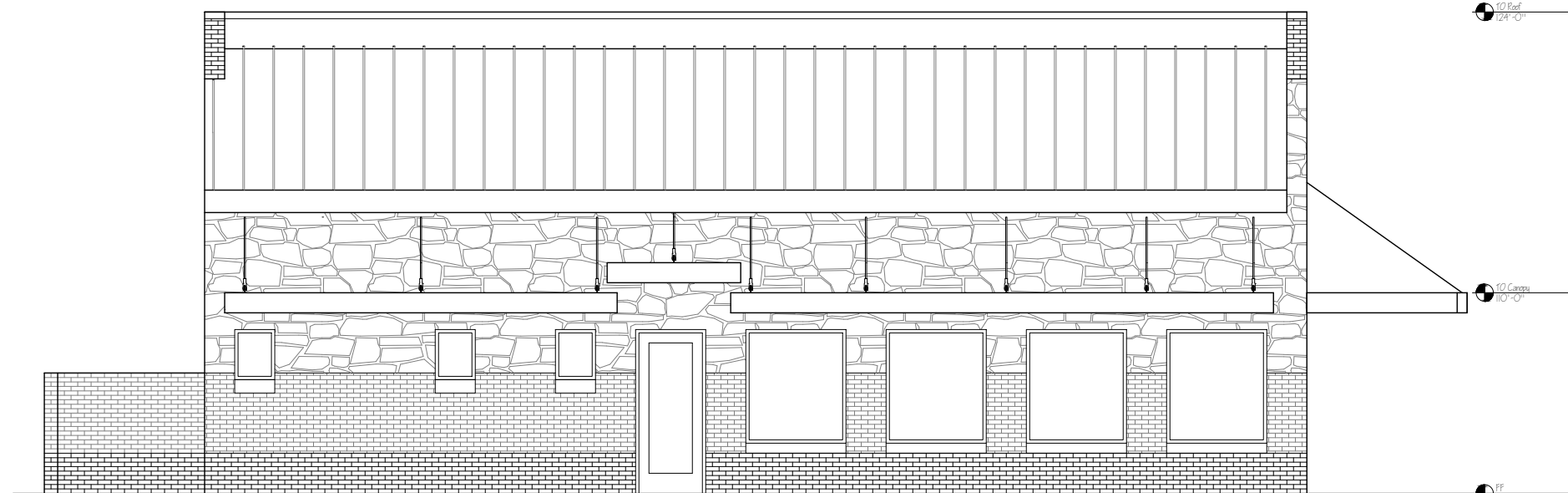


1 Floor Plan
1/4" = 1'-0"

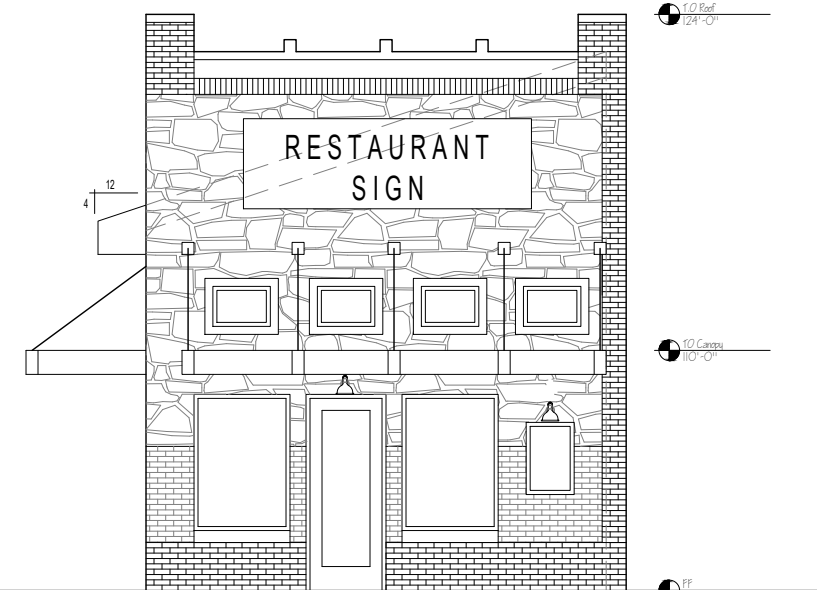
Attachment: Pecan Street PD#89 Ordinance (Pecan Street PD)

EXHIBIT"C"

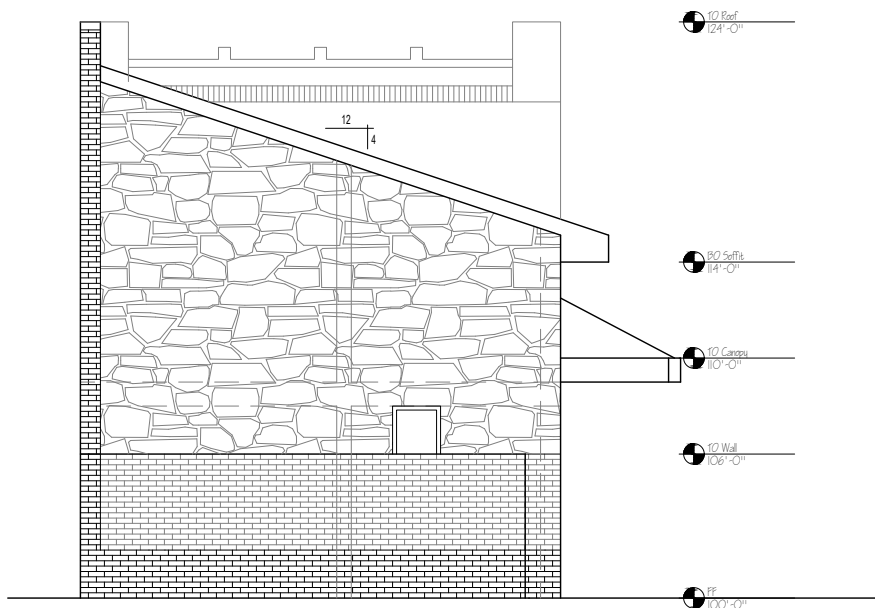
Case #:	Date: 11-15-2017
Legal Description:	Celina Original Donation, Blk 51, Lot 1 Property ID: 981343
Owner:	Juan Llamas & Veronica Zapata, Phone: 972-955-6831 406 Mustang Tri, Celina, TX 75009
Applicant:	Amanda Boers, Architect, Phone: 214-727-6707 P.O. Box 595353, Dallas, TX 75359
Surveyor:	Michael Doyle Phone: 972-221-2838 B&D Surveying Inc 1650 Canterbury Lewisville TX75067



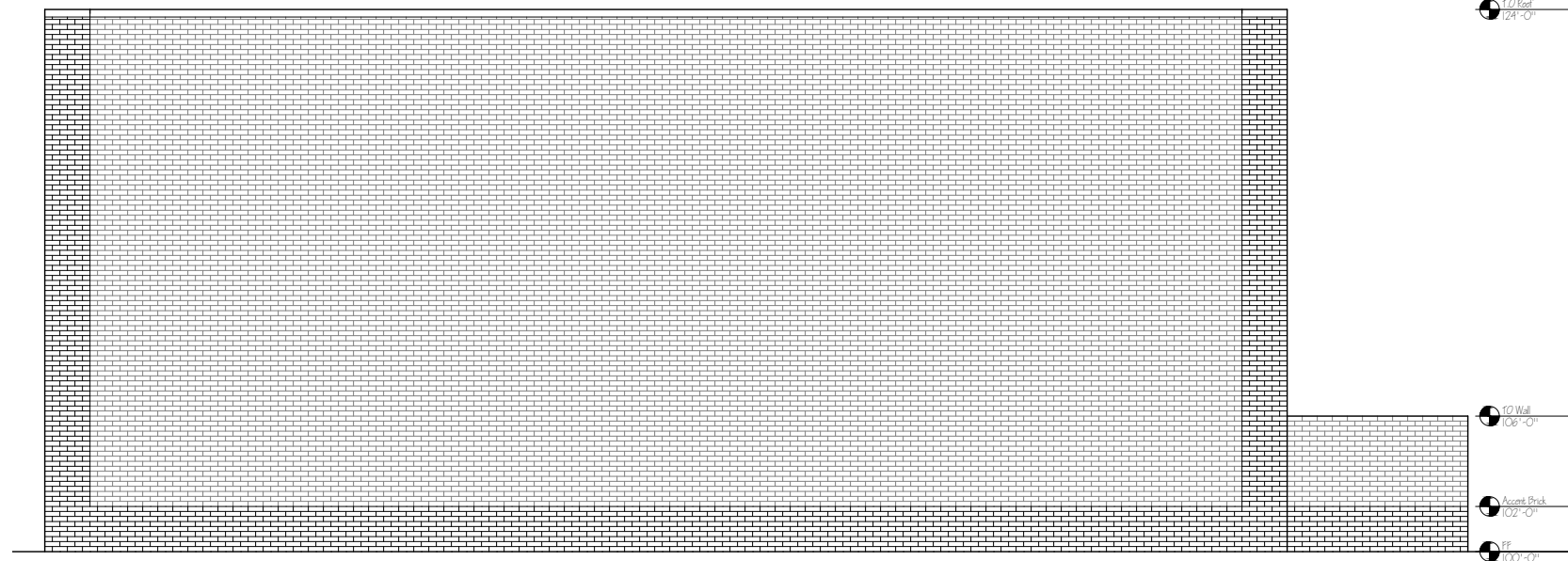
1 East Elevation
1/8" = 1'-0"



2 North Elevation
1/8" = 1'-0"



3 South Elevation
1/8" = 1'-0"



4 West Elevation
1/8" = 1'-0"

EXHIBIT "C"

Case #:		Date: 11-15-2017
Legal Description:		Celina Original Donation, Blk 51, Lot 1 Property ID: 981343
Owner:	Juan Llamas & Veronica Zapata, Phone: 972-955-6831 406 Mustang Tri, Celina, TX 75009	
Applicant:	Amanda Boers, Architect, Phone: 214-727-6707 P.O. Box 595353, Dallas, TX 75359	
Surveyor:	Michael Doyle Phone: 972-221-2838 B&D Surveying Inc 1650 Canterbury Lewisville TX75067	

Planned Development Regulations

Section 14.03.-24 C-1 Retail District applies with the following revisions:

14.03.024.d.1.B Minimum Lot Width 50-feet

14.03.024.d.2.A Minimum front yard 10 feet.

14.03.024.d.2.B Minimum side yard. 5-feet; 10 feet adjacent to a public street.

14.03.024.5 Minimum building separation for nonresidential structures. There shall be a separation between structures composed of distance and/or fire rated construction to meet the city's Fire Code and the current Building Code.

14.05.045.6 Necessary access ways from the public right-of-way shall be permitted through all perimeter landscaping required in section 14.05.086.b. The width of all access ways shall be between 25 feet for non-residential two-way movements...

Sec. 14.05.046 Off Street Parking requirements based upon use

- The applicant may provide on street parking in lieu of off street parking provided that supplied on street parking is accommodated by the increase in right of way being provided by the site to mitigate the effects of vehicles parked within the right of Way.
- Off Street parking shall be a minimum of 1 space per 150 sqft of floor area.

14.05.086.a.2 Minimum front yard Landscaping. Percentage of landscaping in the front yard. In all nonresidential zoning districts, not less than 20% of the landscaping shall be located in the required front yard and shall be in accordance to subsection (c) below (open space landscaping requirements). In calculating the amount of landscaping for the front yard, if landscape areas within off-street parking/vehicular use areas are within the front yard, then they shall be counted towards the 15% landscaping minimum.

14.05.086.b Minimum landscaping requirements for off-street parking and vehicular use areas.

b.1 Interior landscaping shall not be required.

14.05.086.b.1.A Whenever an off-street parking or vehicular use area abuts a public right-of-way, except a public alley, a perimeter landscape area of at least 3 feet in depth shall be maintained between the abutting right-of-way and the off-street parking or vehicular use area. An appropriate landscape screen or barrier shall be installed in this area and the remaining area shall be landscaped with at least grass or other ground cover.

14.05.086.b.1.B Tree minimum. – One tree with a minimum of 3 caliper inches shall be required.

14.05.086.b.2 Perimeter landscaping. All parking lots and vehicular use areas shall be screened from all abutting properties and/or public rights-of-way with a minimum one-foot buffer containing a wall, fence, hedge, berm or other durable landscape barrier.

14.05.086.b.2.A Whenever an off-street parking or vehicular use area abuts a public right-of-way, except a public alley, a perimeter landscape area of at least 3 feet in depth shall be abutting right-of-way and the off-street parking or vehicular use area. An appropriate landscape screen or barrier shall be installed in this area and the remaining area shall be landscaped with at least grass or other ground cover.

14.05.152.6.A Construction standards. Facade articulation of at least three feet in depth or offset shall be required for every 40 feet in horizontal surface length.



Planning and Zoning Commission
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Ben Rodriguez, Senior Planner
 CC: Jason Laumer, City Manager
 Date: December 12, 2017
 Re: Summerview West Replat

Action Requested:

The Celina City Council will conduct a public hearing to consider testimony and act upon a residential replat in Summerview Country Estates, being a 2.578 acre tract of land situated in the Levin Routh Survey, Abstract No. 779, Collin County, Texas. The property is generally located east of CR 1224, west of Summerview Lane, and north of Choate Parkway. (Summerview West Replat) (Rodriguez)

Background Information:

The applicant has submitted a request to replat a single 2.578 acre lot in Summerview Estates into 2 lots that are each 1.289 acres in size. Additionally the applicant is establishing a private access easement on the lots to provide adequate access to both lots via a circular drive.

Summerview Estates is a development within the City's Extra-Territorial Jurisdiction. In 2008 the City approved a replat to divide an adjacent lot within this subdivision into two. Due to the subdivisions ETJ status there are no minimum or maximum lot sizes required within the subdivision.

Collin County has reviewed and approved the proposed OSSF septic system plan for the lots.

Board Review/Citizen Input:

Staff sent notices to property owners within 200 feet of the subject property notifying them of the applicants request. One letter in opposition to the request has been received.

At the Planning and Zoning Commission meeting on November 28, 2017 the Commission voted to approve the proposed replat (4-Yes; 3- No).

Alternatives:

N/A

Financial Considerations:

N/A

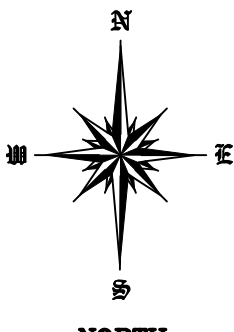
Supporting Documents:

- Proposed Replat

Staff Recommendation:

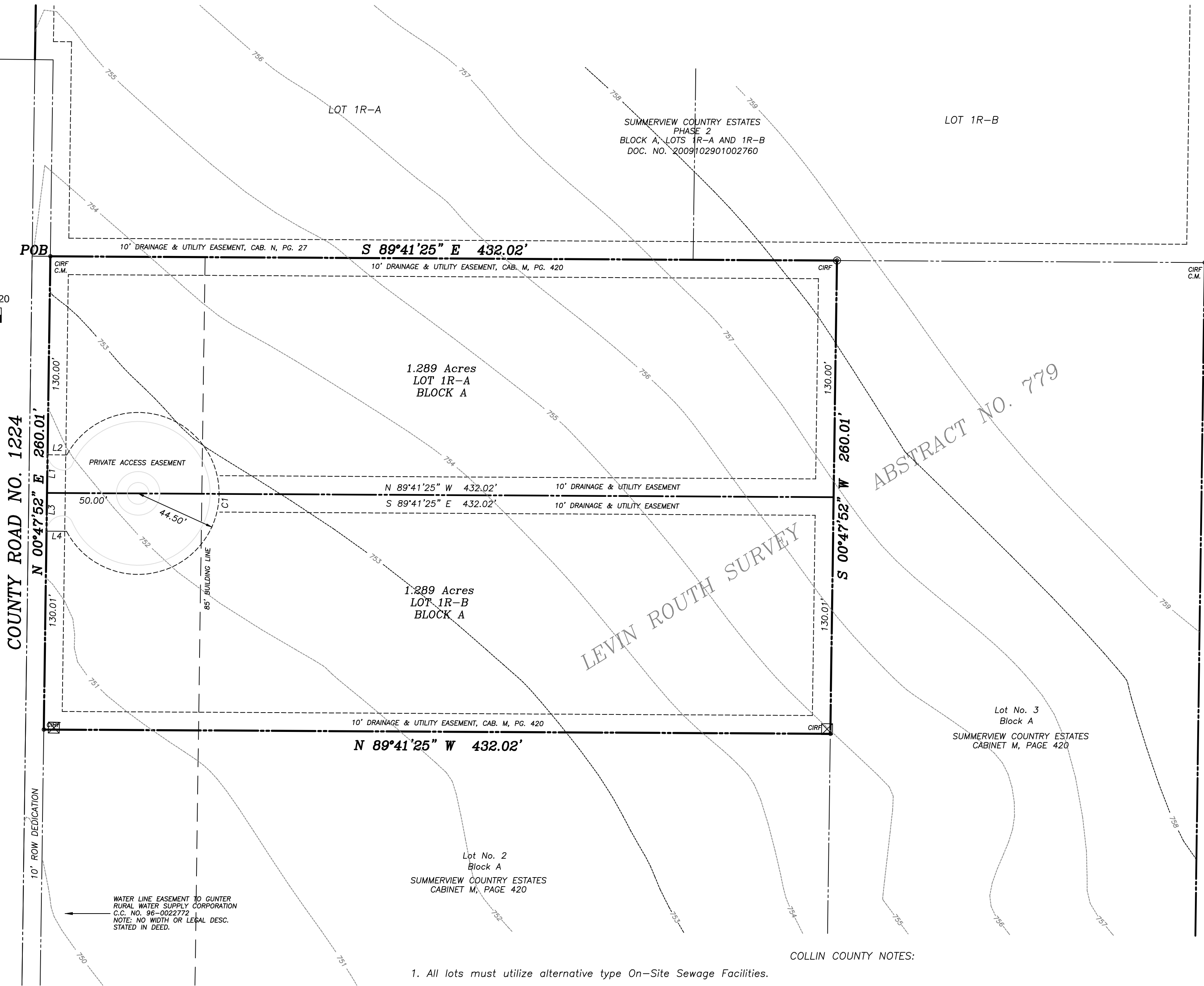
Staff recommends approval as presented.

COUNTY ROAD
NO. 1224



NORTH

GRAPHIC SCALE



LINE	BEARING	DISTANCE
L1	N 00°47'54" E	21.00'
L2	S 89°12'06" E	10.54'
L3	S 00°47'52" W	21.00'
L4	S 89°41'25" E	10.95'

CURVE	DELTA ANGLE	RADIUS	ARC LENGTH	CHORD BEARING	CHORD LENGTH
C1	303°48'41"	44.50'	235.96'	N 00°14'44" E	41.91'

Approved for preparation of final plat following construction of all public improvements (or appropriate sureties thereof) necessary for the subdivision shown on this plat.

RECOMMENDED BY: Planning and Zoning Commission
City of Celina, Texas

Signature of Chairperson _____ Date of Recommendation _____

APPROVED BY: City Council
City of Celina, Texas

Signature of Mayor _____ Date of Approval _____

ATTEST:

City Secretary _____ Date _____

- COLLIN COUNTY NOTES:
- All lots must utilize alternative type On-Site Sewage Facilities.
 - Must maintain state-mandated setback of all On-Site Sewage Facility components from any/all easements and drainage areas, water distribution lines, sharp breaks and/or creeks/rivers/ponds, etc. (Per State regulations).
 - Tree removal and/or grading for OSSF may be required on individual lot.
 - There are no water wells noted in this subdivision and no water wells are allowed without prior approval from Collin County Development Services.
 - Individual site evaluations and OSSF design plans (meeting all State and County requirements) must be submitted to and approved by Collin County for each lot prior to construction of any OSSF system.

HEALTH DEPARTMENT CERTIFICATION

I hereby certify that the onsite sewer facilities described on this plat conform to applicable OSSF laws of the State of Texas, of Texas, that site evaluations have been submitted representing the site conditions in the area in which on-site sewage facilities are planned to be used.

Registered Sanitarian or Designated Representative
Collin County Development Services

STATE OF TEXAS
COUNTY OF COLLIN

KNOW ALL MEN BY THESE PRESENTS:

That I, David J. Surdukan, do hereby certify that I prepared this plat from an actual accurate survey of the land and that the corner monuments shown thereon as "set" were properly placed under my personal supervision in accordance with the Subdivision Ordinance of the City of Celina.



DAVID J. SURDUKAN
R.P.L.S. NO. 4613

STATE OF TEXAS
COUNTY OF COLLIN

Before me, the undersigned authority, a notary public in and for the State of Texas, on this day personally appeared David J. Surdukan, Registered Professional Land Surveyor, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledge to me that he executed the same for the purpose and considerations therein expressed.

Given under my seal of office, this ____ day of _____, 2017.

Notary Public in and for the State of Texas

My Commission Expires On: _____

STATE OF TEXAS
COUNTY OF COLLIN

WHEREAS Hamid Niyati, Fatemeh Sabetpour and Pejman Niyati are the Owners a tract of land situated in the Levin Routh Survey, Abstract 779, Collin County, Texas and being all of a tract conveyed to Hamid Niyati, Fatemeh Sabetpour and Pejman Niyati as recorded in Volume 5685, Page 5792, Land Records of Collin County, Texas, and being Lot 1, Block A, of Summerview Country Estates, a Addition to Collin County, Texas, according to the Map thereof recorded in Cabinet M, Page 420, Plat Records of Collin County, Texas, and being more particularly described by metes and bounds as follows: BEGINNING at a 1/2" iron rod with yellow plastic cap stamped "4613" found for corner located at the northwest corner of said Lot 1, said 1/2" iron rod being in the east ROW line of CR No. 88;
THENCE S 89°41'25" E a distance of 432.02' to a 1/2" iron rod with yellow plastic cap stamped "4613" found for corner;
THENCE S 00°47'52" W a distance of 260.01' to a 1/2" iron rod with yellow plastic cap stamped "4613" found for corner;
THENCE N 89°41'25" W a distance of 432.02' to a 1/2" iron rod with yellow plastic cap stamped "4613" found for corner;
THENCE N 00°47'52" E a distance of 260.01' to the POINT OF BEGINNING and containing 112,324 Square Feet or 2.579 Acres of land.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

That Hamid Niyati, Fatemeh Sabetpour and Pejman Niyati acting herein, does hereby adopt this plat designating the herein above described property as Replat of the Summerview Country Estates, Block A, Lots 1R-A and 1R-B, Being a replat of Block A, Lot 1 of the Summerview Country Estates an addition to Collin County, Texas, as recorded in Cabinet M, Page 420 of the Plat Records of Collin County, Texas, and does hereby dedicate, in fee simple to the public use forever, the streets, rights-of-way, and other public improvements shown thereon. The streets and alleys, if any, are dedicated for street purposes. The easements and public use areas, as shown, are dedicated, for the public use forever, for the purposes indicated on this plat. No buildings, fences, trees, shrubs or other improvements or growths shall be constructed or placed upon, over or across the easements as shown, except that landscape improvements may be placed on landscape easements, if approved by the Commissioners Court. In addition, utility easements may also be used for the mutual use and accommodation of all public utilities desiring to use or using the same unless the easement limits the use to particular utilities, said use by public utilities being subordinate to the public's use thereof. Collin County, and public utility entities shall have the right to remove and keep removed all or parts of any buildings, fences, trees, shrubs or other improvements or growths which may in any way endanger or interfere with the construction, maintenance, or efficiency of their respective systems in said easements. Collin County, and public utility entities shall at all times have the full right ingress and egress to or from their respective systems for the purpose of constructing, reconstructing, inspecting, patrolling, maintaining, reading meters, and adding to or removing all or parts of their respective systems without the necessity at any time procuring permission from anyone. This plat approved subject to all platting ordinances, rules, regulations and resolutions of Collin County, Texas.

WITNESS, my hand this the ____ day of _____, 2017.

BY: _____ NAME: Hamid Niyati, Owner
BY: _____ NAME: Fatemeh Sabetpour, Owner
BY: _____ NAME: Pejman Niyati, Owner

STATE OF TEXAS
COUNTY OF COLLIN

Before me, the undersigned authority, a Notary public in and for the State of Texas, on this day personally appeared Hamid Niyati, Owner, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my and seal of office, this ____ day of _____, 2017.

Notary Public in and for the State of Texas

My Commission Expires On: _____

STATE OF TEXAS
COUNTY OF COLLIN

Before me, the undersigned authority, a Notary public in and for the State of Texas, on this day personally appeared Fatemeh Sabetpour, Owner, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my and seal of office, this ____ day of _____, 2017.

Notary Public in and for the State of Texas

My Commission Expires On: _____

STATE OF TEXAS
COUNTY OF COLLIN

Before me, the undersigned authority, a Notary public in and for the State of Texas, on this day personally appeared Pejman Niyati, Owner, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my and seal of office, this ____ day of _____, 2017.

Notary Public in and for the State of Texas

My Commission Expires On: _____

PURPOSE OF THIS PLAT:

The purpose of this plat is to into 2 Lots.

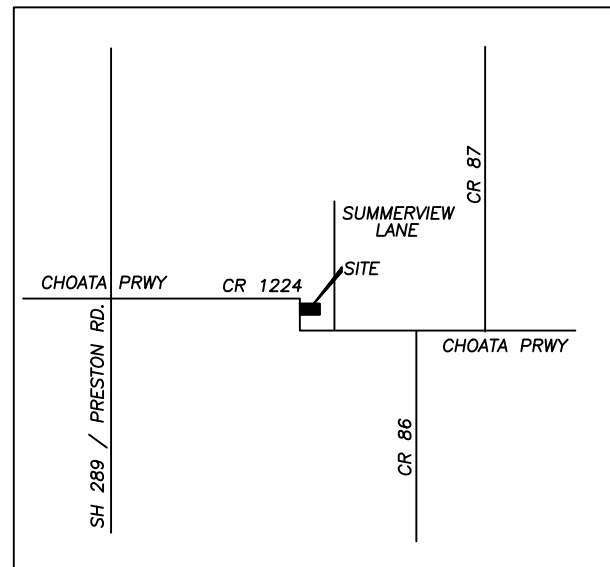
This property falls in the City of Celina, ETJ.

STANDARD NOTES

- Selling a portion of this addition by metes and bounds is a violation of city ordinance and state law, and is subject to fines and withholding of utilities and building permits.
- Basis of bearings is the east line of Lot 15 (S 02°39'27" E) as shown on the Plat of Whispering Meadows as recorded in Cabinet F, Page 9, Plat Records of Collin County, Texas.
- Property owners are responsible for maintenance of the drainage easement and private access easement.

FLOOD NOTE:

This tract falls in Zone X (unshaded) according to the Flood Insurance Rate Map, Panel No. 48085C0120 J, Revised June 2, 2009 as published by the Federal Emergency Management Agency.



LOCATION MAP

REPLAT
SUMMERVIEW COUNTRY ESTATES
BLOCK A, LOTS 1R-A & 1R-B
BEING A REPLAT OF SUMMERVIEW COUNTRY ESTATES
BLOCK A, LOT 1
ABSTRACT NO. 779
COLLIN COUNTY, TEXAS
ABSTRACT NO. 779
COLLIN COUNTY, TEXAS
(2 LOTS)

OWNERS
HAMID NIYATI,
FATEMEH SABETPOUR
& PEJMAN NIYATI
4539 CAPE CHARLES DR.
PLANO, TX 75024

SURVEYOR
SURDUKAN SURVEYING, INC.
P.O. BOX 126
ANNA, TEXAS 75409
(972) 625-0206
FIRM NO. 10069500

SCALE 1" = 40'

DATE: OCTOBER 11, 2017

Ref. 98118/20104
JOB No. 2017-123



Planning and Zoning Commission
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Ben Rodriguez, Senior Planner
 CC: Jason Laumer, City Manager
 Date: December 12, 2017
 Re: Summerview East Replat

Action Requested:

The Celina City Council will conduct a public hearing to consider testimony and act upon a residential replat in Summerview Country Estates, being a 3.247 acre tract of land situated in the Levin Routh Survey, Abstract No. 779, Collin County, Texas. The property is generally located east of Summerview Lane and north of Choate Parkway. (Summerview East Replat) (Rodriguez)

Background Information:

The applicant has submitted a request to replat a single 2.578 acre lot in Summerview Estates into 2 lots that are each 1.289 acres in size. Additionally, the applicant is establishing a private access easement on the lots to provide adequate access to both lots via a circular drive.

Summerview Estates is a development within the City's Extra-Territorial Jurisdiction. In 2008 the City approved a Replat to divide an lot within this subdivision into two. Due to the subdivisions ETJ status there are no minimum or maximum lot sizes required within the subdivision.

Collin County has not yet approved the OSSF, septic facility plan for these lots.

Board Review/Citizen Input:

Staff sent notices to property owners within 200 feet of the subject property notifying them of the applicants request. One letter in opposition to the request has been received.

At the Planning and Zoning Commission meeting on November 28, 2017 the Commission voted to approve the proposed replat (4-Yes; 3- No).

Alternatives:

N/A

Financial Considerations:

N/A

Supporting Documents:

- Proposed replat

Staff Recommendation:

Staff recommends approval pending all comments being addressed prior to its placement on a City Council agenda.



Planning and Zoning Commission
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
 From: Ben Rodriguez, Senior Planner
 CC: Jason Laumer, City Manager
 Date: December 12, 2017
 Re: RO, Retail Office District Amendments

Action Requested:

The Celina City Council will conduct a public hearing to consider testimony and act upon an ordinance amending the City's Code of Ordinances Chapter 14: Zoning, Article 14.03: Zoning Districts, Section 14.03.007: RO, Retail and Office District. (RO, Retail Office District Amendments) (Rodriguez)

Background Information:

Staff is proposing amendments to the RO, Retail Office Zoning District that will help facilitate the development of retail and office developments.

Currently the Retail Office zoning district has a 5 acre maximum lot size, this makes it very difficult for land owners to develop non-residential products without applying for a Planned Development District. Many retail centers are developed on properties that are larger than 5 acres in size. It is hoped that removing the acreage requirement will streamline the development process for retail and office developments.

Additionally, staff is proposing the separation of integrated and standalone drive-through restaurants. Currently all drive-through restaurants are required to obtain a Conditional Use Permit (CUP) prior to development. Staff is proposing allowing standalone drive-through restaurants by right, while requiring that all drive-through restaurants integrated into a building such as in a gas station or strip center obtain a CUP prior to development. Staff is also removing the CUP requirement from uses that sell alcoholic beverages, this is intended to bring us in line with State Law, which discourages treating alcohol uses differently than non-alcohol uses in cities that have voted for the sale of alcoholic beverages via an election.

Finally, staff is revising the facade plan review procedure for the Retail Office district. Within the RO district, facade plans are required to go to City Council for approval. Typically this is handled through the site planning process, which does not go to City Council for approval provided that the development meets all of the City's requirements. Staff's proposal will treat facade plans within the Retail Office district the same as the other zoning districts throughout the City.

Board Review/Citizen Input:

Notice of public hearing was published in the Celina Record on November 10, 2017.

At the Planning and Zoning Commission meeting on November 28, 2017 the Commission voted to approve the proposed rezoning (7-Yes; 0- No).

Supporting Documents:

- Proposed Amendments

Staff Recommendation:

Staff recommends approval as presented.

Sec. 14.03.007 RO, retail and office district

(a) General purpose and description. This district is established to provide areas for retail sales and professional offices which are not part of an overall larger development. These retail and office buildings will be freestanding buildings, fully contained on a single lot or tract of land. The retail and office district should be located along or at the intersection of major collectors or thoroughfares to accommodate higher traffic volumes.

(b) Permitted (P) or conditional (C) uses:

Armed services recruiting center	P
General retail store	P
Artist studio	P
Kiosk (providing a service)	P
Auto laundry or carwash	P
Laundry/dry cleaning (drop off/pick up)	P
Auto supply store for new & rebuilt parts	P
Motorcycle sales and repair	C
Bakery or confectionery (retail)	P
Nursing/convalescent home	C
Bank/credit unions	P
Offices (professional and general business)	P
Child day care (business)	C
Parking lot structure, commercial (auto)	P
Church/place of worship	P
Personal services shop	P
Concrete or asphalt batching plant (temporary)	C
Pet and animal grooming shop	P
Convenience store (with beer and wine sales)	C
Recycling kiosk	P
Convenience store (with or without gas sales)	P
Stand-alone Restaurant (with drive-through service)	P
Integrated Restaurant (with drive-through service)	C
Farmers market (public)	C
Integrated & Stand-alone Restaurant (with no	P

drive-through service)

Food or grocery store	P
Retirement home/home for the aged	P
Food or grocery store (with beer and wine sales)	C
Theater or playhouse (indoor)	P
Funeral home	C
Veterinarian (indoor kennels)	P
Garden shop (inside storage)	P

(c) Height regulations.

- (1) Main building(s). Maximum forty-five (45) feet.
- (2) Accessory buildings. Maximum one story or 25 feet for accessory buildings.

(d) Area regulations.

(1) Size of lots.

(A) Size of yards.

- (i) Minimum front yard. 25 feet; all yards adjacent to a street shall be considered front yards.
- (ii) Minimum side yard. Eight feet; ~~45~~ 25 feet when adjacent to a residential lot.
- (iii) Minimum rear yard. 15 feet.
- (iv) Any building that is located adjacent to (and not across any right-of-way from) any existing single-family detached zoning district shall be setback from the applicable perimeter property line a distance equal to the height of the building, but not less than twenty-five (25) feet.

(2) Minimum open space requirement. 15% of the total lot area.

(3) Maximum impervious surface. 80% of the total lot area, including main buildings, accessory buildings, parking lots, drive lanes, fire lanes, and loading areas.

(4) Building size for nonresidential structures. The building footprint area shall not exceed 75,000 square feet in size.

- (5) Connectivity: A minimum of two (2) vehicular points of connection to adjacent roadways and a minimum of two (2) pedestrian points of connection to adjoining sidewalks, trails or developments shall be provided.
- (e) Parking requirements. Refer to article 14.05, division 2.
- (f) Landscaping requirements. Refer to article 14.05, division 3.
- (g) Special district requirements.
- (1) Building facade review. Building facade (elevation) plans shall be submitted for commission review and approval by ~~the city council~~ **staff** along with the site plan. Facade plans shall clearly show how the building(s) will look, especially as viewed from the major thoroughfare upon which the property faces or sides, and will portray a reasonably accurate depiction of the anticipated materials and colors to be used. The mayor/city administrator or his or her designee may, as deemed appropriate, require submission of additional information and materials, including actual samples of materials to be used, during the site plan review process.
- (2) Open storage. Open storage is prohibited.
- (3) Temporary facilities. There shall be no permanent use of temporary facilities or buildings.
- (4) Other regulations. Refer to article 14.05, development standards and use regulations.



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: December 12, 2017
 Re: <Insert Subject/RE Here>

Action Requested:

The Celina City Council will conduct a public hearing to consider testimony on the creation of a Tax Increment Reinvestment Zone consisting of ±687 acres generally located west of Preston Road and north of W. Glendenning Pkwy, and act upon an ordinance of the City Council of the City of Celina, Texas, designating a contiguous geographic area within the city as a Tax Increment Reinvestment Zone pursuant to Chapter 311 of the Texas Tax Code, to be known as Tax Increment Reinvestment Zone Number Eleven, City of Celina, describing the boundaries of the zone; creating a Board of Directors for the Zone; establishing a Tax Increment Fund of the Zone. (Downtown TIRZ #11) (DeBuff)

Background Information:

This item is a public hearing and action creating Downtown Celina TIRZ #11.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

This ordinance has been reviewed by the City Attorney.

Supporting Documents:

- Proposed Ordinance creating TIRZ #11
- Preliminary Project and Finance Plan

Staff Recommendation:

Staff recommends approval.

CITY OF CELINA, TEXAS

ORDINANCE NO.

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS, DESIGNATING A CONTIGUOUS GEOGRAPHIC AREA WITHIN THE CITY AS A REINVESTMENT ZONE PURSUANT TO CHAPTER 311 OF THE TEXAS TAX CODE, TO BE KNOWN AS REINVESTMENT ZONE NUMBER ELEVEN, CITY OF CELINA, TEXAS; DESCRIBING THE BOUNDARIES OF THE ZONE; CREATING A BOARD OF DIRECTORS FOR THE ZONE; ESTABLISHING A TAX INCREMENT FUND FOR THE ZONE; CONTAINING FINDINGS RELATED TO THE CREATION OF THE ZONE; PROVIDING A DATE FOR THE TERMINATION OF THE ZONE; PROVIDING THAT THE ZONE TAKE EFFECT IMMEDIATELY UPON PASSAGE OF THE ORDINANCE; PROVIDING A SEVERABILITY CLAUSE; AND PROVIDING AN EFFECTIVE DATE

WHEREAS, the City of Celina, Texas (the “City”), pursuant to Chapter 311 of the Texas Tax Code, as amended (the “Act”), may designate a geographic area within the City as a tax increment reinvestment zone if the area satisfies the requirements of the Act; and

WHEREAS, the Act provides that the governing body of a municipality by ordinance may designate a contiguous or non-contiguous geographic area that is in the corporate limits of the municipality to be a reinvestment zone if the governing body determines that development or redevelopment would not occur solely through private investment in the reasonably foreseeable future; and

WHEREAS, the City Council desires to promote the development of a certain contiguous geographic area in the City, which is more specifically described in the metes and bounds attached hereto as **Exhibit "A"** and more generally depicted in **Exhibit "B"** attached hereto (the "Zone"), through the creation of a new reinvestment zone as authorized by and in accordance with the Act; and

WHEREAS, pursuant to and as required by the Act, the City has prepared a *Preliminary Reinvestment Zone Project Plan and Financing Plan for Reinvestment Zone Number Eleven, City of Celina, Texas* attached dated December 2017, attached as **Exhibit "C"** (hereinafter referred to as the (“Preliminary Project and Finance Plan”) for a proposed tax increment reinvestment zone containing the real property within the Zone; and

WHEREAS, notice of the public hearing on the creation of the proposed zone was published in a newspaper having general circulation in the City on November 17, 2017, which date is earlier than the seventh (7th) day before the public hearing held on December 12, 2017; and

WHEREAS, on December 12, 2017, the City Council opened a public hearing in accordance with Section 311.003(c) of the Act and interested persons were allowed to speak for or against the creation of the Zone, the boundaries of the Zone, and the concept of tax increment financing, and owners of property in the proposed Zone were given a reasonable opportunity to protest the inclusion of their property in the Zone; and

WHEREAS, evidence was received and presented at the public hearing on December 12th, 2017; and

WHEREAS, after all comments and evidence, both written and oral, were received by the City Council, the public hearing was closed on December 12th, 2017; and

WHEREAS, the City has taken all actions required to create the Zone including, but not limited to, all actions required by the home-rule Charter of the City, the Act, the Texas Open Meetings Act (defined herein), and all other laws applicable to the creation of the Zone; and

WHEREAS, the percentage of the property in the proposed zone, excluding property that is publicly owned, that is used for residential purposes is less than thirty percent; and

WHEREAS, a Preliminary Project and Finance plan has been prepared for the proposed reinvestment zone.

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

SECTION 1. RECITALS INCORPORATED.

The facts and recitations contained in the preamble of this Ordinance are hereby found and declared to be true and correct and are incorporated and adopted as part of this Ordinance for all purposes.

SECTION 2. FINDINGS.

The City Council, after conducting the above described hearing and having heard the evidence and testimony presented at the hearing, has made the following findings and determined based on the evidence and testimony presented to it:

- (a) That the public hearing on creation of the proposed reinvestment zone has been properly called, held, and conducted and that notice of such hearing has been published as required by applicable law, including the Act; and
- (b) That the creation of the proposed reinvestment zone with boundaries as described and depicted in *Exhibits "A" and "B"* will result in benefits to the City, its residents and property owners, in general, and to the property, residents, and property owners in the reinvestment zone; and

- (c) That the proposed reinvestment zone, as defined and depicted in *Exhibits “A”* and *“B”*, meets the criteria for the creation of a reinvestment zone set forth in the Act in that:
1. It is a geographic area located wholly within the City limits of the City; and
 2. The area includes land that is predominantly open and, because of obsolete platting, deterioration of structures or site improvements, or other factors, substantially impair or arrest the sound growth of the City; and
 3. The area includes land that constitutes an economic or social liability and is a menace to the to the public health, safety, morals and/or welfare in its present condition because of the predominance of defective or inadequate sidewalk and street layout and the deterioration of sites, utility infrastructure and other improvements; and
- (d) That 30 percent or less of the property in the proposed reinvestment zone, excluding property dedicated to public use, is currently used for residential purposes; and
- (e) That the total appraised value of all taxable real property in the proposed reinvestment zone according to the most recent appraisal rolls of the City, together with the total appraised value of taxable real property in all other existing reinvestment zones within the City, according to the most recent appraisal rolls of the City, does not exceed 50 percent of the current total appraised value of taxable real property in the City and in the industrial districts created by the City, if any; and
- (f) That the improvements in the proposed reinvestment zone will significantly enhance the value of all taxable real property in the proposed reinvestment zone and will be of general benefit to the City; and
- (g) That the development or redevelopment of the property in the proposed reinvestment zone will not occur solely through private investment in the reasonable foreseeable future; and
- (h) The City Council has prepared the Preliminary Project and Finance Plan prior to the execution of this Ordinance; and
- (i) The City Council finds that the Preliminary Project and Finance Plan is feasible.

SECTION 3. DESIGNATION AND NAME OF THE ZONE.

Pursuant to the authority of, and in accordance with the requirements of the Act, the City Council hereby designates the area described and depicted in *Exhibits “A”* and *“B”* hereto

Downtown TIRZ #11 Creation

Page 3

as a tax increment reinvestment zone. The name assigned to the zone for identification is **Reinvestment Zone Number 11, City of Celina, Texas** (hereinafter referred to as the “Zone”).

SECTION 4. BOARD OF DIRECTORS.

- (a) The City Council hereby creates a board of directors for the Zone (hereinafter referred to as the “Board”) consisting of seven (7) members all appointed by the City Council. Council Members and the Mayor may serve as Board members.
- (b) The Board shall make recommendations to the City Council concerning the administration, management, and operation of the Zone. The Board shall prepare and adopt a project plan and a reinvestment zone financing plan for the Zone and submit such plans to the City Council for its approval. The Board shall consider amendments to the project plan and finance plan on its own initiative or upon submission by the City Council, but amendments considered by Board shall not take effect unless and until adopted by City Council.
- (c) The Board shall exercise all duties and powers imposed upon it by the Act and all other applicable laws, subject to approval by the City Council, including but not limited to the powers in Section 311.010(h) and (i) of the Act. Notwithstanding anything to the contrary herein, the Board shall not be authorized to (i) issues bonds; (ii) impose taxes or fees; (iii) exercise the power of eminent domain, or (iv) give final approval to the Zone’s project plan and financing plan.
- (d) The Board members appointed to the Board shall be eligible to serve on the Board if that person is at least 18 years of age, and is a resident of the county in which the Zone is located or a county adjacent to that county.
- (e) Directors shall not receive any salary or other compensation for their services as directors.
- (f) Members of the Board shall be appointed for terms of two years. The terms of the Board members may be staggered. The City Council may remove and replace Board members at any time during a term.
- (g) The initial Board shall be seven members and the following shall be members:
 - 1. City Councilmember, Place 1
 - 2. City Councilmember, Place 2
 - 3. City Councilmember, Place 3
 - 4. City Councilmember, Place 4
 - 5. City Councilmember, Place 5
 - 6. City Councilmember, Place 6

7. Mayor

The City Council hereby appoints Mayor to serve as chairman of the Board during the time the initial Board is serving. Each year the City shall appoint one member of the Board to serve as chairman for a term of one year that begins on January 1 of the year. If City Council does not appoint a chairman during that period, the Mayor is automatically appointed to serve as chairperson for the term that begins on January 1 of the following year. The Board may elect a vice-chairman to preside in the absence of the chairman or when there is a vacancy in the office of chairman. The Board may elect other officers as it considers appropriate.

SECTION 5. DURATION OF THE ZONE.

That the Zone shall take effect immediately upon the passage and approval of this Ordinance, consistent with Section 311.004(a)(3) of the Act, and termination of the Zone shall occur upon any of the following: (i) on December 31, 2048; (ii) at an earlier time designated by subsequent ordinance; (iii) at such time, subsequent to the issuance of tax increment bonds, if any, that all project costs, tax increment bonds, notes and other obligations of the Zone, and the interest thereon, have been paid in full, in accordance with Section 311.017 of the Act.

SECTION 6. TAX INCREMENT BASE AND TAX INCREMENT.

Pursuant to Section 311.012(c) of the Act, the tax increment base of the City, or any other taxing unit participating in the Zone, is the total taxable value, as of January 1, 2017, of all real property taxable by the City or other taxing unit participating in the Zone, and located in the Zone for the year in which the Zone was designated as a reinvestment zone. The amount of tax increment for a year shall consist of (i) the percentage of the tax increment, as defined by Section 311.012(a) of the Act, that each taxing unit which levies real property taxes in the Zone, other than the City, has elected to dedicate to the tax increment fund under an agreement with the City authorized by Section 311.013(f) of the Act, plus (ii) one hundred percent (100%) of the City's portion of the tax increment, as defined by Section 311.012(a) of the Act, subject to any binding agreement executed at any time by the City that pledges a portion of such tax increment or an amount of other legally available funds whose calculation is based on receipt of any portion of such tax increment.

In addition, sales tax base for purposes of calculating the City sales tax increment means the amount generated from the City's municipal sales and use tax at the rate of one-half cent, which is twenty-five percent (25%) of the total two cent local sales tax rate, attributable to Zone as of January 1, 2017. The amount of sales tax increment for a year shall consist of one-hundred percent (100%) of the City's municipal sales and use tax at the rate of one percent (1.0%) on incremental sales which exceeds the sales tax base attributable to sales occurring within the Zone, in accordance with the authority contained in Section 311.0123(b) of the Act, as amended. The sales tax increment may be used as set forth in the project plan or financing plan consistent with Section 311.0123(e) of the Act.

SECTION 7. TAX INCREMENT FUND.

There is hereby created and established a “Tax Increment Fund” for the Zone that may be divided into such subaccounts as authorized by subsequent ordinances, into which the tax increments of the City authorized by Section 6 above and Sections 311.012 and 311.0123 of the Act, as such increments are described in the final project plan and reinvestment zone financing plan and may include administration costs, less any of the amounts not required to be paid into the Tax Increment Fund pursuant to the Act, are to be deposited. The Tax Increment Fund shall be maintained in an account at the depository bank of the City and shall be secured in the manner prescribed by law for Texas cities. In addition, all revenues from (i) the sale of any obligations hereafter issued by the City and secured in whole or in part from the tax increments; (ii) the sale of any property acquired as part of a tax increment financing plan adopted by the Board; and (iii) other revenues dedicated to and used in the Zone shall be deposited into the Tax Increment Fund. Prior to the termination of the Zone, money shall be disbursed from the Tax Increment Fund only to pay project costs, as defined by the Act, for the Zone, to satisfy the claims of holders of tax increments bonds or notes issued for the Zone, or to pay obligations incurred pursuant to agreements entered into to implement the project plan and reinvestment zone financing plan and achieve their purpose pursuant to Section 311.010(b) of the Act, however excess funds may be transferred to the City’s general fund as determined by the City.

SECTION 8. SEVERABILITY CLAUSE.

Should any provision, section, subsection, sentence, clause or phrase of this Ordinance be declared unconstitutional or invalid by a court of competent jurisdiction, it is expressly provided that any and all remaining portions of this Ordinance shall remain in full force and effect. The City of Celina hereby declares that it would have passed this Ordinance, and each provision, section, subsection, sentence, clause or phrase thereof irrespective of the fact that any one or more provisions, sections, subsections, sentences, clauses and phrases be declared unconstitutional or invalid.

SECTION 9. OPEN MEETINGS.

It is hereby found, determined, and declared that sufficient written notice of the date, hour, place and subject of the meeting of the City Council at which this Ordinance was adopted was posted at a place convenient and readily accessible at all times to the general public at the City Hall of the City for the time required by law preceding its meeting, as required by Chapter 551 of the Texas Government Code, and that this meeting has been open to the public as required by law at all times during which this Ordinance and the subject matter hereof has been discussed, considered and formally acted upon. The City Council further ratifies, approves and confirms such written notice and the contents and posting thereof.

SECTION 10. EFFECTIVE DATE.

This Ordinance shall take effect immediately upon its adoption and publication in accordance with and as provided by law and the City Charter.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS, THIS THE 12th day of December, 2017.

Sean Terry, Mayor

ATTEST:

Vicki Faulkner, City Secretary

APPROVED AS TO FORM:

Julie Fort, Attorney for the City

Attachment: TIRZ #11 - Creation Ordinance v1 MRF clean (Public Hearing & Creation of Downtown TIRZ #11)

EXHIBIT A

Metes and Bounds Description of the Zone

EXHIBIT B

Depiction of Property Described in Exhibit A

Attachment: TIRZ #11 - Creation Ordinance v1 MRF clean (Public Hearing & Creation of Downtown TIRZ #11)

EXHIBIT C
Preliminary Project Plan and Finance Plan

Attachment: TIRZ #11 - Creation Ordinance v1 MRF clean (Public Hearing & Creation of Downtown TIRZ #11)



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: December 12, 2017
Re: <Insert Subject/RE Here>

Action Requested:

The Celina City Council will conduct a public hearing to consider testimony and act upon a resolution dissolving the Chalk Hill Public Improvement District No. 1 in accordance with Chapter 372 of the Texas Local Government Code; a ±97 acre tract of land generally located east of Preston Road, north of County Road 105, and south of County Road 102. (Chalk Hill PID #1) (DeBuff)

Background Information:

This item is a public hearing and action dissolving the Chalk Hill PID #1, which will be replaced by Chalk Hill PID #2 in a subsequent agenda item.

Board Review/Citizen Input:

The requisite public hearing was held and notices were published.

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

This ordinance has been approved by the City Attorney.

Supporting Documents:

- Proposed resolution dissolving Chalk Hill PID #1

Staff Recommendation:

Staff recommends approval.

CITY OF CELINA, TEXAS

RESOLUTION NO. _____

A RESOLUTION OF THE CITY OF CELINA, TEXAS DISSOLVING THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT IN ACCORDANCE WITH CHAPTER 372 OF THE TEXAS LOCAL GOVERNMENT CODE; PROVIDING FOR RELATED MATTERS; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City of Celina, Texas (the “City” or “Celina”), is authorized under Chapter 372 of the Texas Local Government Code (the “Act”), to create a public improvement district within its corporate limits or its extraterritorial jurisdiction; and

WHEREAS, on October 10, 2017 by Resolution No. 2017-193R, the City Council of the City of Celina, Texas (the “City Council”), after public hearing, authorized the creation of the Chalk Hill Public Improvement District (the “District”), which District is described by a metes and bounds in **Exhibit B** and depicted in **Exhibit A** attached hereto; and

WHEREAS, on November 14, 2017, the owner of real property delivered to the City of Celina, Texas a petition (the “Petition”) meeting the requirements of the Act and indicating: (i) the owner of more than fifty percent (50%) of the appraised value of the taxable real property liable for assessment, and (ii) the owner of more than fifty percent (50%) of the area of all taxable real property liable for assessment within the District has executed the Petition requesting that the City Council dissolve the District, as shown in the exhibits attached to the Petition; and

WHEREAS, the City Council investigated and determined that the facts contained in the Petition are true and correct; and

WHEREAS, the City Council has not levied any assessments in the District and the District has not incurred any obligations of indebtedness for improvements; and

WHEREAS, the Act requires that prior to the adoption of a resolution dissolving the District, the City Council must hold a public hearing on the advisability of dissolving the District in the same manner as a public hearing under Section 372.009 of the Act; and

WHEREAS, after publishing notice in a newspaper of general circulation in the City in which the district is located, and mailing notice of the hearing, all as required by and in conformity with the Act, the City Council, conducted a public hearing on the advisability of dissolving the District on *December 12, 2017*; and

WHEREAS, after hearing all public comments and testimony related to dissolving the District, the City Council closed the public hearing on the advisability of dissolving the District on *December 12, 2017*.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS:

Section 1. The findings set forth in the recitals of this Resolution are found to be true and correct.

Section 2. The Petition submitted to the City by the Petitioner was filed with the City Secretary and complies with Section 372.011 of the Act.

Section 3. Pursuant to the requirements of the Act, including, without limitation, Sections 372.009, and 372.011, the City Council of Celina, after considering the Petition and evidence and testimony presented at the public hearing on December 12, 2017, hereby finds and declares that the Chalk Hill Public Improvement District, which was created by Resolution No. 2017-193R on October 10, 2017, is dissolved for all purposes.

Section 4. This Resolution shall take effect immediately from and after its passage and publication as required by law.

PASSED, APPROVED AND ADOPTED on the *12th day of December, 2017*.

ATTEST:

Chad Anderson, Mayor ProTem

Vicki Faulkner, City Secretary

APPROVED AS TO FORM:

Julie Fort, Attorney for the City

EXHIBIT A PROPERTY DEPICTION

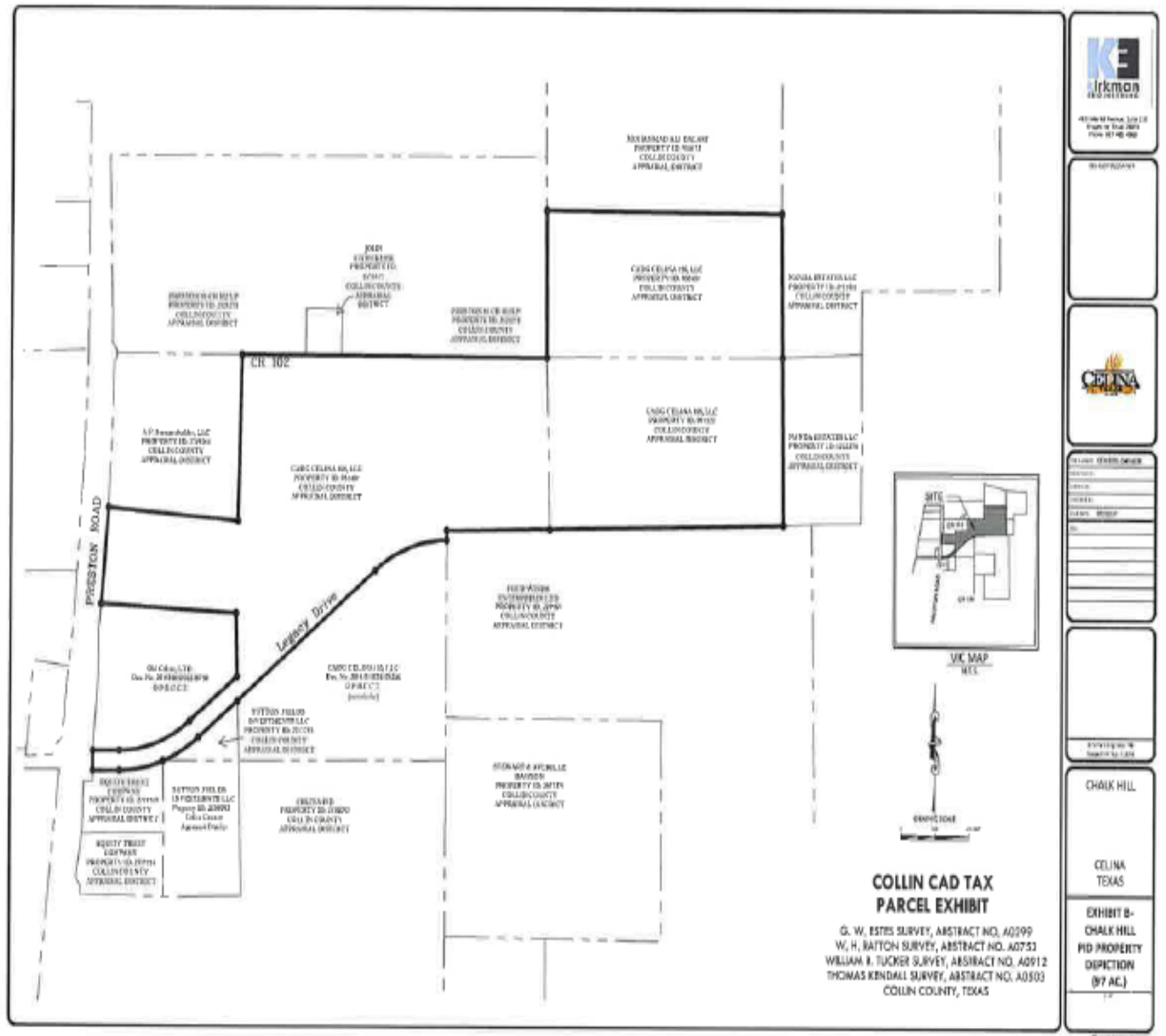


EXHIBIT B

PROPERTY METES AND BOUNDS DESCRIPTION

LEGAL DESCRIPTION

96.777 ACRE TRACT

G. Eastes Survey, Abstract No. 299
W. Shawver Survey, Abstract No. 810
W. Tucker Survey, Abstract No. 912
W. Rattan Survey, Abstract No. 753
City of Celina, Collin County, Texas

PROPERTY DESCRIPTION:

BEING a 96.777 acre tract of land situated in the George W. Eastes Survey, Abstract Number 299, the William W. Shawver Survey, Abstract Number 810, the William B. Tucker Survey, Abstract Number 912, and the Wade H. Rattan Survey, Abstract Number 753, City of Celina, Collin County, Texas, and being a part of that certain tract of land described by deed to CADG CELINA 156, LLC, recorded under Document Number 20141015001128280, Official Public Records of Collin County, Texas, being a part of that certain tract of land described by deed to Sutton Field Investments, LLC, recorded under Document Number 20150305000240910, Official Public Records of Collin County, Texas, being a part of that certain tract of land described by deed to Equity Trust Company, Custodian F/B/O Sherese Glendenning IRA, recorded under Document Number 20150305000240770 of the Official Public Records of Collin County, Texas, being a part of that certain tract of land described by deed to Old Celina, LTD., recorded under Document Number 20150305000240780 of the Official Public Records of Collin County, Texas, and being more particularly described by metes and bounds as follows:

COMMENCING at a 1/2 inch iron rod found for the most northwest corner of a tract of land described to A.P. Sommerhalder, LLC, by deed recorded in document number 20150625000764600, Deed Records, Collin County, Texas, and the southwest corner of that certain tract of land described by deed to Preston 51 CR 102, LP, recorded under Document Number 20071120001569950 of the Official Public Records of Collin County, Texas, and being in the east line of State Highway No. 289, also known as Preston Road, having a variable width right-of-way, and being within County Road 102;

THENCE South 89 degrees 43 minutes 35 seconds East, within said County Road 102 and with the north line of said A. P. Sommerhalder tract and the south line of said Preston 51 CR 102 tract, a distance of 737.08 feet to a 1/2 inch iron rod with a yellow cap stamped "ARTHUR SURVEYING COMPANY" (ASC) set for corner, being the POINT OF BEGINNING;

THENCE South 89 degrees 43 minutes 35 seconds East, continuing within said County Road 102, a distance of 1803.23 feet to a 1/2 inch iron rod found for the southeast corner of said Preston 51 CR 102, LP tract, same being an inner ell corner of said CADG Celina 156, LLC tract;

THENCE North 00 degrees 26 minutes 05 seconds West, with the east line of said Preston 51 CR 102, LP tract and the northernmost west line of said CADG Celina 156, LLC tract, a distance of 640.81 feet to a 1/2 inch iron rod found for the southwest corner of that same tract of land described to Mohammad Ali Dalaki, by deed recorded in Document Number 20141119001266880, Official Public Records, Collin County, Texas, same being the northernmost northwest corner of said CADG Celina 156, LLC tract;

THENCE North 89 degrees 49 minutes 17 Seconds East, with the south line of said Dalaki tract and the north line of said CADG Celina 156, LLC tract, a distance of 1391.00 feet to a point for the southeast corner of said Dalaki tract and the northeast corner of said CADG Celina 156, LLC tract, said point lying on the west line of that same tract of land described to Nanda Estates, LLC, by deed recorded in Document Number 201407090000706790, Official Public Records, Collin County, Texas, from which a 1/2 inch iron rod found for reference bears South 74 degrees 10 minutes 03 seconds West, a distance of 1.21 feet;

THENCE South 00 degrees 30 minutes 42 seconds East, with the west line of said Nada Estates, LLC tract and the easternmost line of said CADG Celina 156, LLC tract, a distance of 1391.70 feet to a 5/8 inch iron rod found for the easternmost southeast corner thereof, same being the southwest corner of said Nada Estates, LLC tract, and lying on the north line of that same tract of land described to Four Winds Enterprises, Ltd., by deed recorded in Volume 5476, Page 8080, Official Public Records, Collin County, Texas;

THENCE South 88 degrees 45 minutes 36 seconds West, with the north line of said Four Winds Enterprises, Ltd. tract, and the easternmost south line of said CADG Celina 156, LLC tract, a distance of 551.59 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner;

PROPERTY DESCRIPTION (continued):

THENCE South 89 degrees 08 minutes 14 seconds West, continuing with the north line of said Four Winds Enterprises, Ltd. tract, and the easternmost south line of said CADG Celina 156, LLC tract, a distance of 1442.68 feet to a 1/2 inch iron rod found for the northwest corner of said Four Winds Enterprises, Ltd. tract and an inner ell corner of said CADG Celina 156, LLC tract;

THENCE South 00 degrees 08 minutes 33 seconds West, with the west line of said Four Winds Enterprises, Ltd. tract, and the southernmost east line of said CADG Celina 156, LLC tract, a distance of 45.11 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner in the west line of said Four Winds Enterprises, Ltd., and at the beginning of a curve to the left having a radius of 708.00 feet, with a delta angle of 36 degrees 15 minutes 41 seconds, whose chord bears South 72 degrees 00 minutes 02 seconds West, a distance of 440.64 feet;

THENCE within said CADG Celina 156 tract and with said curve, an arc length of 448.08 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner;

THENCE South 53 degrees 52 minutes 12 seconds West, continuing within said CADG Celina 156 tract and within said Sutton Field Investments tract, a distance of 1279.50 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner, being at the beginning of a curve to the right having a radius of 795.00 feet, with a delta angle of 35 degrees 55 minutes 01 second, whose chord bears South 71 degrees 49 minutes 42 seconds West, a distance of 490.24 feet;

THENCE continuing within said Sutton Field Investments tract and within said Equity Trust Company tract, and with said curve, an arc length of 498.36 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner;

THENCE South 89 degrees 47 minutes 13 seconds West, continuing within said Equity Trust tract, a distance of 132.49 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner;

THENCE South 44 degrees 58 minutes 27 seconds West, continuing within said Equity Trust tract, a distance of 35.47 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner in the east line of said Preston Road;

THENCE North 00 degrees 09 minutes 41 seconds East, with the east line of said Preston Road, a distance of 75.08 feet to a Texas Department of Transportation Monument (TxDot Mon.) found for corner;

THENCE North 00 degrees 51 minutes 58 seconds West, continuing with the east line of said Preston Road, a distance of 64.93 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner;

THENCE South 45 degrees 32 minutes 22 seconds East, within said Old Celina tract, a distance of 35.56 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner;

THENCE North 89 degrees 47 minutes 13 seconds East, continuing within said Old Celina tract, a distance of 132.61 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner, being at the beginning of a curve to the left having a radius of 705.00 feet, with a delta angle of 35 degrees 55 minutes 01 second, whose chord bears North 71 degrees 49 minutes 42 seconds East, a distance of 434.74 feet;

THENCE continuing within said Old Celina tract and with said curve, an arc length of 441.94 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner;

THENCE North 53 degrees 52 minutes 12 seconds East, continuing within said Old Celina tract and within said CADG Celina 156 tract, a distance of 340.14 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner;

THENCE North 01 degrees 31 minutes 38 seconds West, continuing within said CADG Celina 156 tract, a distance of 294.31 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner;

THENCE North 87 degrees 49 minutes 58 seconds West, continuing within said CADG Celina 156 tract, a distance of 793.07 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner in the east line of said Preston Road, lying in a curve to the left having a radius of 11546.01 feet, with a delta angle of 02 degrees 10 minutes 12 seconds, whose chord bears North 05 degrees 22 minutes 06 seconds East, a distance of 437.28 feet;

Page 2 of 3

\\Engineering\William Engineering\21506443 - celina156.dwg

PROPERTY DESCRIPTION (continued):

THENCE continuing with the east line of said Preston Road and with said curve, an arc length of 437.31 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for the westernmost northwest corner of said CADG Celina 156 tract and the southwest corner of said A.P. Sommerhalder, LLC tract;

THENCE South 85 degrees 39 minutes 30 seconds East, with the westernmost north line of said CADG Celina 156 tract and the south line of said A.P. Sommerhalder, LLC. tract, a distance of 763.61 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for the southeast corner of said A.P.Sommerhalder, LLC. tract and an interior corner of said CADG Celina 156 tract;

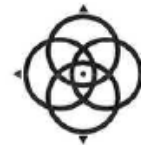
THENCE North 01 degrees 37 minutes 07 seconds West, with the northernmost west line of said CADG Celina 156 tract and the east line of said A.P. Sommerhalder, LLC. tract, a distance of 749.79 feet to the POINT OF BEGINNING, and containing 96.777 acres of land, more or less, and being subject to any and all easements that may affect.



RPLS No. 6443

Page 3 of 3

V:\Engineering\Witman Engineering\11658443 - celine136\dwg



WINDROSE
LAND SURVEYING | PLATTING

220 ELM STREET, SUITE 200 | LEWISVILLE, TX 75057 | 214.217.2544
FIRM REGISTRATION NO. 10194331 | WINDROSESERVICES.COM



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: December 12, 2017
Re: <Insert Subject/RE Here>

Action Requested:

The Celina City Council will conduct a public hearing to consider testimony and act upon a resolution authorizing and creating the Chalk Hill Public Improvement District No. 2 in accordance with Chapter 372 of the Texas Local Government Code; a ±95 acre tract of land generally located east of Preston Road, north of County Road 105, and south of County Road 102. (Chalk Hill PID #2) (DeBuff)

Background Information:

This item is a public hearing and action creating the Chalk Hill PID #2, which replaces Chalk Hill PID #1 dissolved in a previous agenda item.

Board Review/Citizen Input:

The requisite public hearing was held and notices were published.

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

This ordinance has been approved by the City Attorney.

Supporting Documents:

- Proposed resolution authorizing and creating Chalk Hill PID #2

Staff Recommendation:

Staff recommends approval.

CITY OF CELINA, TEXAS

RESOLUTION NO. _____

A RESOLUTION OF THE CITY OF CELINA, TEXAS AUTHORIZING AND CREATING THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT NO. 2 IN ACCORDANCE WITH CHAPTER 372 OF THE TEXAS LOCAL GOVERNMENT CODE; PROVIDING FOR RELATED MATTERS; AND PROVIDING AN EFFECTIVE DATE

WHEREAS, the City of Celina, Texas (the “City” or “Celina”), is authorized under Chapter 372 of the Texas Local Government Code (the “Act”), to create a public improvement district within its City limits or its extraterritorial jurisdiction; and

WHEREAS, on *November 14, 2017*, *CADG Celina 156, LLC, a Texas limited liability company*, the owner of (1) taxable real property representing more than 50 percent of the appraised value of taxable real property liable for assessment under the proposal, as determined by the current roll of the appraisal district in which the property is located and (2) record owner of real property liable for assessment under the proposal who: (A) constitute more than 50 percent of all record owners of property that is liable for assessment under the proposal; or (B) own taxable real property that constitutes more than 50 percent of the area of all taxable real property that is liable for assessment under the proposal (the “Petitioner”), within the corporate limits of the City, submitted and filed with the City Secretary of Celina (the “City Secretary”) a petition (“Petition”) requesting the establishment of a public improvement district for property within the City; and

WHEREAS, the Petition requested the creation of the Chalk Hill Public Improvement District No. 2 (the “District”), which District is located within the city limits of Celina and more particularly depicted in **Exhibit B** and described by metes and bounds in **Exhibit A** (the “Property”) each attached hereto and incorporated herein for all purposes; and

WHEREAS, the City Council of Celina (the “City Council”) has investigated and determined that the facts contained in the Petition are true and correct; and

WHEREAS, after publishing notice in the *Celina Record*, a newspaper of general circulation in Celina, and mailing notice of the hearing, all as required by and in conformity with

the Act, the City Council, conducted a public hearing on the advisability of the improvements and services on *December 12, 2017*; and

WHEREAS, the City Council of Celina closed the public hearing on the advisability of the improvements and services on *December 12, 2017*; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS:

Section 1. The findings set forth in the recitals of this Resolution are found to be true and correct.

Section 2. The Petition submitted to Celina by the Petitioner was filed with the City Secretary and complies with Section 372.005 of the Act.

Section 3. Pursuant to the requirements of the Act, including, without limitation, Sections 372.006, 372.009(a), and 372.009(b), the City Council of Celina, after considering the Petition and the evidence and testimony presented at the public hearing on *December 12, 2017*, hereby finds and declares:

- (a) **Advisability of the Proposed Improvements.** It is advisable to create the District to provide the Authorized Improvements (as described below). The Authorized Improvements are feasible and desirable and will promote the interests of Celina and will confer a special benefit on the Property.
- (b) **General Nature of the Authorized Improvements.** The purposes of the District include the design, acquisition, construction, and improvement of public improvement projects authorized by the Act (the “Authorized Improvements”) that are necessary for the development of the Property, which Authorized Improvements will include: landscaping, entryway features, water, wastewater, sidewalks, streets, roadways, off-street parking, drainage system improvements, trails, parks and open space; special supplemental services for the improvement and promotion of the District; and payment of expenses incurred in the establishment, administration, and operation of the District.

These Authorized Improvements shall promote the interests of Celina and confer a special benefit upon the Property.

(c) Estimated Costs of the Authorized Improvements and Apportionment of Costs –

The estimated total costs of the Authorized Improvements is \$20,000,000.00, which costs shall be paid by assessment of the property owners within the proposed District. Celina will not be obligated to provide any funds to finance the Authorized Improvements, other than from assessments levied on the Property, and possible tax increment reinvestment zone revenue. No municipal property in the District shall be assessed. The developer of the property (the “Developer”) may also pay certain costs of the Authorized Improvements from other funds available to the Developer.

(d) Boundaries of the District. The District is proposed to include approximately 94.827 acres of land generally located east of Preston Road, north of County Road 105, and south of County Road 102, as more particularly depicted in **Exhibit A** attached hereto, and as more properly described in the metes and bounds described in **Exhibit B** attached hereto.

(e) Proposed Method of Assessment – Celina shall levy an assessment on each parcel of the Property within the District in a manner that results in imposing equal shares of the costs on property similarly benefited. All assessments, including interest, may be paid in full at any time, and certain assessments may be paid in annual installments, with interest. If an assessment is allowed to be paid in installments, then the installments must be paid in amounts necessary to meet annual costs for those Authorized Improvements financed by the assessments, and must continue for a period necessary to retire the indebtedness for those Authorized Improvements (including interest).

(f) Management of the District. The District shall be managed by Celina, with the assistance of a consultant, who shall, from time to time, advise Celina regarding certain operations of the District.

(g) Advisory Board. The District shall be managed without the creation of an advisory body.

Section 4. The Chalk Hill Public Improvement District No. 2 is hereby authorized and created as a public improvement district under the Act in accordance with the findings of the City Council as to the advisability of the Authorized Improvements contained in this Resolution, the nature and the estimated costs of the Authorized Improvements, the boundaries of the District, the method of assessment, and the apportionment of costs as described herein; and the conclusion that the District is needed to fund such Authorized Improvements.

Section 5. Notice of this Resolution authorizing the District shall be given by publishing such notice once in the *Celina Record*, a newspaper of general circulation in Celina. Effective upon the publication of such notice, such authorization shall take effect and the District shall be established.

Section 6. This Resolution shall take effect immediately from and after its passage and publication as required by law.

PASSED, APPROVED AND ADOPTED on the 12th day of December, 2017.

ATTEST:

Chad Anderson, Mayor Pro Tem

Vicki Faulkner, City Secretary

SEAL

EXHIBIT A PROPERTY DEPICTION

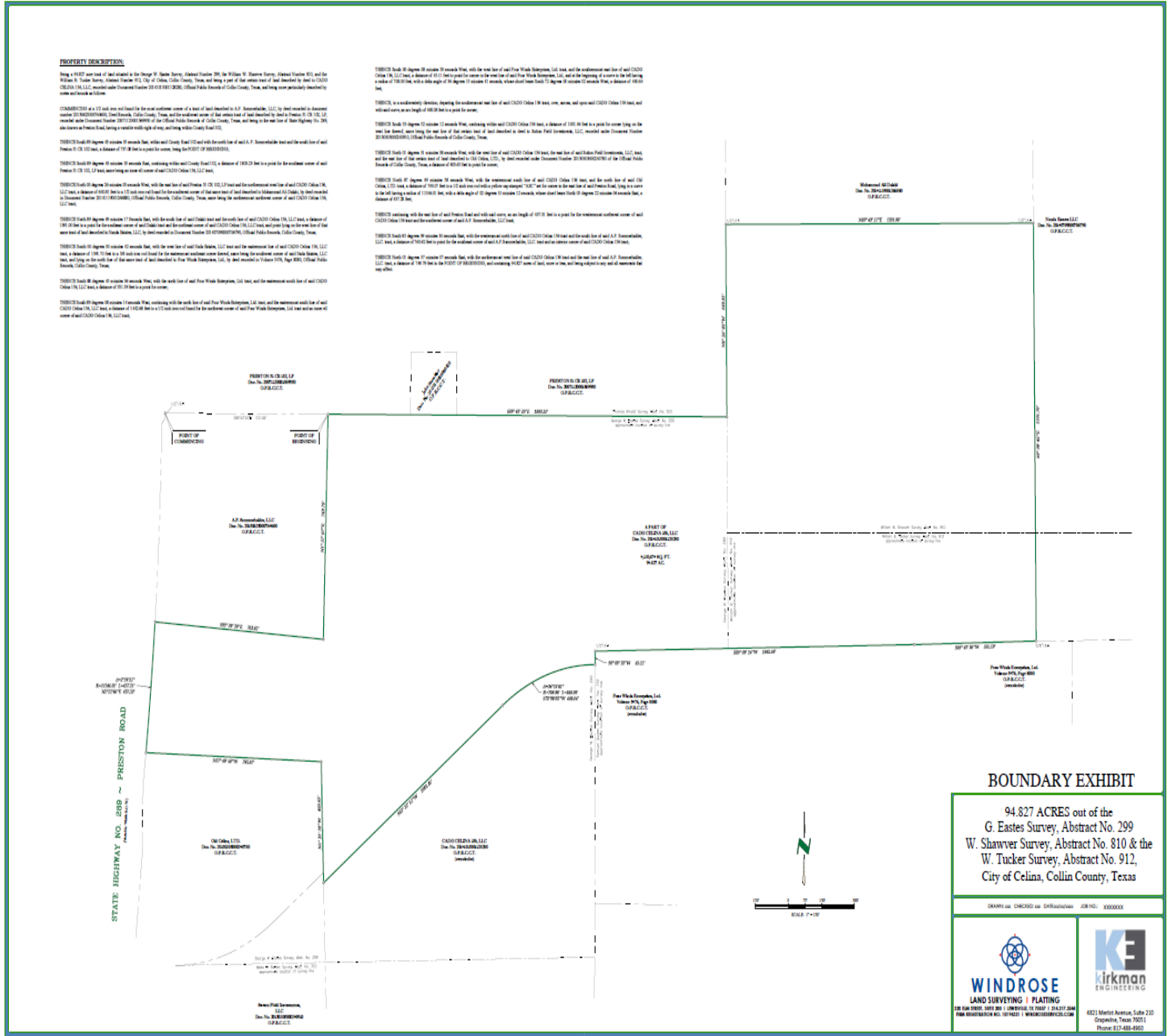


EXHIBIT B

PROPERTY METES AND BOUNDS DESCRIPTION

PROPERTY DESCRIPTION:

Being a 94.827 acre tract of land situated in the George W. Eastes Survey, Abstract Number 299, the William W. Shawver Survey, Abstract Number 810, and the William B. Tucker Survey, Abstract Number 912, City of Celina, Collin County, Texas, and being a part of that certain tract of land described by deed to CADG CELINA 156, LLC, recorded under Document Number 20141015001128280, Official Public Records of Collin County, Texas, and being more particularly described by metes and bounds as follows:

COMMENCING at a 1/2 inch iron rod found for the most northwest corner of a tract of land described to A.P. Sommerhalder, LLC, by deed recorded in document number 20150625000764600, Deed Records, Collin County, Texas, and the southwest corner of that certain tract of land described by deed to Preston 51 CR 102, LP, recorded under Document Number 20071120001569950 of the Official Public Records of Collin County, Texas, and being in the east line of State Highway No. 289, also known as Preston Road, having a variable width right-of-way, and being within County Road 102;

THENCE South 89 degrees 43 minutes 35 seconds East, within said County Road 102 and with the north line of said A. P. Sommerhalder tract and the south line of said Preston 51 CR 102 tract, a distance of 737.08 feet to a point for corner, being the POINT OF BEGINNING;

THENCE South 89 degrees 43 minutes 35 seconds East, continuing within said County Road 102, a distance of 1803.23 feet to a point for the southeast corner of said Preston 51 CR 102, LP tract, same being an inner ell corner of said CADG Celina 156, LLC tract;

THENCE North 00 degrees 26 minutes 05 seconds West, with the east line of said Preston 51 CR 102, LP tract and the northernmost west line of said CADG Celina 156, LLC tract, a distance of 640.81 feet to a 1/2 inch iron rod found for the southwest corner of that same tract of land described to Mohammad Ali Dalaki, by deed recorded in Document Number 20141119001266880, Official Public Records, Collin County, Texas, same being the northernmost northwest corner of said CADG Celina 156, LLC tract;

THENCE North 89 degrees 49 minutes 17 Seconds East, with the south line of said Dalaki tract and the north line of said CADG Celina 156, LLC tract, a distance of 1391.00 feet to a point for the southeast corner of said Dalaki tract and the northeast corner of said CADG Celina 156, LLC tract, said point lying on the west line of that same tract of land described to Nanda Estates, LLC, by deed recorded in Document Number 201407090000706790, Official Public Records, Collin County, Texas;

THENCE South 00 degrees 30 minutes 42 seconds East, with the west line of said Nada Estates, LLC tract and the easternmost line of said CADG Celina 156, LLC tract, a distance of 1391.70 feet to a 5/8 inch iron rod found for the easternmost southeast corner thereof, same being the southwest corner of said Nada Estates, LLC tract, and lying on the north line of that same tract of land described to Four Winds Enterprises, Ltd., by deed recorded in Volume 5476, Page 8080, Official Public Records, Collin County, Texas;

THENCE South 88 degrees 45 minutes 36 seconds West, with the north line of said Four Winds Enterprises, Ltd. tract, and the easternmost south line of said CADG Celina 156, LLC tract, a distance of 551.59 feet to a point for corner;

THENCE South 89 degrees 08 minutes 14 seconds West, continuing with the north line of said Four Winds Enterprises, Ltd. tract, and the easternmost south line of said CADG Celina 156, LLC tract, a distance of 1442.68 feet to a 1/2 inch iron rod found for the northwest corner of said Four Winds Enterprises, Ltd. tract and an inner ell corner of said CADG Celina 156, LLC tract;

THENCE South 00 degrees 08 minutes 33 seconds West, with the west line of said Four Winds Enterprises, Ltd. tract, and the southernmost east line of said CADG Celina 156, LLC tract, a distance of 45.11 feet to point for corner in the west line of said Four Winds Enterprises, Ltd., and at the beginning of a curve to the left having a radius of 708.00 feet, with a delta angle of 36 degrees 15 minutes 41 seconds, whose chord bears South 72 degrees 00 minutes 02 seconds West, a distance of 440.64 feet;

THENCE, in a southwesterly direction, departing the southernmost east line of said CADG Celina 156 tract, over, across, and upon said CADG Celina 156 tract, and with said curve, an arc length of 448.08 feet to a point for corner;

THENCE South 53 degrees 52 minutes 12 seconds West, continuing within said CADG Celina 156 tract, a distance of 1001.46 feet to a point for corner lying on the west line thereof, same being the east line of that certain tract of land described in deed to Sutton Field Investments, LLC, recorded under Document Number 20150305000240910, Official Public Records of Collin County, Texas;

THENCE North 01 degrees 31 minutes 38 seconds West, with the west line of said CADG Celina 156 tract, the east line of said Sutton Field Investments, LLC, tract, and the east line of that certain tract of land described to Old Celina, LTD., by deed recorded under Document Number 20150305000240780 of the Official Public Records of Collin County, Texas, a distance of 403.65 feet to point for corner;

THENCE North 87 degrees 49 minutes 58 seconds West, with the westernmost south line of said CADG Celina 156 tract, and the north line of said Old Celina, LTD. tract, a distance of 793.07 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner in the east line of said Preston Road, lying in a curve to the left having a radius of 11546.01 feet, with a delta angle of 02 degrees 10 minutes 12 seconds, whose chord bears North 05 degrees 22 minutes 06 seconds East, a distance of 437.28 feet;

THENCE continuing with the east line of said Preston Road and with said curve, an arc length of 437.31 feet to a point for the westernmost northwest corner of said CADG Celina 156 tract and the southwest corner of said A.P. Sommerhalder, LLC tract;

THENCE South 85 degrees 39 minutes 30 seconds East, with the westernmost north line of said CADG Celina 156 tract and the south line of said A.P. Sommerhalder, LLC. tract, a distance of 763.62 feet to point for the southeast corner of said A.P. Sommerhalder, LLC. tract and an interior corner of said CADG Celina 156 tract;

THENCE North 01 degrees 37 minutes 07 seconds East, with the northernmost west line of said CADG Celina 156 tract and the east line of said A.P. Sommerhalder, LLC. tract, a distance of 749.79 feet to the POINT OF BEGINNING, and containing 94.827 acres of land, more or less, and being subject to any and all easements that may affect.



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: December 12, 2017
Re: <Insert Subject/RE Here>

Action Requested:

Consider and act upon a resolution of the City of Celina, Texas determining the costs of certain authorized improvements to be financed by The Columns Public Improvement District; approving a preliminary service plan and assessment plan, including proposed assessment rolls; calling a regular meeting and noticing a public hearing for February 13, 2018 to consider an ordinance levying assessment rolls with the City Secretary to make available for public inspection; directing city staff to publish and mail notice of said public hearing; and resolving other matters incident and related thereto. (The Columns PID Project Costs) (DeBuff)

Background Information:

This item approves a resolution outlining the costs of authorized improvements that will be financed by The Columns PID, and approves related items.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

This resolution has been reviewed by the City Attorney.

Supporting Documents:

- Proposed resolution determining costs of improvements

Staff Recommendation:

Staff recommends approval.

CITY OF CELINA, TEXAS

RESOLUTION NO. _____

A RESOLUTION OF THE CITY OF CELINA, TEXAS DETERMINING THE COSTS OF CERTAIN AUTHORIZED IMPROVEMENTS TO BE FINANCED BY THE COLUMNS PUBLIC IMPROVEMENT DISTRICT; APPROVING A PRELIMINARY SERVICE PLAN AND ASSESSMENT PLAN, INCLUDING PROPOSED ASSESSMENT ROLL; CALLING A SPECIAL MEETING AND NOTICING A PUBLIC HEARING FOR FEBRUARY 13, 2018 TO CONSIDER AN ORDINANCE LEVYING ASSESSMENTS ON PROPERTY LOCATED WITHIN THE COLUMNS PUBLIC IMPROVEMENT DISTRICT; DIRECTING THE FILING OF THE PROPOSED ASSESSMENT ROLL WITH THE CITY SECRETARY TO MAKE AVAILABLE FOR PUBLIC INSPECTION; DIRECTING CITY STAFF TO PUBLISH AND MAIL NOTICE OF SAID PUBLIC HEARING; AND RESOLVING OTHER MATTERS INCIDENT AND RELATED THERETO.

RECITALS

WHEREAS, the Public Improvement District Assessment Act, Texas Local Government Code, Chapter 372, as amended (the "Act") authorizes the governing body (the "City Council") of the City of Celina, Texas (the "City") to create a public improvement district within the City; and

WHEREAS, on November 14, 2017 the City Council conducted a public hearing to consider a petition received by the City on September 29, 2017 titled "Petition for the Creation of a Public Improvement District within the city of the City of Celina, Texas, for The Columns Public Improvement District" requesting the creation of a public improvement district; and

WHEREAS, on November 14, 2017, the City Council approved Resolution No. 2017-203R (the "Authorization Resolution"), authorizing, establishing and creating The Columns Public Improvement District (the "District"); and

WHEREAS, the City authorized the creation of the District and the issuance of up to \$14,000,000.00 in bonds for the District to finance certain public improvements authorized by the Act for the benefit of the property within the District (the "Authorized Improvements"); and

WHEREAS, the City Council and the City staff have been presented "The Columns Public Improvement District Preliminary Service and Assessment Plan," including the proposed

assessment roll attached thereto (the "Proposed Assessment Roll"), dated November 29, 2017 (collectively, the "Preliminary SAP"), a copy of which is attached hereto as **Exhibit A** and is incorporated herein for all purposes; and

WHEREAS, the Preliminary SAP sets forth the estimated total costs of certain Authorized Improvements to be financed by the District and the Proposed Assessment Roll states the assessments proposed to be levied against each parcel of land in the District as determined by the method of assessment chosen by the City; and

WHEREAS, the Act requires that the Proposed Assessment Roll be filed with the City Secretary of the City (the "City Secretary") and be subject to public inspection; and

WHEREAS, the Act requires that a public hearing (the "Assessment Hearing") be called to consider proposed assessments and requires the City Council to hear and pass on any objections to the proposed assessments at, or on the adjournment of, the Assessment Hearing; and

WHEREAS, the Act requires that notice of the Assessment Hearing be mailed to property owners liable for assessment and published in a newspaper of general circulation in the City before the tenth (10th) day before the date of the Assessment Hearing.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS AS FOLLOWS:

SECTION 1. THAT the recitals set forth above in this Resolution are true and correct and are hereby adopted as findings of the City Council and are incorporated into the body of this Resolution as if fully set forth herein.

SECTION 2. THAT the City Council does hereby accept the Preliminary SAP for the District, including the Proposed Assessment Roll, a copy of which is attached hereto as **Exhibit A** and is incorporated herein for all purposes. All capitalized terms not otherwise defined herein shall have the meanings given to such terms in the Preliminary SAP.

SECTION 3. THAT the City Council hereby determines that the total costs of the Authorized Improvements (as defined in the Preliminary SAP) to be financed by the District are

as set forth in Table III-A, which costs do not include the payment of expenses incurred in the administration of the District or related to the issuance of any bonds.

SECTION 4. THAT the City Council's final determination and approval of the costs of the Authorized Improvements, or any portion thereof, shall be subject to and contingent upon City Council approval of a final Service and Assessment Plan which will include final Assessment Roll, after the properly noticed and held Assessment Hearing.

SECTION 5. THAT the Proposed Assessment Roll states the assessment proposed to be levied against each parcel of land in the District as determined by the method of assessment chosen by the City in the Authorization Resolution and as more fully described in the Preliminary SAP.

SECTION 6. THAT the City Council hereby authorizes and directs the filing of the Proposed Assessment Roll with the City Secretary and the same shall be available for public inspection.

SECTION 7. THAT the City Council hereby authorizes, and calls, a meeting and a public hearing (the Assessment Hearing as defined above) to be held on February 13, 2018 at 5 p.m. at Celina Council Chambers, 112 N. Colorado St., Celina, TX 75009, at which the City Council shall, among other actions, hear and pass on any objections to the proposed assessments; and, upon the adjournment of the Assessment Hearing, the City Council will consider an ordinance levying the assessments as special assessments on property within the District (which ordinance shall specify the method of payment of the assessments).

SECTION 8. THAT the City Council hereby authorizes and directs the City Secretary to publish notice of the Assessment Hearing to be held on February 13, 2018, in substantially the form attached hereto as **Exhibit B** and incorporated herein for all purposes, in a newspaper of general circulation in the City on or before February 2, 2018, which is before the tenth (10th) day before the date of the Assessment Hearing, as required by Section 372.016(b) of the Act.

SECTION 9. THAT when the Proposed Assessment Roll is filed with the City Secretary, the City Council hereby authorizes and directs the City Secretary to mail to owners of property

liable for assessment notice of the Assessment Hearing to be held on February 13, 2018 as required by Section 372.016(c) of the Act.

SECTION 10. THAT City staff is authorized and directed to take such other actions as are required (including, but not limited to, notice of the public hearing as required by the Texas Open Meetings Act) to place the public hearing on the agenda for the February 13, 2018 meeting of the City Council.

SECTION 11. THAT this Resolution shall become effective from and after its date of passage in accordance with law.

PASSED AND APPROVED on this the 12th day of December, 2017.

ATTEST:

Chad Anderson, Mayor Pro Tem

Vicki Faulkner, City Secretary

EXHIBIT A

PRELIMINARY SERVICE AND ASSESSMENT PLAN

EXHIBIT B
CITY OF CELINA, TEXAS
NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN THAT a public hearing will be conducted by the City Council of the City of Celina, Texas on *February 13, 2018 at 5 p.m. at 112 N. Colorado St., Celina, Texas 75009*. The public hearing will be held to consider proposed assessments to be levied against the assessable property within The Columns Public Improvement District (the "District") pursuant to the provisions of Chapter 372 of the Texas Local Government Code, as amended (the "Act").

The general nature of the proposed public improvements (collectively, the "Authorized Improvements") may include: (i) street and roadway improvements, including related sidewalks, drainage, utility relocation, signalization, landscaping, lighting, signage, off-street parking and right-of-way; (ii) establishment or improvement of parks and open space, together with the design, construction and maintenance of any ancillary structures, features or amenities such as trails, playgrounds, walkways, lighting and any similar items located therein; (iii) sidewalks and landscaping, including entry monuments and features, fountains, lighting and signage; (iv) acquisition, construction, and improvement of water, wastewater and drainage improvements and facilities; (v) projects similar to those listed in subsections (i) - (iv) above authorized by the Act, including similar off-site projects that provide a benefit to the property within the District; (vi) special supplemental services for improvement and promotion of the district; (vii) payment of costs associated with operating and maintaining the public improvements listed in subparagraphs (i) – (vi) above; and (viii) payment of costs associated with developing and financing the public improvements listed in subparagraphs (i) - (vi) above, and costs of establishing, administering and operating the District. These Authorized Improvements shall promote the interests of the City and confer a special benefit upon the Property.

The total costs of the Authorized Improvements, including the costs of creating the District and issuing the bonds, is approximately \$10,770,195.00 . The term of the assessments, to the extent payable on an annual basis, will be 30 years as reflected in the Preliminary Service and Assessment Plan available at the Celina City Hall.

The boundaries of the District include approximately 48.784 acres of land generally located East of Dallas Parkway and South of County Road 51 and within the city limits, as more particularly described by a metes and bounds description available at Celina City Hall located 142 N. Ohio Dr., Celina, Texas 75009 and available for public inspection.

All written or oral objections on the proposed assessment within the District will be considered at the public hearing.

A copy of the Assessment Roll relating to the Authorized Improvements (the "Assessment Roll"), which Assessment Roll includes the assessments to be levied against each parcel in the District for the Authorized Improvements, is available for public inspection at the office of the City Secretary, 142 N. Ohio Dr., Celina, Texas 75009.

Draft

THE COLUMNS
PUBLIC IMPROVEMENT DISTRICT
PRELIMINARY SERVICE AND ASSESSMENT PLAN

Attachment: The Columns PID SAP (The Columns Costs Resolution)

NOVEMBER 29, 2017

THE COLUMNS PUBLIC IMPROVEMENT DISTRICT
PRELIMINARY SERVICE AND ASSESSMENT PLAN

Table of Contents

Section I	Plan Description and Defined Terms	1
Section II	Property Included in the PID	9
Section III	Description of Authorized Improvements	10
Section IV	Service Plan	15
Section V	Assessment Plan	20
Section VI	Terms of the Assessments	29
Section VII	The Assessment Roll	34
Section VIII	Miscellaneous Provisions	35

List of Appendices

Appendix A	The PID Map
Appendix B	Estimated Costs of the Authorized Improvements
Appendix C	Diagrams of the Authorized Improvements
Appendix D	Assessment Roll

Section I PLAN DESCRIPTION AND DEFINED TERMS

A. Introduction

On November 14, 2017 (the “Creation Date”) the City Council (the “City Council”) of the City of Celina, Texas (the “City”) passed and approved Resolution No. 2017-203R approving and authorizing the creation of the Columns Public Improvement District (the “PID”) to finance the costs of certain public improvements for the benefit of property in such public improvement district (the “Authorized Improvements”), all of which is located within the City.

The property in the PID is proposed to be developed as one phase, and the PID will finance public improvements as the property is developed. Assessments will be imposed on the property for the public improvements to be constructed.

Chapter 372 of the Texas Local Government Code, the “Public Improvement District Assessment Act” (as amended, the “PID Act”), governs the creation and operation of public improvement districts within the State of Texas. This Columns Public Improvement District Preliminary Service and Assessment Plan (the “Service and Assessment Plan”) has been prepared in accordance with the PID Act and specifically Sections 372.013, 372.014, 372.015 and 372.016, which address the requirements of a service and assessment plan and the assessment roll. According to Section 372.013 of the PID Act, a service plan “must cover a period of at least five years and must also define the annual indebtedness and the projected costs for improvements. The plan shall be reviewed and updated annually for the purpose of determining the annual budget for improvements.” The service plan is described in Section IV of this Service and Assessment Plan.

Section 372.014 of the PID Act requires that “an assessment plan must be included in the annual service plan.” The assessment plan is described in Section V of this Service and Assessment Plan.

Section 372.015 of the PID Act requires that “the governing body of the municipality or county shall apportion the cost of an improvement to be assessed against property in an improvement district.” The method of assessing the Authorized Improvement Costs and apportionment of such costs to the property in the PID is included in Section V of this Service and Assessment Plan.

Section 372.016 of the PID Act requires that “after the total cost of an improvement is determined, the governing body of the municipality or county shall prepare a proposed assessment roll. The roll must state the assessment against each parcel of land in the district, as determined by the method of assessment chosen by the municipality or county under this subchapter.” The Assessment Roll for the PID is included in this Service and Assessment Plan. The Assessments as shown on the Assessment Roll is based on the method of assessment and apportionment of costs described in Section V of this Service and Assessment Plan.

B. Definitions

Capitalized terms used herein shall have the meanings ascribed to them as follows:

“Actual Cost(s)” means, with respect to an Authorized Improvement, the demonstrated, reasonable, allocable, and allowable costs of constructing such Authorized Improvement. Actual Cost may include (a) the costs for the design, planning, financing, administration, management, acquisition, installation, construction and/or implementation of such Authorized Improvement, including general contractor construction management fees, if any, (b) the costs of preparing the construction plans for such Authorized Improvement, (c) the fees paid for obtaining permits, licenses or other governmental approvals for such Authorized Improvement, (d) the costs for external professional costs associated with such Authorized Improvement, such as engineering, geotechnical, surveying, land planning, architectural landscapers, advertising, marketing and research studies, appraisals, legal, accounting and similar professional services, taxes (property and franchise), (e) the costs of all labor, bonds and materials, including equipment and fixtures, incurred by contractors, builders and material men in connection with the acquisition, construction or implementation of the Authorized Improvements, (f) all related permitting, zoning and public approval expenses, architectural, engineering, legal, and consulting fees, financing charges, taxes, governmental fees and charges (including inspection fees, County permit fees, development fees), insurance premiums, miscellaneous expenses, and all advances and payments for Administrative Expenses.

Actual Costs may include general contractor’s fees in an amount up to a percentage equal to the percentage of work completed and accepted by the City or construction management fees in an amount up to five percent of the eligible Actual Costs described in a Certification for Payment. The amounts expended on legal costs, taxes, governmental fees, insurance premiums, permits, financing costs, and appraisals shall be excluded from the base upon which the general contractor and construction management fees are calculated.

“Administrative Expenses” mean the administrative, organization, maintenance and operation costs associated with, or incident to, the administration, organization, maintenance and operation of the PID, including, but not limited to, the costs of: (i) creating and organizing the PID, including conducting hearings, preparing notices and petitions, and all costs incident thereto, including engineering fees, legal fees and consultant fees, (ii) the annual administrative, organization, maintenance, and operation costs and expenses associated with, or incident and allocable to, the administration, organization, and operation of the PID, (iii) computing, levying, billing and collecting Assessments or the Annual Installments thereof, (iv) maintaining the record of installments of the Assessments and the system of registration and transfer of the Bonds, (v) issuing, paying and redeeming the Bonds, (vi) investing or depositing of monies, (vii) complying with the PID Act and codes with respect to the Bonds, (viii) the Trustee fees and expenses relating to the Bonds, including reasonable fees, (ix) legal counsel, engineers, accountants, financial advisors, investment bankers or other consultants and advisors, and (x) administering the construction of the Authorized Improvements. Administrative Expenses do not include payment of the actual principal of, redemption premium, if any, and interest on the Bonds. Administrative Expenses collected and not expended for actual Administrative Expenses shall be carried forward and applied to reduce Administrative Expenses in subsequent years to avoid the over-collection of amounts to pay Administrative Expenses.

“Administrator” means the employee or designee of the City, identified in any indenture of trust

relating to a series of Bonds or identified in any other agreement approved by the City Council, who shall have the responsibilities provided for herein.

“Annual Installment” means, with respect to each Parcel, each annual payment of: (i) the Assessments including any applicable interest, as shown on the Assessment Roll attached hereto as Appendix D, as applicable, or in an Annual Service Plan Update, and calculated as provided in Section VI of this Service and Assessment Plan, (ii) the Administrative Expenses, and (iii) the Prepayment and Delinquency Reserve described in Section V.F. of this Service and Assessment Plan.

“Annual Service Plan Update” has the meaning set forth in the second paragraph of Section IV of this Service and Assessment Plan.

“Assessed Property” means any property that benefits from the Authorized Improvements within the PID on which Assessments have been imposed as shown in the Assessment Roll, as the Assessment Roll is updated each year by the Annual Service Plan Update. Assessed Property includes Parcels within the PID other than Non-Benefited Property.

“Assessment” means an assessment levied against a Parcel imposed pursuant to an Assessment Ordinance and the provisions herein, as shown on any Assessment Roll, subject to reallocation upon the subdivision of such Parcel or reduction according to the provisions herein and the PID Act. An Assessment for a Parcel consists of the Annual Installments to be collected in all years and amounts collected to pay Administrative Expenses and interest on all Assessments.

“Assessment Ordinance” means an Assessment Ordinance adopted by the City Council approving the Service and Assessment Plan (including amendments or supplements to the Service and Assessment Plan) and levying the Assessments.

“Assessment Revenues” mean the revenues actually received by or on behalf of the City from the collection of Assessments.

“Assessment Roll” or **“Assessment Rolls”** means collectively or separately, as applicable, the Assessment Roll included in this Service and Assessment Plan as Appendix D or any other Assessment Roll in an amendment or supplement to this Service and Assessment Plan or in an Annual Service Plan Update, as each may be updated, modified, or amended from time to time in accordance with the procedures set forth in this Service and Assessment Plan and in the PID Act.

“Authorized Improvements” mean those public improvements described in Appendix B of this Service and Assessment Plan and Section 372.003 of the PID Act, acquired, constructed and installed in accordance with this Service and Assessment Plan, and any future updates and/or amendments.

“Authorized Improvement Costs” mean the actual or budgeted costs, as applicable, of all or any portion of the Authorized Improvements, as shown in Appendix B.

“Bonds” mean any bonds issued for financing the Authorized Improvements, including the Series ____ Bonds, in one or more series and secured in whole or in part by the Assessment Revenues.

“Budgeted Cost(s)” means the amounts budgeted to construct the Authorized Improvements as used in the preparation of this Service and Assessment Plan.

“Certification for Payment” means the certificate to be provided by the Developer, or his designee, to substantiate the Actual Cost of one or more Authorized Improvements, which may be in segments or sections.

“City” means the City of Celina, Texas.

“City Council” means the duly elected governing body of the City.

“County” means Collin County, Texas.

“Delinquent Collection Costs” mean interest, penalties and expenses incurred or imposed with respect to any delinquent installment of an Assessment in accordance with the PID Act and the costs related to pursuing collection of a delinquent Assessment and foreclosing the lien against the Assessed Property, including attorney’s fees.

“Developer” means CADG Celina Outer Loop, LLC, a Texas limited liability company and its successors and assigns.

“Development Agreement” means that certain Development Agreement relating to the PID executed by and between the Developer and the City effective October 31, 2017, as the same may be amended from time to time.

“Homeowner Association” means a homeowners’ association or property owners’ association established for the benefit of property owners within the PID.

“Homeowner Association Property” or **“(HOA Property)”** means property within the PID owned by or irrevocably offered for dedication to, whether in fee simple or through an easement, a Homeowners’ Association established for the benefit of a group of homeowners or property owners within the PID.

“Lot” means a tract of land described as a “lot” in a subdivision plat recorded in the official public records of Collin County, Texas.

“Lot Type” means a classification of final building lots with similar characteristics (e.g. commercial, light industrial, multifamily residential, single family residential, etc.), as determined by the Administrator and confirmed by the City Council. In the case of single family residential lots, the Lot Type shall be further defined by classifying the residential lots by the estimated final average home value for each lot as of the date of the recorded subdivision plat, considering factors such as density, lot size, proximity to amenities, view premiums, location, and any other factors that may impact the average home value on the lot, as determined by the Administrator and confirmed by the City Council.

“Non-Benefited Property” means Parcels that accrue no special benefit from the Authorized

Improvements, including Public Property and easements that create an exclusive use for a public utility provider. Property identified as Non-Benefited Property at the time the Assessments (i) are imposed or (ii) are reallocated pursuant to a subdivision of a Parcel, is not assessed. Assessed Property converted to Non-Benefited Property, if the Assessments may not be reallocated pursuant to the provisions herein, remains subject to the Assessments and requires the Assessments to be prepaid as provided for in Section VI.D.

“Parcel” or “Parcels” means a parcel or parcels within the PID identified by either a tax map identification number assigned by the Collin Central Appraisal District for real property tax purposes or by lot and block number in a final subdivision plat recorded in the official public records for real property in Collin County.

“PID” has the meaning set forth in Section I.A. of this Service and Assessment Plan.

“PID Act” means Texas Local Government Code Chapter 372, Public Improvement District Assessment Act, Subchapter A, Public Improvement Districts, as amended.

“Planned Development District” means the zoning classification established as PD – Planned Development District #84 pursuant to Ordinance 2017-33 adopted by the City Council designating the zoning and development standards.

“Prepayment Costs” mean interest and expenses to the date of prepayment, plus any additional expenses related to the prepayment allowed by applicable law, reasonably expected to be incurred by or imposed upon the City as a result of any prepayment of an Assessment.

“Prepayment and Delinquency Reserve” has the meaning set forth in Section V.F. of this Service and Assessment Plan.

“Public Property” means property, right of way and easements within the boundaries of the PID that is owned by or irrevocably offered for dedication to the federal government, the State of Texas, Collin County, the City, a school district or any other public agency or political subdivision, whether in fee simple or through an exclusive use easement.

“Service and Assessment Plan” means this Service and Assessment Plan prepared for the PID pursuant to the PID Act, as the same may be amended from time to time.

“TIRZ No. 9” means the Tax Increment Reinvestment Zone No. 9, City of Celina, Texas.

“TIRZ Annual Credit Amount” means, for each Parcel, such Parcel’s prorated amount of TIRZ Revenues calculated pursuant to Section VI.A. of this Service and Assessment Plan.

“TIRZ Ordinance” means an ordinance adopted by the City Council authorizing the use of TIRZ Revenues for project costs under the Tax Increment Financing Act, Texas Tax Code, Chapter 311, as amended, relating to certain public improvements as provided for in the Tax Increment Reinvestment Zone No. Nine Project Plan and Financing Plan (including amendments or supplements thereto).

“TIRZ Revenues” mean, for each year, the amounts paid by the City from the TIRZ No. 9 tax

increment fund pursuant to the TIRZ Ordinance to reduce an Annual Installment, as calculated each year by the Administrator in collaboration with the City, in accordance with Section VI.A. of this Service and Assessment Plan.

“Trust Indenture” means an indenture of trust, ordinance or similar document setting forth the terms and other provisions relating to the Bonds, as modified, amended, and/or supplemented from time to time.

“Trustee” means the fiscal agent or trustee as specified in a Trust Indenture, including a substitute fiscal agent or trustee.

Remainder of this page left intentionally blank.

Section II PROPERTY INCLUDED IN THE PID

Property Included in the PID

The PID is presently located within the City and contains approximately 48.784 acres of land. A map of the property within the PID is shown on Appendix A to this Service and Assessment Plan.

At completion, the PID is expected to consist of approximately 261 single family residential units, landscaping, and infrastructure necessary to provide roadways, drainage, and utilities to the PID. The estimated number of lots (261) and the classification of each lot are based upon the proposed development plan.

The property within the PID is proposed to be developed as follows:

Table II-A
Proposed Development

Proposed Development Type	Quantity	Measurement
Single Family Residential – 40 Feet	261	units
Total	261	units

The estimated number of units at the build-out of the PID is based on the land use approvals for the property, the anticipated subdivision of property in the PID, and the Developer's estimate of the highest and best use of the property within the PID.

Section III DESCRIPTION OF THE AUTHORIZED IMPROVEMENTS

A. Authorized Improvement Overview

Section 372.003 of the PID Act defines the improvements that may be undertaken by a municipality or county through the establishment of a public improvement district, as follows:

372.003. Authorized Improvements

- (a) If the governing body of a municipality or county finds that it promotes the interests of the municipality or county, the governing body may undertake an improvement project that confers a special benefit on a definable part of the municipality or county or the municipality's extraterritorial jurisdiction. A project may be undertaken in the municipality or county or the municipality's extraterritorial jurisdiction.
- (b) A public improvement may include:
 - (i) landscaping;
 - (ii) erection of fountains, distinctive lighting, and signs;
 - (iii) acquiring, constructing, improving, widening, narrowing, closing, or rerouting of sidewalks or of streets, any other roadways, or their rights-of way;
 - (iv) construction or improvement of pedestrian malls;
 - (v) acquisition and installation of pieces of art;
 - (vi) acquisition, construction, or improvement of libraries;
 - (vii) acquisition, construction, or improvement of off-street parking facilities;
 - (viii) acquisition, construction, improvement, or rerouting of mass transportation facilities;
 - (ix) acquisition, construction, or improvement of water, wastewater, or drainage facilities or improvements;
 - (x) the establishment or improvement of parks;
 - (xi) projects similar to those listed in Subdivisions (i)-(x);
 - (xii) acquisition, by purchase or otherwise, of real property in connection with an authorized improvement;
 - (xiii) special supplemental services for improvement and promotion of the district, including services relating to advertising, promotion, health and sanitation, water and wastewater, public safety, security, business recruitment, development, recreation, and cultural enhancement; and
 - (xiv) payment of expenses incurred in the establishment, administration and operation of the district.

After analyzing the public improvement projects authorized by the PID Act, the City has determined at this time to undertake only Authorized Improvements listed in Section III.B. below and described in Appendix B and shown on the diagram included as Appendix C for the benefit of the Assessed Property. Any change to the list of Authorized Improvements will require the approval of the City and an update to this Service and Assessment Plan.

B. Description of the Authorized Improvements

The descriptions of the Authorized Improvements are presented below and the estimated costs of the Authorized Improvements are shown in Table III-A. The estimated costs shown in Table III-B may be revised in an Annual Service Plan Update as needed.

Roadway improvements: The roadway improvements within the PID include construction of perimeter road and thoroughfare improvements, including related paving, drainage, curbs, gutters, sidewalks, retaining walls, signage, and traffic control devices. All roadway projects will be designed and constructed in accordance with City standards and specifications and will be owned and operated by the City.

Water distribution system improvements: The water distribution system improvements within the PID consist of construction and installation of water lines, mains, pipes, valves and appurtenances necessary for the water distribution system, as well as related testing, trench safety and erosion protection, necessary to service the Assessed Property. The water distribution system improvements will be designed and constructed in accordance with City standards and specifications and will be owned and operated by the City.

Sanitary sewer collection system improvements: The sanitary sewer collection system improvements within consist of construction and installation of pipes, service lines, manholes, encasements and appurtenances necessary to provide sanitary sewer service to the Assessed Property. The sanitary sewer improvements will be designed and constructed in accordance with City standards and specifications and will be owned and operated by the City.

Storm Drainage collection system improvements: The storm drainage collection system improvements consist of reinforced concrete pipes, reinforced concrete boxes, and multi-reinforced box culverts. The storm drainage collection system improvements will be designed and constructed in accordance with City standards and specifications and will be owned and operated by the City.

Additional details of the Authorized Improvements are shown in Appendix B attached to this Service and Assessment Plan. The method of cost allocation is explained in Section V.C.

The estimated costs of the Authorized Improvements shown in Tables III-A may be revised in Annual Service Plan Updates. Savings from one line item may be applied to a cost increase in another line item. These savings may be applied only to increases in costs of the Authorized Improvements (i.e., the improvements for the benefit of property within the PID). The detailed costs of the Authorized Improvements are shown in Appendix B to this Service and Assessment Plan.

Table III-A
Authorized Improvements - Authorized Improvements

Description	Estimated Costs
Roadway improvements	\$3,104,797
Water improvements	\$604,982
Sanitary sewer improvements	\$506,958
Storm drainage improvements	\$1,881,993
Screening and landscape improvements	\$844,870
Other soft costs including PID creation costs	\$1,306,594
Total Improvement Costs	\$8,250,195

Additionally, the Developer plans to construct certain improvements within the PID over a period of approximately five years including amenities, landscaping, hardscaping and other miscellaneous items (collectively, the “Private Costs”) to serve the entire PID. The Private Costs will be paid entirely by the Developer without any reimbursement through the PID.

Remainder of this page intentionally left blank.

Section IV SERVICE PLAN

A. Sources and Uses of Funds

The PID Act requires the service plan to cover a period of at least five years. The service plan is required to define the annual projected costs and indebtedness for the Authorized Improvements undertaken within the PID during the five year period. It is anticipated that it will take approximately 18 months to construct the Authorized Improvements.

The Budgeted Costs for the Authorized Improvements plus costs related to the issuance of the Series ____ Bonds, in one or more series, and payment of expenses incurred in the establishment, administration and operation of the PID are \$10,770,195 as shown in Table IV-A. The service plan shall be reviewed and updated at least annually for the purpose of determining the annual budget for Administrative Expenses, updating the Actual Costs of the Authorized Improvements, and updating the Assessment Roll(s). Any update to this Service and Assessment Plan is herein referred to as an “Annual Service Plan Update.”

Table IV-A
Estimated Sources and Uses

Sources of Funds	Series 2018 Bonds
Par amount	\$7,500,000
Other funding sources	\$3,270,195
Total Sources	\$10,770,195
Uses of Funds	
<u>Authorized Improvements</u>	
Road improvements	\$3,104,797
Water distribution system improvements	\$604,982
Sanitary sewer improvements	\$506,958
Storm drainage improvements	\$1,881,993
Screening and landscaping improvements	\$844,870
Other soft and miscellaneous costs	\$1,306,594
Subtotal: Authorized Improvements	\$8,250,195
<u>Estimated Bond Issuance Costs</u>	
Capitalized interest	\$975,000
Reserve fund	\$600,000
Administrative expenses fund	\$45,000
Other costs of issuance including underwriter's discount	\$900,000
Subtotal: Estimated Bond Issuance Costs	\$2,520,000
Total Uses	\$10,770,195

Attachment: The Columns PID SAP (The Columns Costs Resolution)

The annual projected costs and annual projected indebtedness is shown by Table IV-B. The annual projected costs and indebtedness is subject to revision and each shall be updated in the Annual Service Plan Update to reflect any changes in the costs or indebtedness expected for each year.

Table IV-B
Annual Projected Costs and Annual Projected Indebtedness

		Annual Projected Indebtedness (Series _____)	Sources other than Series _____ Bonds
2018	\$10,770,195	\$7,500,000	\$3,270,195
2019	\$0	\$0	\$0
2020	\$0	\$0	\$0
2021	\$0	\$0	\$0
2022	\$0	\$0	\$0
Total	\$10,770,195	\$7,500,000	\$3,270,195

The annual projected costs shown in Table IV-B are the annual expenditures relating to the Authorized Improvements shown in Table III-A, the costs associated with creating the PID and costs of issuing the Series _____ Bonds, including reserves shown in Table IV-A. The difference between the annual projected cost and the annual projected indebtedness, and between the annual projected indebtedness and the principal amount of the bonds each represent an amount funded by the Developer, which may be reimbursed with future bond proceeds to the extent available.

Remainder of this page intentionally left blank.

Section V ASSESSMENT PLAN

A. Introduction

The PID Act requires the City Council to apportion the costs of the Authorized Improvements on the basis of special benefits conferred upon the property because of the Authorized Improvements. The PID Act provides that the costs of the Authorized Improvements may be assessed: (i) equally per front foot or square foot; (ii) according to the value of the property as determined by the governing body, with or without regard to improvements on the property; or (iii) in any other manner that results in imposing equal shares of the cost on property similarly benefited. The PID Act further provides that the governing body may establish by ordinance or order reasonable classifications and formulas for the apportionment of the cost between the municipality and the area to be assessed and the methods of assessing the special benefits for various classes of improvements.

The proposed bond issuance program anticipates a series of bond financings that are intended to finance the public infrastructure required for the development. This financing may be undertaken in phases to coincide with the private investment and development of the Authorized Improvements.

For purposes of this Service and Assessment Plan, the City Council has determined that the costs of the Authorized Improvement Costs shall be allocated equally on the basis of the number of Lots once such property is developed, and that such method of allocation will result in the imposition of equal shares of the costs of the Authorized Improvements to Parcels similarly benefited.

This section of this Service and Assessment Plan currently (i) describes the special benefit received by each Parcel within the Assessed Property as a result of the Authorized Improvements, (ii) provides the basis and justification for the determination that this special benefit exceeds the amount of the Assessments to be levied on the Assessed Property, and (iii) establishes the methodologies by which the City Council allocates and reallocates the special benefit of the Authorized Improvements to the Assessed Property in a manner that results in equal shares of the Actual Costs of such improvements being apportioned to the Assessed Property similarly benefited. The determination by the City Council of the assessment methodologies set forth below is the result of the discretionary exercise by the City Council of its legislative authority and governmental powers and is conclusive and binding on the Developer and all future owners and developers of the Assessed Property.

B. Special Benefit

Assessed Property must receive a direct and special benefit from the Authorized Improvements, and this benefit must be equal to or greater than the amount of the Assessments. The Authorized Improvements are provided specifically for the benefit of the Assessed Property. The Authorized Improvements (more particularly described in line-item format in Appendix B to this Service and Assessment Plan) and the costs of issuance and payment of costs incurred in the establishment of the PID shown in Table IV-A are authorized by the PID Act. These Authorized Improvements are provided specifically for the benefit of the Assessed Property.

Each owner of the Assessed Property has acknowledged that the Authorized Improvements confer a special benefit on the Assessed Property and has consented to the imposition of the Assessments to pay for the Actual Costs associated therewith. Each of the owners is acting in its interest in consenting to this apportionment and levying of the Assessments because the special benefit conferred upon the Assessed Property by the Authorized Improvements exceeds the amount of the Assessments.

The Authorized Improvements provide a special benefit to the Assessed Property as a result of these improvements being constructed on the Assessed Property or in close proximity to the Assessed Property and the specific purpose of these Authorized Improvements of providing infrastructure for the Assessed Property. In other words, the Assessed Property could not be used in the manner proposed without the construction of the Authorized Improvements. The Authorized Improvements are being provided specifically to meet the needs of the Assessed Property as required for the proposed use of the property.

The Assessments are being levied to provide the Authorized Improvements that are required for the highest and best use of the Assessed Property (i.e., the use of the property that is most valuable, including any costs associated with that use). Highest and best use is defined as “the reasonably probable and legal use of property, which is physically possible, appropriately supported, financially feasible, and that results in the highest value.” (*Dictionary of Real Estate Appraisal, Third Edition.*) The Authorized Improvements are required for the proposed use of the Assessed Property to be physically possible, appropriately supported, financially feasible, and maximally productive.

The Developer has evaluated the potential use of the property and has determined that the highest and best use of the property is the use intended and the legal use for the property as described in Section II of this Service and Assessment Plan. The use of the Assessed Property as described herein will require the construction of the Authorized Improvements.

Each owner of the Assessed Property will ratify, confirm, accept, agree to and approve; (i) the determinations and finding by the City Council as to the special benefits described in this Service and Assessment Plan and the Assessment Ordinance; and (ii) the levying of Assessments on the Assessed Property. Use of the Assessed Property as described in this Service and Assessment Plan and as authorized by the PID Act requires that Authorized Improvements be acquired, constructed, installed, and/or improved. Funding the Actual Costs of the Authorized Improvements through the PID has been determined by the City Council to be beneficial to the City and the PID. As a result, the Authorized Improvements result in a special benefit to the Assessed Property, and this special benefit exceeds the amount of the Assessment. This conclusion is based on and supported by the evidence, information, and testimony provided to the City Council.

In summary, the Authorized Improvements result in a special benefit to the Assessed Property for the following reasons:

1. The Authorized Improvements are being provided specifically for the use of the Assessed Property, are necessary for the proposed best use of the property and provide a special benefit to the Assessed Property as a result;
2. The Developer has consented to the imposition of the Assessments for the purpose of

- providing the Authorized Improvements and the Developer is acting in its interest by consenting to this imposition;
3. The Authorized Improvements are required for the highest and best use of the property;
 4. The highest and best use of the Assessed Property is the use of the Assessed Property that is most valuable (including any costs associated with the use of the Assessed Property);
 5. Financing of the costs of the Authorized Improvement through the PID is determined to be beneficial; and,
 6. As a result, the special benefits to the Assessed Property from the Authorized Improvements will be equal to or greater than the Assessments.

C. Assessment Methodology

The Actual Costs may be assessed by the City Council against the Assessed Property so long as the special benefit conferred upon the Assessed Property by the Authorized Improvements equals or exceeds the Assessments. The Actual Costs may be assessed using any methodology that results in the imposition of equal shares of the Actual Costs on Assessed Property similarly benefited.

For purpose of this Service and Assessment Plan, the City Council has determined that the Actual Costs of the Authorized Improvements shall be allocated to the Assessed Property by spreading the entire Assessment across the Parcels based on the estimated number of units.

Based on the Actual Costs of the Authorized Improvements provided by the Developer, as set forth in Table III-A, the City Council has determined that the benefit to the Assessed Property is equal to or greater than the Assessments to be levied on the Assessed Property.

Upon subsequent divisions of any Parcel, the Assessment applicable to the Parcel will then be apportioned pro rata based on the number of units on each newly created Parcel. For residential Lots, when final residential building sites are platted, Assessments will be apportioned proportionately among each Lot Type based on the number of units applicable at the time residential Lots are platted to the total number of units of all Lots in the platted Parcel, as determined by the Administrator and confirmed by the City Council. The result of this approach is that each final residential Lot within a recorded subdivision plat with similar values will have the same Assessment.

As shown in Section IV of this Service and Assessment Plan, the total amount of the Series _____ Bonds, which represents the total Assessment to be allocated on all Parcels within the PID, is \$7,500,000. There are a total of 261 estimated residential units for the residential development within the PID, resulting in an Assessment per unit of \$28,735.63 ($\$7,500,000 \div 261 = \$28,735.63$).

Type	Planned No. of Units	Assessment per Unit	Total Assessments
40 Ft Lots	261	\$28,735.63 per dwelling unit	\$7,500,000
Total	261		\$7,500,000

The Assessment and Annual Installments for each Parcel or Lot located within the PID is shown on the Assessment Roll, attached as Appendix D, and no Assessment shall be changed except as authorized by this Service and Assessment Plan and the PID Act.

D. Assessments

The Assessments will be levied on each Parcel according to the Assessment Roll, attached hereto as Appendix D. The Annual Installments for the Series ____ Bonds will be collected at the time and in the amounts shown on the Assessment Roll, respectively, subject to any revisions made during an Annual Service Plan Update.

E. Administrative Expenses

The cost of administering the PID and collecting the Annual Installments shall be paid for on a pro rata basis by each Parcel based on the amount of Assessment levied against the Parcel. The Administrative Expenses shall be collected as part of and in the same manner as Annual Installments in the amounts shown on the Assessment Roll, which may be revised based on actual costs incurred in Annual Service Plan Updates.

F. Prepayment and Delinquency Reserve

Pursuant to the PID Act, the interest rate for Assessments may exceed the actual interest rate per annum paid on the related Bonds by no more than one half of one percent (0.50%) (the “Additional Interest”). The interest rate used to determine the Assessments is one half of one percent (0.50%) per annum higher than the actual rate paid on the Bonds, with the 0.5% Additional Interest component of the Annual Installments allocated to fund a reserve to be used for paying prepayment and delinquency related costs (the “Prepayment and Delinquency Reserve”). The Prepayment and Delinquency Reserve shall be funded until it reaches 5.50% of the outstanding Bonds as stipulated in the Bond documents. Once the Prepayment and Delinquency Reserve is funded in full, the City may allocate the Additional Interest component of the Annual Installments to pay for Administrative Expenses, improvement costs, any other use that benefits the Assessed Property or redeem Bonds and reduce the Assessments, as determined by the City Council.

G. TIRZ Annual Credit Amount

Pursuant to the TIRZ Ordinance, the City has agreed to use TIRZ Revenues generated from each Parcel to offset a portion of such Parcel’s Annual Installments (the “TIRZ Annual Credit Amount”). The Annual Installment for each Parcel shall be calculated by taking into consideration any TIRZ Annual Credit Amount applicable to the Parcel then on deposit in the TIRZ No. 9 tax increment fund. The TIRZ Annual Credit Amount applicable to each Parcel shall be calculated as described under Section VI.A. of this Service and Assessment Plan.

Section VI TERMS OF THE ASSESSMENTS

A. Amount of Assessments and Annual Installments for Parcels Located Within the PID

The Assessments, and Annual Installments thereof, for each Parcel of Assessed Property is shown on the Assessment Roll, attached as Appendix D, and no Assessment shall be changed except as authorized by this Service and Assessment Plan and the PID Act.

The Annual Installments shall be collected in an amount sufficient to pay (i) principal and interest on the Series _____ Bonds, (ii) to fund the Prepayment and Delinquency reserve described in Section V, and (iii) to pay Administrative Expenses related to the PID. The Annual Installment for each Parcel shall be calculated by taking into consideration any available capitalized interest and TIRZ Annual Credit Amount applicable to the Parcel. The TIRZ Annual Credit Amount shall be calculated separately for each Parcel and such TIRZ Annual Credit Amount shall be applied on a Parcel-by-Parcel basis. As described in Section V.H., the TIRZ Revenues attributable to each Parcel of Assessed Property collected in any given year shall be used to calculate each Parcel's TIRZ Annual Credit Amount for such Parcel in the following year (i.e., TIRZ Revenues collected in 2018 shall be used to calculate the TIRZ Annual Credit Amount applicable to Annual Installments to be collected in 2019). TIRZ Annual Credit Amounts shall be calculated for those Parcels that are subject to Assessments in the PID. The Equivalent Units to be used for the calculation of the TIRZ Annual Credit Amount, if applicable, shall be determined by the Administrator based on the information available to the Administrator at the time of such calculations.

B. Reallocation of Assessments

1. Subdivision

Upon the subdivision of any Parcel, the Assessment for the Parcel prior to the subdivision shall be reallocated among the new subdivided Parcels according to the following formula:

$$A = B \times (C \div D)$$

Where the terms have the following meanings:

- A = the Assessment for each new subdivided Parcel
- B = the Assessment for the Parcel prior to subdivision
- C = the estimated number of units to be built on each new subdivided Parcel
- D = the sum of the estimated number of units to be built on all of the new subdivided Parcels

The calculation of the estimated number of units to be built on a Parcel shall be performed by the Administrator and confirmed by the City Council based on the information available regarding the use of the Parcel. The estimate as confirmed shall be conclusive. The number of units to be built on a Parcel may be estimated by net land area and reasonable density ratios.

The sum of the Assessments for all newly subdivided Parcels shall equal the Assessment for the Parcel prior to subdivision. The calculation shall be made separately for each newly subdivided Parcel. The reallocation of an Assessment for a Parcel that is a homestead under Texas law may

not exceed the Assessment prior to the reallocation and to the extent the reallocation would exceed such amount, it shall be prepaid by such amount by the party requesting the subdivision of the Parcels.

Any reallocation pursuant to this section shall be reflected in an Annual Service Plan Update approved by the City Council.

2. Consolidation

Upon the consolidation of two or more Parcels, the Assessment for the consolidated Parcel shall be the sum of the Assessments for the Parcels prior to consolidation. The reallocation of an Assessment for a Parcel that is a homestead under Texas law may not exceed the Assessment prior to the reallocation and to the extent the reallocation would exceed such amount, it shall be prepaid by such amount by the party requesting the consolidation of the Parcels. Any reallocation pursuant to this section shall be reflected in an Annual Service Plan Update approved by the City Council.

C. Mandatory Prepayment of Assessments

1. If a Parcel subject to Assessments is transferred to a party that is exempt from the payment of the Assessment under applicable law, or if an owner causes a Parcel subject to Assessments to become Non-Benefited Property, the owner of such Parcel shall pay to the City the full amount of the principal portion of the Assessment on such Parcel, plus all Prepayment Costs, prior to any such transfer or act.
2. The payments required above shall be treated the same as any Assessment that is due and owing under the PID Act, the Assessment Ordinance, and this Service and Assessment Plan, including the same lien priority, penalties, procedures, and foreclosure specified by the PID Act.

E. Reduction of Assessments

1. If, after all Authorized Improvements to be funded with a series of Bonds have been completed and Actual Costs for such Authorized Improvements are less than the Authorized Improvement Costs used to calculate the Assessments securing such series of Bonds, resulting in excess Bond proceeds being available to redeem Bonds of such series, then the Assessment securing such series of Bonds for each Parcel of Assessed Property shall be reduced by the City Council pro rata such that the sum of the resulting reduced Assessments for all Assessed Properties equals the reduced Actual Costs and such excess Bond proceeds shall applied to redeem Bonds of such series. The Assessments shall not be reduced to an amount less than the related outstanding series of Bonds. If all of the Authorized Improvements are not completed, the City may reduce the Assessments in another method if it determines such method would better reflect the benefit received by the Parcels from the Authorized Improvements completed.

2. If after all Authorized Improvements to be funded with a series of Bonds have been completed and a portion of the Bonds have been redeemed using the TIRZ Annual Credit Amounts or other funds available to the City, then the Assessment securing such series of Bonds for each Parcel of Assessed Property shall be reduced by the City Council pro rata such that the sum of the resulting reduced Assessments for all Assessed Properties equals the remaining

outstanding amount(s) of the Bonds after such redemptions. The Assessments shall not be reduced to an amount less than the related outstanding series of Bonds.

3. If all the Authorized Improvements are not undertaken, resulting in excess Bond proceeds being available to redeem Bonds, then the Assessments and Annual Installments for each Parcel shall be appropriately reduced by the City Council to reflect only the amounts required to repay the Bonds, including interest on the Bonds and Administrative Expenses, and such excess Bond proceeds shall be applied to redeem Bonds. The City Council may reduce the Assessments and the Annual Installments for each Parcel (i) in an amount that represents the Authorized Improvements provided for each Parcel or (ii) by an equal percentage calculated based on Equivalent Units, if determined by the City Council to be the most fair and practical means of reducing the Assessments for each Parcel, such that the sum of the resulting reduced Assessments equals the amount required to repay the Bonds, including interest on the Bonds and Collection Costs. The principal portion of the Assessment for each Parcel shall be reduced pro rata to the reduction in the Assessments for each Parcel such that the sum of the resulting reduced Principal Portion of the Bonds is equal to the outstanding principal amount of the Bonds.

F. Payment of Assessments

1. Payment in Full

- (a) The Assessment for any Parcel may be paid in full at any time. Such payment shall include all Prepayment Costs. If prepayment in full will result in redemption of Bonds, the payment amount shall be reduced by the amount, if any, of interest through the date of redemption of Bonds and reserve funds applied to the redemption under the Trust Indenture, net of any other costs applicable to the redemption of such Bonds.
- (b) If an Annual Installment has been billed prior to payment in full of an Assessment, the Annual Installment shall be due and payable and shall be credited against the payment-in-full amount.
- (c) Upon payment in full of the Assessment and all Prepayment Costs, the City shall deposit the payment in accordance with the Trust Indenture; whereupon, the Assessment shall be reduced to zero, and the owner's obligation to pay the Assessment and Annual Installments thereof shall automatically terminate.
- (d) At the option of the owner, the Assessment on any Parcel plus Prepayment Costs may be paid in part in an amount sufficient to allow for a convenient redemption of Bonds as determined by the Administrator. Upon the payment of such amounts for a Parcel, the Assessment for the Parcel shall be reduced, the Assessment Roll shall be updated to reflect such partial payment, and the obligation to pay the Annual Installment for such Parcel shall be reduced to the extent the partial payment is made.

2. Payment in Annual Installments

The PID Act provides that an Assessment for a Parcel may be paid in full at any time. If not paid in full, the PID Act authorizes the Assessment to be paid in installments and additionally allows the City to collect interest, administrative expenses and other authorized charges in installments. An Assessment for a Parcel that is not paid in full will be collected in Annual Installments each

year in the amounts shown on the Assessment Roll, as updated as provided for herein, which include interest, Administrative Expenses, and payments required for the Prepayment Reserve and Delinquency Reserve. Payment of the Annual Installments shall commence with tax bills mailed after the levy of the Assessments.

Each Assessment shall be paid with interest of no more than the lesser of (i) the actual interest rate paid on the Bonds. The Assessment Roll sets forth for each year the Annual Installment for each Parcel based on an estimated interest rate of 6.5%, and an additional interest at the rate of 0.5% for Prepayment and Delinquency Reserve. Furthermore, the Annual Installments may not exceed the amounts shown on the Assessment Rolls. The Assessment Roll, shown as Appendix D, will be updated with the actual interest rates on the Series _____ Bonds.

The Annual Installments shall be reduced to equal the actual costs of repaying the obligations and actual Administrative Expenses (as provided for in the definition of such term), taking into consideration any other available funds for these costs, such as interest income on account balances.

The City reserves and shall have the right and option to refund the Bonds in accordance with Section 372.027 of the PID Act, Chapter 1207 of the Texas Government Code or any other applicable authority provided by the laws of the State of Texas. In the event of such refunding, the Administrator shall recalculate the Annual Installments, and if necessary, may adjust, or decrease, the amount of the Annual Installments so that total Annual Installments of Assessments will be produced in annual amounts that are required to pay the refunding bonds when due and payable as required by and established in the ordinance and/or the indenture authorizing and securing the refunding bonds, and such refunding bonds shall constitute Bonds for purposes of this Service and Assessment Plan.

G. Collection of Annual Installments

No less frequently than annually, the Administrator shall prepare, and the City Council shall approve, an Annual Service Plan Update to allow for the billing and collection of Annual Installments. Each Annual Service Plan Update shall include an updated Assessment Roll and a calculation of the Annual Installment for each Parcel. Administrative Expenses shall be allocated among Parcels in proportion to the amount of the Annual Installments for the Parcels. Each Annual Installment shall be reduced by any credits applied under the applicable Trust Indenture, including capitalized interest, interest earnings on any account balances, and any other funds available to the Trustee for such purpose, and including any existing deposits to a prepayment reserve. Annual Installments shall be collected by the City in the same manner and at the same time as ad valorem taxes and shall be subject to the same penalties, procedures, and foreclosure sale in case of delinquencies as are provided for ad valorem taxes of the City. The City Council may provide for other means of collecting the Annual Installments to the extent permitted under the PID Act. The Assessments shall have lien priority as specified in the Act.

Any sale of Assessed Property for nonpayment of the Annual Installments shall be subject to the lien established for the remaining unpaid Annual Installments against such Assessed Property and such Assessed Property may again be sold at a judicial foreclosure sale if the purchaser thereof fails to make timely payment of the non-delinquent Annual Installments against such Assessed Property as they become due and payable.

Section VII THE ASSESSMENT ROLL

A. Assessment Roll

Assessed Property will be assessed for the special benefits conferred upon such property as a result of the Authorized Improvements. Table IV-A summarizes the \$10,817,754 in special benefit received by the Assessed Property from the Authorized Improvements, costs associated with the PID formation, and costs related to the issuance of the Series _____ Bonds. The total par amount of Series _____ Bonds is \$7,500,000 which is less than the benefit received by the Assessed Property, and as such the total Assessment for all Assessed Property within the PID is \$7,500,000 plus annual Administrative Expenses, the additional interest for Prepayment and Delinquency Reserve and Delinquent Collection Costs, if any. The Assessment for each Parcel of Assessed Property within the PID is calculated based on the allocation methodologies described in Section V.C. of this Service and Assessment Plan. The Assessment Roll is attached hereto as Appendix D.

C. Annual Assessment Roll Updates

The Administrator shall prepare, and shall submit to the City Council for approval, annual updates to the Assessment Roll in conjunction with the Annual Service Plan Update to reflect the following matters, together with any other changes helpful to the Administrator or the City and permitted by the PID Act: (i) the identification of each Parcel (ii) the Assessment for each Parcel of Assessed Property, including any adjustments authorized by this Service and Assessment Plan and in the PID Act; (iii) the Annual Installment for the Assessed Property for the year (if the Assessment is payable in installments); and (iv) payments of the Assessment, if any, as provided by Section VI.F. of this Service and Assessment Plan. The Assessment Roll shall be updated, which update may be done in the next Annual Service Plan Update, to reflect the issuance of additional Bonds, if any.

Section VIII MISCELLANEOUS PROVISIONS

A. Administrative Review

The City may elect to designate a third party to serve as Administrator. The City shall notify Developer in writing at least thirty (30) days in advance before appointing a third party Administrator.

To the extent consistent with the PID Act, an owner of an Assessed Parcel claiming that a calculation error has been made in the Assessment Roll(s), including the calculation of the Annual Installment, shall send a written notice describing the error to the City not later than thirty (30) days after the date any amount which is alleged to be incorrect is due prior to seeking any other remedy. The Administrator shall promptly review the notice, and if necessary, meet with the Assessed Parcel owner, consider written and oral evidence regarding the alleged error and decide whether, in fact, such a calculation error occurred.

If the Administrator determines that a calculation error has been made and the Assessment Roll should be modified or changed in favor of the Assessed Parcel owner, such change or modification shall be presented to the City Council for approval to the extent permitted by the PID Act. A cash refund may not be made for any amount previously paid by the Assessed Parcel owner (except for the final year during which the Annual Installment shall be collected or if it is determined there are sufficient funds to meet the expenses of the PID for the current year), but an adjustment may be made in the amount of the Annual Installment to be paid in the following year. The decision of the Administrator regarding a calculation error relating to the Assessment Roll may be appealed to the City Council. Any amendments made to the Assessment Roll(s) pursuant to calculation errors shall be made pursuant to the PID Act.

The decision of the Administrator, or if such decision is appealed to the City Council, the decision of the City Council shall be conclusive as long as there is a reasonable basis for such determination. This procedure shall be exclusive and its exhaustion by any property owner shall be a condition precedent to any other appeal or legal action by such owner.

B. Termination of Assessments

Each Assessment shall be extinguished on the date the Assessment is paid in full, including unpaid Annual Installments, Prepayment Costs and Delinquent Collection Costs, if any. After the extinguishment of an Assessment and the collection of any delinquent Annual Installments and Delinquent Collection Costs, the City shall provide the owner of the affected Parcel a recordable "Notice of the PID Assessment Termination".

C. Amendments

Amendments to the Service and Assessment Plan can be made as permitted or required by the PID Act and under Texas law.

To the extent permitted by the PID Act, the City Council reserves the right to amend this Service and Assessment Plan without notice under the PID Act and without notice to property owners of

Parcels:

(i) to correct mistakes and clerical errors; (ii) to clarify ambiguities; (iii) to provide procedures for the collection and enforcement of Assessments, Prepayment Costs, Collection Costs, and other charges imposed by the Service and Assessment Plan, and (iv) as may be required by the Attorney General of Texas in connection with the issuance of any series of Bonds.

D. Administration and Interpretation of Provisions

The City Council shall administer the PID, this Service and Assessment Plan, and all Annual Service Plan Updates consistent with the PID Act, and shall make all interpretations and determinations related to the application of this Service and Assessment Plan unless stated otherwise herein or in the Trust Indenture; such interpretations and determinations shall be conclusive.

E. Severability

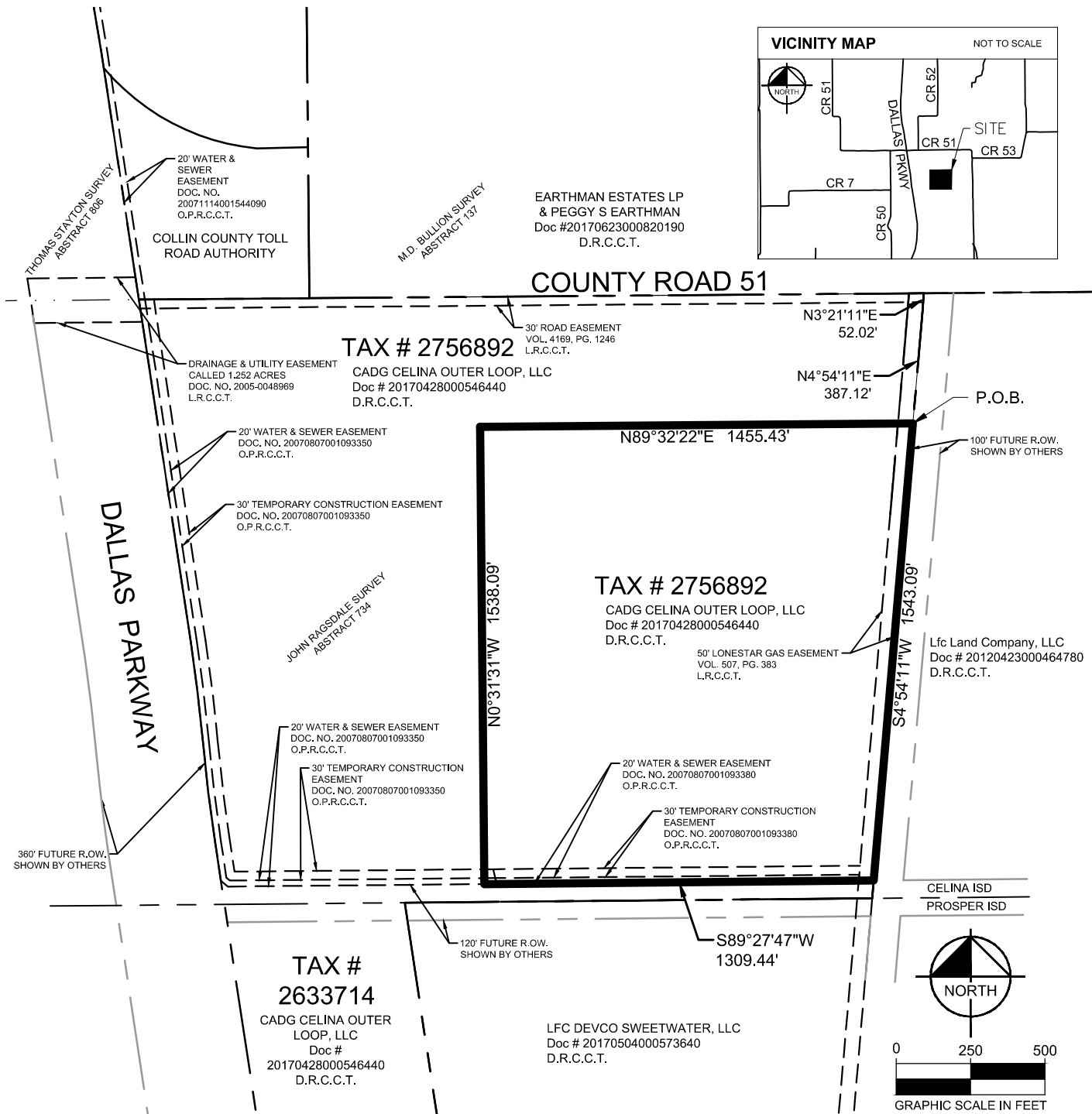
If any provision, section, subsection, sentence, clause or phrase of this Service and Assessment Plan or the application of same to an Assessed Parcel or any person or set of circumstances is for any reason held to be unconstitutional, void or invalid, the validity of the remaining portions of this Service and Assessment Plan or the application to other persons or sets of circumstances shall not be affected thereby, it being the intent of the City Council in adopting this Service and Assessment Plan that no part hereof or provision or regulation contained herein shall become inoperative or fail by reason of any unconstitutionality, voidness or invalidity of any other part hereof, and all provisions of this Service and Assessment Plan are declared to be severable for that purpose.

If any provision of this Service and Assessment Plan is determined by a court to be unenforceable, the unenforceable provision shall be deleted from this Service and Assessment Plan and the unenforceable provision shall, to the extent possible, be rewritten to be enforceable and to give effect to the intent of the City.

[Remainder of page intentionally left blank.]

Appendix A

THE PID MAP



Attachment: The Columns PID SAP (The Columns Costs Resolution)

**THE COLUMNS PUBLIC
IMPROVEMENT DISTRICT
COLLIN CAD TAX PARCEL EXHIBIT**

JOHN RAGSDALE SURVEY,
ABSTRACT NO. 734
CITY OF CELINA
COLLIN COUNTY, TEXAS

Kimley»Horn

5750 Genesis Court, Suite 200
Frisco, Texas 75034

FIRM # 10193822

Tel. No. (972) 335-3580
Fax No. (972) 335-3779

Scale
1" = 500'

Drawn by
SEP

Checked by
KHA

Date
Sept. 28, 2017

Project No.
064040007

Sheet No.
2 OF 2

Appendix B
AUTHORIZED IMPROVEMENT COSTS

Attachment: The Columns PID SAP (The Columns Costs Resolution)

PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST

IMPORTANT NOTES INCLUDED

KIMLEY-HORN AND ASSOCIATES				PHASE 1	TOTAL
PROJECT NAME:	Lucas Tract Mixed Use Development	NET ACRES:	48.8	NO. OF LOTS:	261
CITY:	Celina, Texas	GROSS ACRES:	48.8	CREATED BY:	TLF
JOB NUMBER:	064040007.1.105	CREATED:	5/30/2017	CHECKED BY:	TLF
FILE NAME:	The Columns OPC Interior.xlsx	PRINTED:	5/31/2017	REVISED BY:	BTL

A. WATER						
DESCRIPTION	UNIT	UNIT PRICE	PHASE 1		TOTAL QUANTITY	TOTAL COST
			QUANTITY	TOTAL		
8" P.V.C. WATERLINE	LF	\$25.00	8,770	\$219,250.00	8,770	\$219,250.00
8" GATE VALVE & BOX	EA	\$1,250.00	30	\$37,500.00	30	\$37,500.00
1" WATER SERVICE	EA	\$800.00	261	\$208,800.00	261	\$208,800.00
1" OPEN SPACE SERVICE	EA	\$800.00	1	\$800.00	1	\$800.00
1" IRRIGATION SERVICE	EA	\$800.00	2	\$1,600.00	2	\$1,600.00
2" IRRIGATION SERVICE	EA	\$1,500.00	1	\$1,500.00	1	\$1,500.00
FIRE HYDRANT ASSEMBLY	EA	\$4,100.00	24	\$98,400.00	24	\$98,400.00
CONNECT TO EXISTING 12"	EA	\$3,500.00	1	\$3,500.00	1	\$3,500.00
CONNECT TO EXISTING 18"	EA	\$5,500.00	1	\$5,500.00	1	\$5,500.00
4" PVC SLEEVES (IRRIGATION)	LF	\$15.00	500	\$7,500.00	500	\$7,500.00
TRENCH SAFETY	LF	\$0.50	8,770	\$4,385.00	8,770	\$4,385.00
WATER TESTING (EXCLUDING GEOTECH)	LF	\$0.50	8,770	\$4,385.00	8,770	\$4,385.00
BONDS	PERCENT	2.00%	593,120.00	\$11,862.40	593,120	\$11,862.40
TOTAL WATER				\$604,982.40	\$604,982.40	

B. SEWER						
DESCRIPTION	UNIT	UNIT PRICE	PHASE 1		TOTAL QUANTITY	TOTAL COST
			QUANTITY	TOTAL		
8" P.V.C. SEWERLINE	LF	\$28.00	8,470	\$237,160.00	8,470	\$237,160.00
STUB & PLUG	EA	\$500.00	1	\$500.00	1	\$500.00
4' DIAMETER MANHOLE	EA	\$3,500.00	21	\$73,500.00	21	\$73,500.00
CONCRETE ENCASEMENT	LF	\$35.00	240	\$8,400.00	240	\$8,400.00
4" SERVICE	EA	\$600.00	261	\$156,600.00	261	\$156,600.00
6" OPEN SPACE SERVICE	EA	\$800.00	1	\$800.00	1	\$800.00
CONNECT TO EXISTING	EA	\$1,000.00	1	\$1,000.00	1	\$1,000.00
TRENCH SAFETY	LF	\$1.00	8,470	\$8,470.00	8,470	\$8,470.00
SANITARY SEWER TESTING (EXCLUDING GEOTECH)	LF	\$1.25	8,470	\$10,587.50	8,470	\$10,587.50
BONDS	PERCENT	2.00%	\$497,018	\$9,940.35	497,018	\$9,940.35
TOTAL SEWER				\$506,957.85	\$506,957.85	

Attachment: The Columns PID SAP (The Columns Costs Resolution)

PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST

IMPORTANT NOTES INCLUDED

KIMLEY-HORN AND ASSOCIATES				PHASE 1	TOTAL
PROJECT NAME:	Lucas Tract Mixed Use Development	NET ACRES:	48.8	NO. OF LOTS:	261
CITY:	Celina, Texas	GROSS ACRES:	48.8	CREATED BY:	TLF
JOB NUMBER:	064040007.1.105	CREATED:	5/30/2017	CHECKED BY:	TLF
FILE NAME:	The Columns OPC Interior.xlsx	PRINTED:	5/31/2017	REVISED BY:	BTL

C. STORM SEWER						
DESCRIPTION	UNIT	UNIT PRICE	PHASE 1		TOTAL QUANTITY	TOTAL COST
			QUANTITY	TOTAL		
18" RCP	LF	\$55.00	1,370	\$75,350.00	1,370	\$75,350.00
21" RCP	LF	\$65.00	1,005	\$65,325.00	1,005	\$65,325.00
24" RCP	LF	\$72.00	115	\$8,280.00	115	\$8,280.00
27" RCP	LF	\$80.00	450	\$36,000.00	450	\$36,000.00
30" RCP	LF	\$90.00	410	\$36,900.00	410	\$36,900.00
36" RCP	LF	\$120.00	1,680	\$201,600.00	1,680	\$201,600.00
42" RCP	LF	\$155.00	315	\$48,825.00	315	\$48,825.00
48" RCP	LF	\$180.00	30	\$5,400.00	30	\$5,400.00
54" RCP	LF	\$210.00	145	\$30,450.00	145	\$30,450.00
60" RCP	LF	\$260.00	530	\$137,800.00	530	\$137,800.00
5'X5' RCB	LF	\$375.00	960	\$360,000.00	960	\$360,000.00
10'X6' RCB	LF	\$700.00	340	\$238,000.00	340	\$238,000.00
21" HEADWALL	EA	\$1,500.00	2	\$3,000.00	2	\$3,000.00
60" HEADWALL	EA	\$5,500.00	1	\$5,500.00	1	\$5,500.00
10'X6' HEADWALL	EA	\$14,500.00	1	\$14,500.00	1	\$14,500.00
CURB INLETS (ALL SIZES)	EA	\$3,500.00	49	\$171,500.00	49	\$171,500.00
2'X2' WYE INLET	EA	\$2,500.00	1	\$2,500.00	1	\$2,500.00
3'X3' WYE INLET	EA	\$3,300.00	1	\$3,300.00	1	\$3,300.00
INLET PROTECTION	EA	\$175.00	51	\$8,925.00	51	\$8,925.00
5' JUNCTION BOX	EA	\$5,000.00	15	\$75,000.00	15	\$75,000.00
DENTENTION PONDS	EA	VARIE	1	\$50,000.00	1	\$50,000.00
12" GROUTED RIP RAP	SY	\$75.00	315	\$23,625.00	315	\$23,625.00
GRADE TO DRAIN	CY	\$3.50	2,400	\$8,400.00	2,400	\$8,400.00
TRENCH SAFETY	LF	\$0.50	7,350	\$3,675.00	7,350	\$3,675.00
TESTING (TV)	LF	\$1.00	7,350	\$7,350.00	7,350	\$7,350.00
BONDS	PERCENT	2.00%	\$1,621,205.00	\$32,424.10	1,621,205	\$32,424.10
TOTAL STORM SEWER			\$1,653,629.10		\$1,653,629.10	

D. CLEARING & GRADING						
DESCRIPTION	UNIT	UNIT PRICE	PHASE 1		TOTAL QUANTITY	TOTAL COST
			QUANTITY	TOTAL		
CLEARING / GRUBBING	AC	\$800.00	48.8	\$39,040.00	48.8	\$39,040.00
STREET / ROW / BLOCK EXCAVATION	CY	\$2.20	137,779	\$303,113.07	137,778.7	\$303,113.07
MOISTURE CONDITIONING (PER PRELIMINARY GEOTECH REPORT)	LOT	\$2,500.00	261	\$652,500.00	261.0	\$652,500.00
SEDIMENTATION BASIN (NO SKIMMER)	LS	\$20,000.00	1	\$20,000.00	1.0	\$20,000.00
SKIMMER FOR SEDIMENTATION BASIN	LS	\$12,500.00	1	\$12,500.00	1.0	\$12,500.00
OPEN SPACE FINAL GRADING	LS	\$5,000.00	1	\$5,000.00	1.0	\$5,000.00
ROUGH LOT GRADING	EA	\$225.00	261	\$58,725.00	261.0	\$58,725.00
FINAL LOT GRADING	EA	\$125.00	261	\$32,625.00	261.0	\$32,625.00
TOTAL CLEARING & GRADING			\$1,123,503.07		\$1,123,503.07	

Attachment: The Columns PID SAP (The Columns Costs Resolution)

PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST

IMPORTANT NOTES INCLUDED

KIMLEY-HORN AND ASSOCIATES					PHASE 1	TOTAL
PROJECT NAME:	Lucas Tract Mixed Use Development	NET ACRES:	48.8	NO. OF LOTS:	261	261
CITY:	Celina, Texas	GROSS ACRES:	48.8	CREATED BY:	TLF	
JOB NUMBER:	064040007.1.105	CREATED:	5/30/2017	CHECKED BY:	TLF	
FILE NAME:	The Columns OPC Interior.xlsx	PRINTED:	5/31/2017	REVISED BY:	BTL	

E. STREET PAVEMENT						
DESCRIPTION	UNIT	UNIT PRICE	PHASE 1		TOTAL QUANTITY	TOTAL COST
			QUANTITY	TOTAL		
6" REINF. CONCRETE STREET PAVEMENT	SY	\$33.00	30,400	\$1,003,200.00	30,400	\$1,003,200.00
6" REINF. CONCRETE ALLEY PAVEMENT	SY	\$37.50	15,050	\$564,375.00	15,050	\$564,375.00
6" SUBGRADE PREPARATION	SY	\$3.00	49,995	\$149,985.00	49,995	\$149,985.00
HYDRATED LIME (8% #36/SY)	TON	\$165.00	900	\$148,485.15	900	\$148,485.15
PAVEMENT HEADER	LF	\$15.00	210	\$3,150.00	210	\$3,150.00
BARRIER FREE PEDESTRIAN RAMPS	EA	\$1,250.00	36	\$45,000.00	36	\$45,000.00
STREET SIGN	EA	\$500.00	15	\$7,500.00	15	\$7,500.00
STOP SIGN	EA	\$150.00	10	\$1,500.00	10	\$1,500.00
4" PVC SLEEVES (MISC)	LF	\$15.00	1,050	\$15,750.00	1,050	\$15,750.00
TRAFFIC CONTROL	LS	\$3,500.00	1	\$3,500.00	1	\$3,500.00
BONDS	PERCENT	2.00%	\$1,942,445.15	\$38,848.90	1,942,445	\$38,848.90
TOTAL STREET PAVEMENT				\$1,981,294.05		\$1,981,294.05

F. MISCELLANEOUS ITEMS AND FEES						
DESCRIPTION	UNIT	UNIT PRICE	PHASE 1		TOTAL QUANTITY	TOTAL COST
			QUANTITY	TOTAL		
STREET LIGHTS (ASSUMES GCEC)	EA	\$0.00	17	\$0.00	17	\$0.00
ELECTRIC SERVICE ALLOWANCE (ASSUMES GCEC)	LOT	\$0.00	261	\$0.00	261	\$0.00
GAS SERVICE ALLOWANCE (ASSUMES ATMOS)	LOT	\$750.00	261	\$195,750.00	261	\$195,750.00
OFF-SITE GAS MAIN EXTENSION ALLOWANCE	LOT	\$300.00	261	\$78,300.00	261	\$78,300.00
INSPECTION FEE	PERCENT	2.00%	\$4,746,863	\$94,937.27	4,746,863	\$94,937.27
MISCELLANEOUS CITY FEES	LS	\$12,000.00	1	\$12,000.00	1	\$12,000.00
TOTAL MISCELLANEOUS ITEMS AND FEES				\$380,987.27		\$380,987.27

G. EROSION CONTROL						
DESCRIPTION	UNIT	UNIT PRICE	PHASE 1		TOTAL QUANTITY	TOTAL COST
			QUANTITY	TOTAL		
SILT FENCE (DOWN SLOPE PERIMETER, CREEK & CHANNEL PROTECTION)	LF	\$1.50	2,860	\$4,290.00	2,860	\$4,290.00
ROCK CHECK DAM	EA	\$1,500.00	1	\$1,500.00	1	\$1,500.00
CONSTRUCTION ENTRANCE	LS	\$2,500.00	1	\$2,500.00	1	\$2,500.00
CURLEX AFTER PAVING (4' WIDE)	LF	\$0.70	33,220	\$23,254.00	33,220	\$23,254.00
SEEDING	AC	\$285.00	32	\$9,120.00	32	\$9,120.00
EROSION CONTROL PERMITTING, MAINTENANCE, & INSPECTION	LOT	\$200.00	261	\$52,200.00	261	\$52,200.00
SWPPP	LS	\$5,000.00	1	\$5,000.00	1	\$5,000.00
TOTAL EROSION CONTROL				\$97,864.00		\$97,864.00

Attachment: The Columns PID SAP (The Columns Costs Resolution)

PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST

IMPORTANT NOTES INCLUDED

KIMLEY-HORN AND ASSOCIATES					PHASE 1	TOTAL
PROJECT NAME:	Lucas Tract Mixed Use Development	NET ACRES:	48.8	NO. OF LOTS:	261	261
CITY:	Celina, Texas	GROSS ACRES:	48.8	CREATED BY:	TLF	
JOB NUMBER:	064040007.1.105	CREATED:	5/30/2017	CHECKED BY:	TLF	
FILE NAME:	The Columns OPC Interior.xlsx	PRINTED:	5/31/2017	REVISED BY:	BTL	

H. CONSTRUCTION MATERIALS TESTING - GEOTECH						
DESCRIPTION	UNIT	UNIT PRICE	PHASE 1		TOTAL QUANTITY	TOTAL COST
			QUANTITY	TOTAL		
WATER TESTING (GEOTECH)	LF	\$1.65	8,770	\$14,470.50	8,770	\$14,470.50
SANITARY SEWER TESTING (GEOTECH)	LF	\$1.65	8,470	\$13,975.50	8,470	\$13,975.50
STORM SEWER TESTING (GEOTECH)	LF	\$1.00	7,350	\$7,350.00	7,350	\$7,350.00
EARTHWORK TESTING (GEOTECH)	CY	\$0.35	137,779	\$48,222.53	137,779	\$48,222.53
PAVEMENT TESTING (GEOTECH)	SY	\$2.10	49,995	\$104,989.50	49,995	\$104,989.50
TOTAL CONSTRUCTION MATERIALS TESTING - GEOTECH			\$189,008.03		\$189,008.03	

I. SCREENING - LANDSCAPING - SIDEWALKS						
DESCRIPTION	UNIT	UNIT PRICE	PHASE 1		TOTAL QUANTITY	TOTAL COST
			QUANTITY	TOTAL		
SCREENING/BUFFERING ALONG PUNK CARTER BLVD & MINOR ARTERIAL	LF	\$150.00	2,750	\$412,500.00	2,750	\$412,500.00
SOD AND IRRIGATE OPEN SPACES	SF	\$1.25	105,000	\$131,250.00	105,000	\$131,250.00
MISC. OPEN SPACE IMPROVEMENTS	LS	\$250,000.00	1	\$250,000.00	1	\$250,000.00
5' SIDEWALK (4" THICK)	LF	\$24.00	2,130	\$51,120.00	2,130	\$51,120.00
TOTAL SCREENING - LANDSCAPE - SIDEWALKS			\$844,870.00		\$844,870.00	

J. RETAINING WALL						
DESCRIPTION	UNIT	UNIT PRICE	PHASE 1		TOTAL QUANTITY	TOTAL COST
			QUANTITY	TOTAL		
RETAINING WALL ALLOWANCE	LOT	\$500.00	261	\$130,500.00	261	\$130,500.00
TOTAL SCREENING - LANDSCAPE - SIDEWALKS			\$130,500.00		\$130,500.00	

K. CONSULTING SERVICES						
DESCRIPTION	UNIT	UNIT PRICE	PHASE 1		TOTAL QUANTITY	TOTAL COST
			QUANTITY	TOTAL		
PLANNING, PLATTING (PRE & FINAL), ENGINEERING, CONSTRUCTION STAKING, & C	PERCENT	10.00%	\$6,479,718	\$647,971.77	6,479,718	\$647,971.77
GEOTECHNICAL ENGINEERING - FINAL GEOTECH REPORT	LOT	\$250.00	261	\$65,250.00	261	\$65,250.00
LANDSCAPE ARCHITECTURE	PERCENT	2.00%	\$844,870	\$16,897.40	844,870	\$16,897.40
CONSTRUCTION MANAGEMENT	PERCENT	1.00%	\$647,972	\$6,479.72	647,972	\$6,479.72
TOTAL CONSULTING SERVICES			\$736,598.89		\$736,598.89	

Attachment: The Columns PID SAP (The Columns Costs Resolution)

PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST

IMPORTANT NOTES INCLUDED

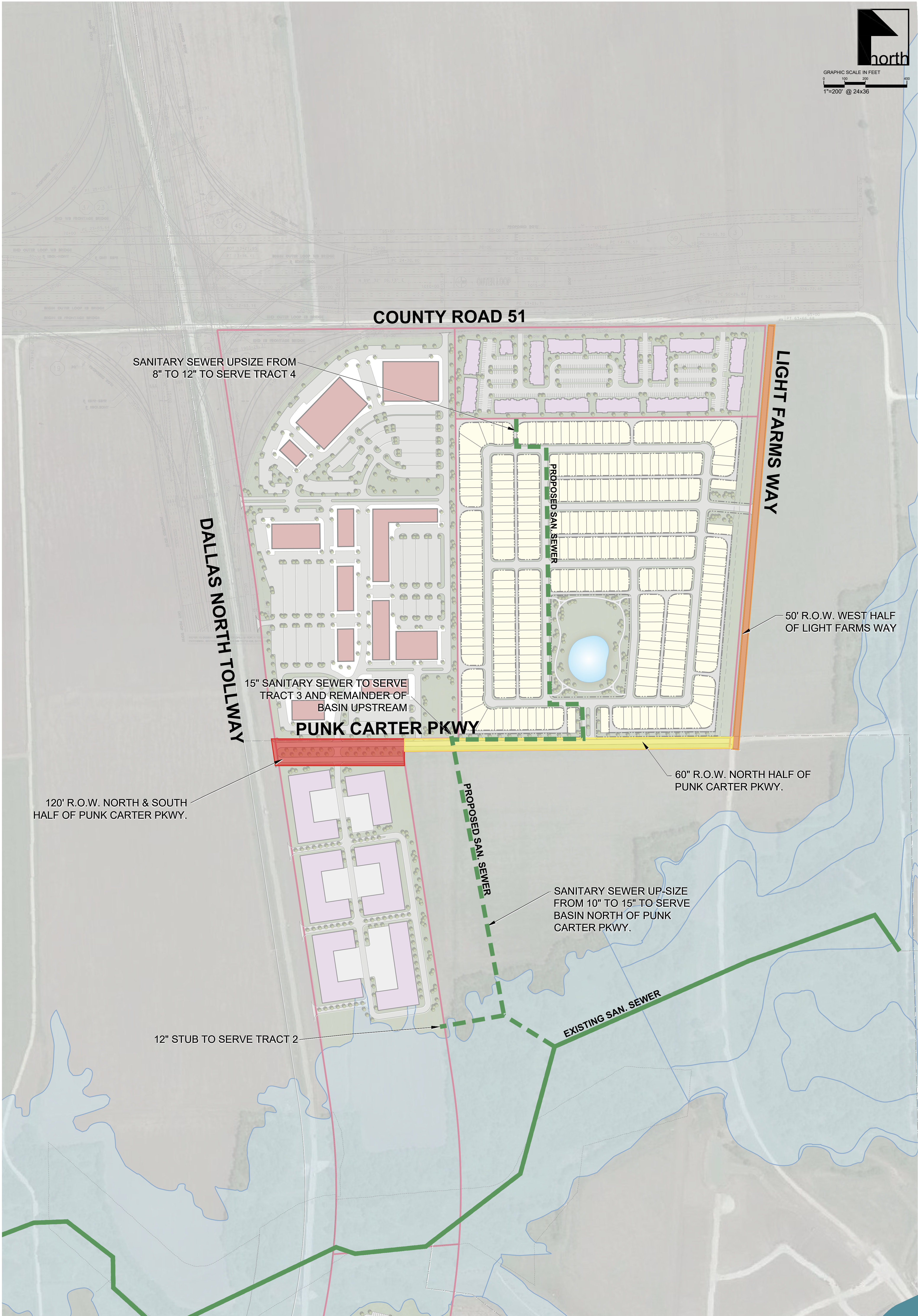
KIMLEY-HORN AND ASSOCIATES				PHASE 1	TOTAL
PROJECT NAME:	Lucas Tract Mixed Use Development	NET ACRES:	48.8	NO. OF LOTS:	261
CITY:	Celina, Texas	GROSS ACRES:	48.8	CREATED BY:	TLF
JOB NUMBER:	064040007.1.105	CREATED:	5/30/2017	CHECKED BY:	TLF
FILE NAME:	The Columns OPC Interior.xlsx	PRINTED:	5/31/2017	REVISED BY:	BTL

TOTALS	PHASE 1	TOTAL
A. WATER	\$604,982.40	\$604,982.40
B. SEWER	\$506,957.85	\$506,957.85
C. STORM SEWER	\$1,653,629.10	\$1,653,629.10
D. CLEARING & GRADING	\$1,123,503.07	\$1,123,503.07
E. STREET PAVEMENT	\$1,981,294.05	\$1,981,294.05
F. MISCELLANEOUS ITEMS AND FEES	\$380,987.27	\$380,987.27
G. EROSION CONTROL	\$97,864.00	\$97,864.00
H. CONSTRUCTION MATERIALS TESTING - GEOTECH	\$189,008.03	\$189,008.03
I. SCREENING - LANDSCAPE - SIDEWALKS	\$844,870.00	\$844,870.00
J. RETAINING WALL	\$130,500.00	\$130,500.00
K. CONSULTING SERVICES	\$736,598.89	\$736,598.89
SUB-TOTAL	\$8,250,194.66	\$8,250,194.66
GRAND TOTAL	\$8,250,194.66	\$8,250,194.66
PER LOT	\$31,609.94	\$31,609.94

NOTES
<u>SECTION A WATER</u> 1. OPC assumes the 12" Waterline along Light Farms Way is within the Major Infrastructure OPC and not included within this OPC. 2. OPC assumes existing 18" water main along Punk Carter Blvd per City of Celina Water Distribution Master Plan. 3. Water Impact Fees are not included in the OPC (by builder at building permit). <u>SECTION B SEWER</u> 4. OPC assumes that all sewer from the residential development will be gravity and connect to a stub provided by the Light Farms Development. 5. OPC assumes that existing systems have capacity for this development. 6. Wastewater Impact Fees are not included within this OPC (by builder at building permit). <u>SECTION C STORM SEWER</u> 7. OPC assumes that the open space provided is sufficient for detention. Preliminary drainage analysis is required to confirm. If open space provided is not sufficient then the land plan will have to be revised in order to provide adequate space. 8. OPC assumes that the open space provided for detention will also be used for site amenities. <u>SECTION D CLEARING & GRADING</u> 9. Excavation assumes 1.75' across the site. 10. Soil remediation, such as moisture conditioning and poly cover, is assumed, based a Preliminary Geotechnical Exploration by Alpha Testing, Alpha Report No. W170372. Final soil remediation should be determined by a comprehensive Final Geotechnical report. 11. OPC assumes that grading within the adjacent tracts will be allowed to eliminate any property line walls and additional drainage systems. 12. Offsite grading and drainage easements may be required. <u>SECTION E STREET PAVEMENT</u> 13. Internal street pavement is based on the current City requirements of 6" concrete pavement over 6" treated subgrade for residential and alley streets. 14. Subgrade preparation assumes treatment of 8% lime for depth indicated in the OPC. Assumptions should be verified by a Geotechnical Engineer. 15. Major roadway improvements for Punk Carter Blvd and Light Farms Way are included within the Major Infrastructure OPC. 16. Roadway Impact Fees are not included within this OPC. <u>SECTION F MISCELLANEOUS ITEMS AND FEES</u> 17. Street lights are based on a maximum spacing of 600 feet. These are assumed to be provided by the electric franchise provider at no charge. 18. Off-site gas infrastructure is included and assumed at \$300 per lot and assumes facilities are available to serve this development within this budget. 19. On-site gas and electric cost is assumed and should be confirmed. 20. Fiber cost is assumed and should be confirmed. <u>SECTION I SCREENING - LANDSCAPING - SIDEWALKS</u> 21. OPC assumes that the screening wall between the commercial tract and residential tract and the multi-family and residential tract will be constructed with the development of the commercial tract and multi-family tract. This assumes builder fence would be installed on the residential lots backing to the alley between the commercial tract and multi-family tract. 22. Sidewalks to be provided by the developer is based on the current city requirement of 5'. 23. Cost of discretionary entry feature and open space improvements is assumed and should be confirmed by Owner. <u>SECTION J RETAINING WALLS</u> 24. Retaining wall allowance is assumed (no preliminary design performed). <u>GENERAL NOTES</u> 25. Permit fees, impact fees, assessments, pro-rata fees, reimbursements, credits, etc. are not included unless specifically listed. 26. Legal, marketing, financing, closing costs, cost of sales, HOA funding, overhead, maintenance, insurance, etc. are not included. 27. Construction administration and development management is not included. 28. OPC assumes that there are no USACE jurisdictional impacts and that permitting and mitigation is not required. Based on aerial photography there doesn't appear to be any potentially jurisdictional features within the portion of the tract covered by this OPC. 29. Tree mitigation fee is not assumed. Based on aerial photography, there doesn't appear to be any existing trees within the portion of the tract covered by this OPC. 30. Unit prices for the OPC are based on recent bid forms for similar projects. 32. OPC is based on a specific land plan for 261 total lots dated June 2017. 33. There are no known franchise utility conflicts at the connections to Punk Carter Blvd., therefore, no budget is assumed or included in this OPC. 34. The borings drilled for the preliminary Geotech Report within this tract did not show rock, therefore, no assumption was made for rock excavation. 35. OPC assumes the earthwork balances on-site without any import or export required. 36. Questions regarding this OPC should be directed to Kimley-Horn and Associates, Thomas Fletcher, P.E., (972) 731-2186.

DIAGRAMS OF THE AUTHORIZED IMPROVEMENTS

Attachment: The Columns PID SAP (The Columns Costs Resolution)



Attachment: The Columns PID SAP (The Columns Costs Resolution)

The Homeplace at the Columns

PUBLIC IMPROVEMENT DISTRICT EXHIBIT

Celina, Texas
OCTOBER 2017

Kimley»Horn

5750 Genesis Court
Suite 200
Frisco, Texas 75034
972-335-3580
State of Texas Registration No. F-928

NOTE: THIS PLAN IS CONCEPTUAL IN NATURE AND HAS BEEN PRODUCED WITHOUT THE BENEFIT OF A SURVEY OR CONTACT WITH THE CITY/COUNTY, ETC.

Appendix D

PROPOSED ASSESSMENT ROLL – Assessed Property

Appendix D
Proposed Assessment Roll

Parcel	All Parcels
Assessment	\$7,500,000
Total Equivalent Units	261.00

Year	Principal	Interest¹	Administrative Expenses²	Total Annual Installment³
1	\$0	\$487,500	\$30,000	\$517,500
2	\$0	\$487,500	\$30,600	\$518,100
3	\$40,000	\$487,500	\$31,212	\$558,712
4	\$50,000	\$484,900	\$31,836	\$566,736
5	\$60,000	\$481,650	\$32,473	\$574,123
6	\$70,000	\$477,750	\$33,122	\$580,872
7	\$80,000	\$473,200	\$33,785	\$586,985
8	\$90,000	\$468,000	\$34,461	\$592,461
9	\$100,000	\$462,150	\$35,150	\$597,300
10	\$115,000	\$455,650	\$35,853	\$606,503
11	\$125,000	\$448,175	\$36,570	\$609,745
12	\$140,000	\$440,050	\$37,301	\$617,351
13	\$155,000	\$430,950	\$38,047	\$623,997
14	\$175,000	\$420,875	\$38,808	\$634,683
15	\$190,000	\$409,500	\$39,584	\$639,084
16	\$210,000	\$397,150	\$40,376	\$647,526
17	\$230,000	\$383,500	\$41,184	\$654,684
18	\$255,000	\$368,550	\$42,007	\$665,557
19	\$275,000	\$351,975	\$42,847	\$669,822
20	\$300,000	\$334,100	\$43,704	\$677,804
21	\$330,000	\$314,600	\$44,578	\$689,178
22	\$355,000	\$293,150	\$45,470	\$693,620
23	\$385,000	\$270,075	\$46,379	\$701,454
24	\$420,000	\$245,050	\$47,307	\$712,357
25	\$455,000	\$217,750	\$48,253	\$721,003
26	\$495,000	\$188,175	\$49,218	\$732,393
27	\$535,000	\$156,000	\$50,203	\$741,203
28	\$575,000	\$121,225	\$51,207	\$747,432
29	\$620,000	\$83,850	\$52,231	\$756,081
30	\$670,000	\$43,550	\$53,275	\$766,825
Total	\$7,500,000	\$10,684,050	\$1,217,042	\$19,401,092

1 - The interest is estimated using 6% per annum and includes 0.5% additional interest.

2 - The Administrative Expenses shown include the estimated PID administration and assessment collection costs.

3- Amounts shown do not include any TIRZ Credit.

Attachment: The Columns PID SAP (The Columns Costs Resolution)



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: December 12, 2017
Re: <Insert Subject/RE Here>

Action Requested:

Consider and act upon a resolution of the City of Celina, Texas determining the costs of certain authorized improvements to be financed by the Chalk Hill Public Improvement District No. 2; approving a preliminary service plan and assessment plan, including proposed assessment rolls; calling a regular meeting and noticing a public hearing for February 13, 2018 to consider an ordinance levying assessment rolls with the City Secretary to make available for public inspection; directing city staff to publish and mail notice of said public hearing; and resolving other matters incident and related thereto. (Chalk Hills PID Project Costs) (DeBuff)

Background Information:

This item approves a resolution outlining the costs of authorized improvements that will be financed by Chalk Hill PID #2, and approves related items.

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Financial Considerations:

N/A

Legal Review:

This resolution has been reviewed by the City Attorney.

Supporting Documents:

- Proposed resolution determining costs of improvements

Staff Recommendation:

Staff recommends approval.

CITY OF CELINA, TEXAS

RESOLUTION NO. _____

A RESOLUTION OF THE CITY OF CELINA, TEXAS DETERMINING THE COSTS OF CERTAIN AUTHORIZED IMPROVEMENTS TO BE FINANCED BY THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT NO. 2; APPROVING A PRELIMINARY SERVICE PLAN AND ASSESSMENT PLAN, INCLUDING PROPOSED ASSESSMENT ROLLS; CALLING A REGULAR MEETING AND NOTICING A PUBLIC HEARING FOR *FEBRUARY 13, 2018* TO CONSIDER AN ORDINANCE LEVYING ASSESSMENTS ON PROPERTY LOCATED WITHIN THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT NO. 2; DIRECTING THE FILING OF THE PROPOSED ASSESSMENT ROLLS WITH THE CITY SECRETARY TO MAKE AVAILABLE FOR PUBLIC INSPECTION; DIRECTING CITY STAFF TO PUBLISH AND MAIL NOTICE OF SAID PUBLIC HEARING; AND RESOLVING OTHER MATTERS INCIDENT AND RELATED THERETO.

RECITALS

WHEREAS, the Public Improvement District Assessment Act, Texas Local Government Code, Chapter 372, as amended (the "Act") authorizes the governing body (the "City Council") of the City of Celina, Texas (the "City") to create a public improvement district within the City; and

WHEREAS, on December 12, 2017, the City Council conducted a public hearing to consider a petition received by the City on November 14, 2017 titled "Petition for the Creation of a Public Improvement District within the city of the City of Celina, Texas, for the Chalk Hill Public Improvement District No. 2" requesting the creation of a public improvement district; and

WHEREAS, on December 12, 2017, the City Council approved Resolution No. _____ (the "Authorization Resolution"), authorizing, establishing and creating the Chalk Hill Public Improvement District No. 2 (the "District"); and

WHEREAS, the City authorized the creation of the District and the issuance of up to \$20,000,000.00 in bonds for the District to finance certain public improvements authorized by the Act for the benefit of the property within the District (the "Authorized Improvements"); and

WHEREAS, the City Council and the City staff have been presented a "Chalk Hill Public Improvement District No. 2 Preliminary Service and Assessment Plan", including the proposed

assessment rolls attached thereto (the "Proposed Assessment Rolls"), dated December 5, 2017 (collectively, the "Preliminary SAP"), a copy of which is attached hereto as **Exhibit A** and is incorporated herein for all purposes; and

WHEREAS, the Preliminary SAP sets forth the estimated total costs of certain Authorized Improvements to be financed by the District for the initial phase of development and the Proposed Assessment Rolls state the assessments proposed to be levied against each parcel of land in the District as determined by the method of assessment chosen by the City; and

WHEREAS, the Act requires that the Proposed Assessment Rolls be filed with the City Secretary of the City (the "City Secretary") and be subject to public inspection; and

WHEREAS, the Act requires that a public hearing (the "Assessment Hearing") be called to consider proposed assessments and requires the City Council to hear and pass on any objections to the proposed assessments at, or on the adjournment of, the Assessment Hearing; and

WHEREAS, the Act requires that notice of the Assessment Hearing be mailed to property owners liable for assessment and published in a newspaper of general circulation in the City before the tenth (10th) day before the date of the Assessment Hearing.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CELINA, TEXAS AS FOLLOWS:

SECTION 1. THAT the recitals set forth above in this Resolution are true and correct and are hereby adopted as findings of the City Council and are incorporated into the body of this Resolution as if fully set forth herein.

SECTION 2. THAT the City Council does hereby accept the Preliminary SAP for the District, including the Proposed Assessment Rolls, a copy of which is attached hereto as **Exhibit A** and is incorporated herein for all purposes. All capitalized terms not otherwise defined herein shall have the meanings given to such terms in the Preliminary SAP.

SECTION 3. THAT the City Council hereby determines that the total costs of the Major Improvements (as defined in the Preliminary SAP) to be financed by the District are as set forth in

Table III-A and the total costs of the Phase #1 Improvements (as defined in the Preliminary SAP) to be financed by the District are as set forth in Table III-B of the Preliminary SAP, which costs do include the payment of expenses incurred in the administration of the District or related to the issuance of any bonds.

SECTION 4. THAT the City Council's final determination and approval of the costs of the Major Improvements and the Phase #1 Improvements, or any portion thereof, shall be subject to and contingent upon City Council approval of a final Service and Assessment Plan which will include final Assessment Rolls, after the properly noticed and held Assessment Hearing.

SECTION 5. THAT the Proposed Assessment Rolls state the assessment proposed to be levied against each parcel of land in the District as determined by the method of assessment chosen by the City in the Authorization Resolution and as more fully described in the Preliminary SAP.

SECTION 6. THAT the City Council expressly defers the levy of assessments against property within future phases for phase-specific improvements that will benefit only the property within each subsequent phase until such time as the costs of such phase-specific improvements can be determined with certainty as referenced in the Preliminary SAP.

SECTION 7. THAT the City Council hereby authorizes and directs the filing of the Proposed Assessment Rolls with the City Secretary and the same shall be available for public inspection.

SECTION 8. THAT the City Council hereby authorizes, and calls, a meeting and a public hearing (the Assessment Hearing as defined above) to be held on *February 13, 2018 at 5 p.m. at Celina Council Chambers, 112 N. Colorado St., Celina, TX 75009*, at which the City Council shall, among other actions, hear and pass on any objections to the proposed assessments; and, upon the adjournment of the Assessment Hearing, the City Council will consider an ordinance levying the assessments as special assessments on property within the District (which ordinance shall specify the method of payment of the assessments).

SECTION 9. THAT the City Council hereby authorizes and directs the City Secretary to publish notice of the Assessment Hearing to be held on *February 13, 2018*, in substantially the

form attached hereto as **Exhibit B** and incorporated herein for all purposes, in a newspaper of general circulation in the City, on or before January 26, 2018, which is before the tenth (10th) day before the date of the Assessment Hearing, as required by Section 372.016(b) of the Act.

SECTION 10. THAT when the Proposed Assessment Rolls are filed with the City Secretary, the City Council hereby authorizes and directs the City Secretary to mail to owners of property liable for assessment notice of the Assessment Hearing to be held on *February 13, 2018*, on or before January 26, 2018, as required by Section 372.016(c) of the Act.

SECTION 11. THAT City staff is authorized and directed to take such other actions as are required (including, but not limited to, notice of the public hearing as required by the Texas Open Meetings Act) to place the public hearing on the agenda for the *February 13, 2018* meeting of the City Council.

SECTION 12. THAT this Resolution shall become effective from and after its date of passage in accordance with law.

PASSED AND APPROVED on this the 12th day of December, 2017.

ATTEST:

Chad Anderson, Mayor Pro-Tem

Vicki Faulkner, City Secretary

EXHIBIT A

PRELIMINARY SERVICE AND ASSESSMENT PLAN

Attachment: Resolution Determining Costs (Chalk Hill PID No. 2) (Chalk Hill Costs Resolution)

EXHIBIT B
CITY OF CELINA, TEXAS
NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN THAT a public hearing will be conducted by the City Council of Celina, Texas on *February 13, 2018 at 5 p.m. at Celina City Council Chambers, 112 N. Colorado St., Celina, Texas 75009*. The public hearing will be held to consider proposed assessments to be levied against the assessable property within the Chalk Hill Public Improvement District No. 2 (the "District") pursuant to the provisions of Chapter 372 of the Texas Local Government Code, as amended (the "Act").

The general nature of the proposed public improvements (collectively, the "Authorized Improvements") may include: (i) street and roadway improvements, including related sidewalks, drainage, utility relocation, signalization, landscaping, lighting, signage, off-street parking and right-of-way; (ii) establishment or improvement of parks and open space, together with the design, construction and maintenance of any ancillary structures, features or amenities such as trails, playgrounds, walkways, lighting and any similar items located therein; (iii) sidewalks and landscaping, including entry monuments and features, fountains, lighting and signage; (iv) acquisition, construction, and improvement of water, wastewater and drainage improvements and facilities; (v) projects similar to those listed in subsections (i) - (iv) above authorized by the Act, including similar off-site projects that provide a benefit to the property within the District; (vi) special supplemental services for improvement and promotion of the District as approved by the City; (vii) payment of costs associated with operating and maintaining the public improvements listed in subparagraphs (i) - (vi) above; and (viii) payment of costs associated with developing and financing the public improvements listed in subparagraphs (i) - (vi) above, and costs of establishing, administering and operating the District. These Authorized Improvements shall promote the interests of the City and confer a special benefit upon the Property.

The total costs of the Major Improvements and the Phase #1 Improvements, including the costs of creating the District and issuing the bonds, is approximately \$12,252,938.00. The total costs of Authorized Improvements to benefit future phases within the District cannot be determined with certainty at this time, but shall not exceed an additional \$7,747,062.00.

The boundaries of the District include approximately 94.83 acres of land generally located east of Preston Road, north of County Road 105, and south of County Road 102, located within the City and as more particularly described by a metes and bounds description available at Celina City Hall located 142 N. Ohio Dr., Celina, Texas 75009 and available for public inspection.

All written or oral objections on the proposed assessment within the District will be considered at the public hearing.

A copy of the Phase #1 Assessment Roll relating to the Phase #1 Improvements and the portion of the Major Improvements allocated to Phase #1, and Phases # 2-3 Major Improvements Assessment Roll relating to the Major Improvements allocated to Phases # 2-3 Assessed Property (collectively, the "Assessment Rolls"), which Assessment Rolls include the assessments to be levied against each parcel in the District for the Phase #1 Improvements and the Major Improvements, is available for public inspection at the office of the City Secretary, 142 N. Ohio Dr., Celina, Texas 75009.

Draft

CHALK HILL
PUBLIC IMPROVEMENT DISTRICT NO. 2
PRELIMINARY SERVICE AND ASSESSMENT PLAN

DECEMBER 5, 2017

MuniCap

v1.1

Attachment: Chalk Hill PID No. 2 - Draft SAP - v1.1 (Chalk Hill Costs Resolution)

CHALK HILL PUBLIC IMPROVEMENT DISTRICT No. 2

PRELIMINARY SERVICE AND ASSESSMENT PLAN

Table of Contents

Section I	Plan Description and Defined Terms	1
Section II	Property Included in the PID	8
Section III	Description of Authorized Improvements	9
Section IV	Service Plan	13
Section V	Assessment Plan	17
Section VI	Terms of the Assessments	25
Section VII	Assessment Roll	30
Section VIII	Miscellaneous Provisions	32

List of Appendix

Appendix A	The PID Map
Appendix B	Estimated Costs of the Authorized Improvements
Appendix C	Diagrams of the Authorized Improvements
Appendix D	Phases #2–3 Major Improvement Assessment Roll
Appendix E	Phase #1 Assessment Roll

Section I PLAN DESCRIPTION AND DEFINED TERMS

A. Introduction

On _____ (the "Creation Date") the City Council of the City of Celina, Texas (the "City") passed and approved Resolution No. _____ approving and authorizing the creation of the Chalk Hill Improvement District No. 2 (the "PID") to finance the costs of certain public improvements for the benefit of property in the PID (the "Authorized Improvements"), all of which is located within the City of Celina.

The property in the PID is proposed to be developed in approximately three phases, and the PID will finance public improvements for each phase as each phase is developed. Assessments will be imposed on the all property in the PID for the public improvements that benefit the entire PID and on the property in each phase for the public improvements to be provided for that phase.

Chapter 372 of the Texas Local Government Code, the "Public Improvement District Assessment Act" (as amended, the "PID Act"), governs the creation and operation of public improvement districts within the State of Texas. The Chalk Hill Public Improvement District No. 2 Service and Assessment Plan (the "Service and Assessment Plan") has been prepared in accordance with the PID Act and specifically Sections 372.013, 372.014, 372.015 and 372.016, which address the requirements of a service and assessment plan and the assessment roll. According to Section 372.013 of the PID Act, a service plan "must cover a period of at least five years and must also define the annual indebtedness and the projected costs for improvements. The plan shall be reviewed and updated annually for the purpose of determining the annual budget for improvements." The service plan is described in Section IV of this Service and Assessment Plan.

Section 372.014 of the PID Act requires that "an assessment plan must be included in the annual service plan." The assessment plan is described in Section V of this Service and Assessment Plan.

Section 372.015 of the PID Act requires that "the governing body of the municipality or county shall apportion the cost of an improvement to be assessed against property in an improvement district." The method of assessing the Authorized Improvement Costs and apportionment of such costs to the property in the PID is included in Section V of this Service and Assessment Plan.

Section 372.016 of the PID Act requires that "after the total cost of an improvement is determined, the governing body of the municipality or county shall prepare a proposed assessment roll. The roll must state the assessment against each parcel of land in the district, as determined by the method of assessment chosen by the municipality or county under this subchapter." The Assessment Rolls for the PID are included as Appendix D and E of this Service and Assessment Plan. The Assessments as shown on each Assessment Roll are based on the method of assessment and apportionment of costs described in Section V of this Service and Assessment Plan.

B. Definitions

Capitalized terms used herein shall have the meanings ascribed to them as follows:

“Actual Cost(s)” means, with respect to an Authorized Improvement, the demonstrated, reasonable, allocable, and allowable costs of constructing such Authorized Improvement, as specified in a Certification for Payment that has been reviewed and approved by the City. Actual Cost may include (a) the costs for the design, planning, financing, administration, management, acquisition, installation, construction and/or implementation of such Authorized Improvement, including general contractor construction management fees, if any, (b) the costs of preparing the construction plans for such Authorized Improvement, (c) the fees paid for obtaining permits, licenses or other governmental approvals for such Authorized Improvement, (d) the costs for external professional costs associated with such Authorized Improvement, such as engineering, geotechnical, surveying, land planning, architectural landscapers, advertising, marketing and research studies, appraisals, legal, accounting and similar professional services, taxes (property and franchise) (e) the costs of all labor, bonds and materials, including equipment and fixtures, incurred by contractors, builders and material men in connection with the acquisition, construction or implementation of the Authorized Improvements, (f) all related permitting, zoning and public approval expenses, architectural, engineering, legal, and consulting fees, financing charges, taxes, governmental fees and charges (including inspection fees, County permit fees, development fees), insurance premiums, miscellaneous expenses, and all advances and payments for Administrative Expenses.

Actual Costs include general contractor’s fees in an amount up to a percentage equal to the percentage of work completed and accepted by the City or construction management fees in an amount up to five percent of the eligible Actual Costs described in a Certification for Payment. The amounts expended on legal costs, taxes, governmental fees, insurance premiums, permits, financing costs, and appraisals shall be excluded from the base upon which the general contractor and construction management fees are calculated.

“Administrator” means the employee or designee of the City, identified in any indenture of trust relating to the Bonds or in any other agreement approved by the City Council, who shall have the responsibilities provided for herein.

“Administrative Expenses” mean the administrative, organization, maintenance and operation costs associated with, or incident to, the administration, organization, maintenance and operation of the PID, including, but not limited to, the costs of: (i) creating and organizing the PID, including conducting hearings, preparing notices and petitions, and all costs incident thereto, including engineering fees, legal fees and consultant fees, (ii) the annual administrative, organization, maintenance, and operation costs and expenses associated with, or incident and allocable to, the administration, organization, and operation of the PID, (iii) computing, levying, billing and collecting Assessments or the Annual Installments thereof, (iv) maintaining the record of installments of the Assessments and the system of registration and transfer of the Bonds, (v) paying and redeeming the Bonds, (vi) investing or depositing of monies, (vii) complying with the PID Act and codes with respect to the Bonds, (viii) the Trustee fees and expenses relating to the Bonds, including reasonable fees, (ix) legal counsel, engineers, accountants, financial advisors, investment bankers or other consultants and advisors, and (x) administering the construction of the Authorized Improvements. Administrative Expenses do not include payment of the actual principal of,

redemption premium, if any, and interest on the Bonds. Administrative Expenses collected and not expended for actual Administrative Expenses shall be carried forward and applied to reduce Administrative Expenses in subsequent years to avoid the over-collection of amounts to pay Administrative Expenses.

“Annual Installment” means, with respect to each Parcel, each annual payment of: (i) the Assessments including interest, as shown on the Assessment Rolls attached hereto as Appendix D and Appendix E, as applicable, or in an Annual Service Plan Update, and calculated as provided in Section VI of this Service and Assessment Plan, (ii) the Prepayment and Delinquency Reserve described in Section IV of this Service and Assessment Plan, and (iii) the Administrative Expenses.

“Annual Service Plan Update” has the meaning set forth in the second paragraph of Section IV of this Service and Assessment Plan.

“Assessed Property” means the property that benefits from the Authorized Improvements to be provided by the PID on which Assessments have been imposed as shown in each Assessment Roll, as each Assessment Roll is updated each year by the Annual Service Plan Update. Assessed Property includes Parcels within the PID other than Non-Benefited Property.

“Assessment” means an assessment levied against a Parcel imposed pursuant to an Assessment Ordinance and the provisions herein, as shown on any Assessment Roll, subject to reallocation upon the subdivision of such Parcel or reduction according to the provisions herein and the PID Act. An Assessment for a Parcel consists of the Annual Installments to be collected in all years and includes the Assessments including those collected to pay Administrative Expenses and interest on all Assessments.

“Assessment Ordinance” means an Assessment Ordinance adopted by the City Council approving the Service and Assessment Plan (including amendments or supplements to the Service and Assessment Plan) and levying the Assessments.

“Assessment Revenues” mean the revenues actually received by or on behalf of the City from the collection of Assessments.

“Assessment Roll” means, as applicable, the Phases #2 – 3 Major Improvement Assessment Roll, the Phase #1 Assessment Roll, an Assessment Roll for Phases #2 - 3 of development or any other Assessment Roll in an amendment or supplement to this Service and Assessment Plan or in an Annual Service Plan Update.

“Authorized Improvements” mean those public improvements described in Appendix B of this Service and Assessment Plan and Section 372.003 of the PID Act, constructed and installed in accordance with this Service and Assessment Plan, and any future updates and/or amendments.

“Authorized Improvement Costs” mean the actual or budgeted costs, as applicable, of all or any portion of the Authorized Improvements, as shown in Appendix B.

“Bonds” mean any bonds issued by the City in one or more series and secured in whole or in part by the Assessment Revenues.

“Certification for Payment” means the certificate to be provided by the Developer, or his

designee, to substantiate the Actual Cost of one or more Authorized Improvements. “

“**City**” means the City of Celina, Texas.

“**City Council**” means the duly elected governing body of the City.

“**Delinquent Collection Costs**” mean interest, penalties and expenses incurred or imposed with respect to any delinquent installment of an Assessment in accordance with the PID Act and the costs related to pursuing collection of a delinquent Assessment and foreclosing the lien against the Assessed Property, including attorney’s fees.

“**Developer**” means CADG Celina 156, LLC, a Texas limited liability company.

“**Future Phases**” means Phases that are fully developed after Phase #1, as such areas are generally depicted in Appendix A. The Future Phases are subject to adjustment and are shown for example only.

“**Homeowner Association**” means a homeowner’s association or property owners’ association established for the benefit of property owners within the boundaries of the PID.

“**Homeowner Association Property**” means property within the boundaries of the PID that is owned by or irrevocably offered for dedication to, whether in fee simple or through an exclusive use easement, a homeowner’s association.

“**Lot**” means a tract of land described as a “lot” in a subdivision plat recorded in the official public records of Collin County, Texas.

“**Lot Type**” means a classification of final building lots with similar characteristics (e.g. commercial, light industrial, multifamily residential, single family residential, etc.), as determined by the Administrator and confirmed by the City Council. In the case of single family residential lots, the Lot Type shall be further defined by classifying the residential lots by the estimated final average home value for each lot as of the date of the recorded subdivision plat, considering factors such as density, lot size, proximity to amenities, view premiums, location, and any other factors that may impact the average home value on the lot, as determined by the Administrator and confirmed by the City Council.

“**Major Improvements**” or “**MI**” mean the Authorized Improvements which benefit all Assessed Property within the PID and are described in Section III.B.

“**Non-Benefited Property**” means Parcels that accrue no special benefit from the Authorized Improvements, including Homeowner Association Property, Public Property and easements that create an exclusive use for a public utility provider. Property identified as Non-Benefited Property at the time the Assessments (i) are imposed or (ii) are reallocated pursuant to a subdivision of a Parcel, is not assessed. Assessed Property converted to Non-Benefited Property, if the Assessments may not be reallocated pursuant to the provisions herein, remains subject to the Assessments and requires the Assessments to be prepaid as provided for in Section VI. E.

“**Parcel**” or “**Parcels**” means a parcel or parcels within the PID identified by either a tax map identification number assigned by the Collin Central Appraisal District for real property tax

purposes or by lot and block number in a final subdivision plat recorded in the real property records of Collin County.

“Phase” means one or more Parcels within the PID that will be developed in the same general time period. The Parcels within a Phase will be assessed in connection with the issuance of Phased PID Bonds for Authorized Improvements (or the portion thereof) designated in an update to this Service and Assessment Plan that specially benefit the Parcels within the Phase.

“Phase #1” means the initial Phase to be developed, identified as “Phase #1” and generally shown in Appendix A, as specifically depicted and described as the sum of all Parcels shown in Appendix E.

“Phase #1 Assessed Property” means all Parcels within Phase #1 other than Non-Benefited Property and shown in the Phase #1 Assessment Roll against which an Assessment relating to the Phase #1 Improvements is levied.

“Phases #1 Assessment Revenues” mean the actual revenues received by or on behalf of the City from the collection of Assessments levied against Phase #1 Assessed Property, or the Annual Installments thereof, for the Phase #1 Improvements.

“Phase #1 Assessment Roll” means the document included in this Service and Assessment Plan as Appendix E, as updated, modified or amended from time to time in accordance with the procedures set forth herein and in the PID Act, including updates prepared in connection with the issuance of Bonds or in connection with any Annual Service Plan Update.

“Phase #1 Bonds” mean those certain "City of Celina, Texas, Special Assessment Revenue Bonds, Series ____ (Chalk Hill Public Improvement District No. 2 Phase #1 Project)" that are secured primarily by Phase #1 Assessment Revenue.

“Phase #1 Improvements” mean (i) the pro rata portion of the Major Improvements allocable to Phase #1, and (ii) the Authorized Improvements which only benefit Phase #1 Assessed Property and are described in Section III.C.

“Phased PID Bonds” mean bonds issued to fund Authorized Improvements (or a portion thereof) in a Phase. In connection with the Phased PID Bonds, Assessments will be levied only on Parcels located within the Phase in question.

“Phases #2 - 3” mean the property within the PID excluding Phase #1 which is to be developed subsequent to Phase #1 and generally depicted in Appendix A of this Service and Assessment Plan or any Annual Service Plan Update.

“Phases #2 - 3 Assessed Property” means, for any year, all Parcels within the PID other than (a) Non-Benefited Property, and (b) Parcels within Phase #1.

“Phases #2 - 3 Major Improvements” mean (i) the pro rata portion of the Major Improvements allocable to Phases #2 - 3 and are described in Section III.

“Phases #2 - 3 Major Improvement Assessment Revenues” mean the revenues actually received by or on behalf of the City from the collection of Assessments levied against Phases #2 - 3 Assessed

Property, or the Annual Installments thereof, for the Major Improvements.

“Phases #2 - 3 Major Improvement Assessment Roll” means the document included in this Service and Assessment Plan as Appendix D, as updated, modified or amended from time to time in accordance with the procedures set forth herein and in the PID Act, including updates prepared in connection with the issuance of Bonds or in connection with any Annual Service Plan Update.

“Phases #2 – 3 Major Improvement Bonds” mean those certain "City of Celina, Texas, Special Assessment Revenue Bonds, Series ____ (Chalk Hill Public Improvement District No. 2 Phases #2 – 3 Major Improvement Project)" that are secured primarily by Phases #2 - 3 Major Improvement Assessment Revenues.

“PID” has the meaning set forth in Section I.A of this Service and Assessment Plan.

“PID Act” means Texas Local Government Code Chapter 372, Public Improvement District Assessment Act, Subchapter A, Public Improvement Districts, as amended.

“PD #43” means Planned Development District, #43 passed and approved by the City pursuant to Ordinance No 2010-26 dated as of April 12, 2010.

“Prepayment Costs” mean interest and expenses to the date of prepayment, plus any additional expenses related to the prepayment, reasonably expected to be incurred by or imposed upon the City as a result of any prepayment of an Assessment.

“Public Property” means property within the boundaries of the PID that is owned by or irrevocably offered for dedication to the federal government, the State of Texas, Collin County, the City, a school district or any other public agency, whether in fee simple or through an exclusive use easement.

“Service and Assessment Plan” means this Service and Assessment Plan prepared for the PID pursuant to the PID Act, as the same may be amended from time to time.

“TIRZ No. 10” means the Tax Increment Reinvestment Zone No. 10, City of Celina, Texas.

“TIRZ Credit” means, for each Parcel, the prorated amount of TIRZ Revenues calculated pursuant to Section VI of this Service and Assessment Plan.

“TIRZ Ordinance” means an ordinance adopted by the City Council authorizing the use of TIRZ Revenues for project costs under the Tax Increment Financing Act, Texas Tax Code, Chapter 311, as amended, relating to the Authorized Improvements as provided for in the Tax Increment Reinvestment Zone No. 10 Project Plan and Financing Plan (including amendments or supplements thereto).

“TIRZ Revenues” mean, for each year, the amounts paid by the City from the TIRZ No. 10 tax increment fund pursuant to the TIRZ Ordinance to reduce an Annual Installment, as calculated each year by the Administrator in collaboration with the City, in accordance with Section VI of this Service and Assessment Plan.

“Trust Indenture” means an indenture of trust, ordinance or similar document setting forth the

terms and other provisions relating to the Bonds, as modified, amended, and/or supplemented from time to time.

“Trustee” means the fiscal agent or trustee as specified in the Trust Indenture, including a substitute fiscal agent or trustee.

Section II PROPERTY INCLUDED IN THE PID

A. Property Included in the PID

The PID is presently located within the City and contains approximately 94.827 acres of land. A map of the property within the PID is shown on Appendix A to this Service and Assessment Plan.

At completion, the PID is expected to consist of approximately 440 single family residential units, landscaping, and infrastructure necessary to provide roadways, drainage, and utilities to the PID. The estimated number of lots (440) is based upon the proposed development plan.

B. Property Included in Phase #1 and Phases #2 - 3

Phase #1 consists of approximately 41 acres and is projected to consist of 157 single family residential units, to be developed as Phase #1, as further described in Section III. Phases # 2 - 3 consist of approximately 53 acres and are projected to consist of approximately 283 residential units. A map of the property within Phase #1 and Phases #2 – 3 and depicting the boundaries of each proposed Phase is shown in Appendix A.

C. Property Included in Future Phases

As Future Phases are developed, additional Bonds will be issued for each new phase. In connection with the issuance of each new Phased PID Bonds, this Service and Assessment Plan will be updated to add additional details of each new Phase(s) as shown for Phase #1 in Section II.B. A map of the projected property within each Future Phase is shown in Appendix A. The Future Phases are shown for illustrative purposes only and are subject to adjustment. The current Parcels in the PID are shown on the Assessment Rolls included as Appendix D and Appendix E.

The estimated number of units at the build-out of the PID is based on the land use approvals for the property, the anticipated subdivision of property in the PID, and the Developer's estimate of the highest and best use of the property within the PID.

Section III DESCRIPTION OF THE AUTHORIZED IMPROVEMENTS

A. Authorized Improvement Overview

Section 372.003 of the PID Act defines the improvements that may be undertaken by a municipality or county through the establishment of a public improvement district, as follows:

372.003. Authorized Improvements

- (a) If the governing body of a municipality or county finds that it promotes the interests of the municipality or county, the governing body may undertake an improvement project that confers a special benefit on a definable part of the municipality or county or the municipality's extraterritorial jurisdiction. A project may be undertaken in the municipality or county or the municipality's extraterritorial jurisdiction.
- (b) A public improvement may include:
 - (i) landscaping;
 - (ii) erection of fountains, distinctive lighting, and signs;
 - (iii) acquiring, constructing, improving, widening, narrowing, closing, or rerouting of sidewalks or of streets, any other roadways, or their rights-of way;
 - (iv) construction or improvement of pedestrian malls;
 - (v) acquisition and installation of pieces of art;
 - (vi) acquisition, construction, or improvement of libraries;
 - (vii) acquisition, construction, or improvement of off-street parking facilities;
 - (viii) acquisition, construction, improvement, or rerouting of mass transportation facilities;
 - (ix) acquisition, construction, or improvement of water, wastewater, or drainage facilities or improvements;
 - (x) the establishment or improvement of parks;
 - (xi) projects similar to those listed in Subdivisions (i)-(x);
 - (xii) acquisition, by purchase or otherwise, of real property in connection with an authorized improvement;
 - (xiii) special supplemental services for improvement and promotion of the district, including services relating to advertising, promotion, health and sanitation, water and wastewater, public safety, security, business recruitment, development, recreation, and cultural enhancement; and

- (xiv) payment of expenses incurred in the establishment, administration and operation of the district.

After analyzing the public improvement projects authorized by the PID Act, the City has determined that the Authorized Improvements as described in Appendix B and shown on the diagram included as Appendix C should be undertaken by the City for the benefit of the property within the PID.

B. Description of Estimated Costs of Major Improvements

The Major Improvements benefit the entire PID. The costs of the Major Improvements are allocated proportionally throughout the entire PID, excluding Non-Benefited Property, in a manner that anticipates planned development of the PID based on the anticipated number of lots.

The Major Improvements descriptions are presented below as provided by the project engineer. The costs of the Major Improvements are shown in Table III-A. The costs shown in Table III-A are estimates and may be revised in Annual Service Plan Updates, including such other improvements as deemed necessary to further improve the properties within the PID.

Road Improvements:

The major roadway improvements within the PID include construction of perimeter road and thoroughfare improvements, including related paving, drainage, curbs, gutters, sidewalks, retaining walls, signage, and traffic control devices. All roadway projects will be designed and constructed in accordance with City standards and specifications and will be owned and operated by the City.

Water Distribution System Improvements:

The major water distribution system improvements within the PID consist of construction and installation of water lines, mains, pipes, valves and appurtenances necessary for the water distribution system, as well as related testing, trench safety and erosion protection, necessary to service the Assessed Property. The water distribution system improvements will be designed and constructed in accordance with City standards and specifications and will be owned and operated by the City.

Sanitary Sewer Collection System Improvements:

The major sanitary sewer collection system improvements within consist of construction and installation of pipes, service lines, manholes, encasements and appurtenances necessary to provide sanitary sewer service to the Assessed Property. The sanitary sewer improvements will be designed and constructed in accordance with City standards and specifications and will be owned and operated by the City.

Storm Drainage Collection System Improvements

The major storm drainage collection system improvements consist of reinforced concrete pipes, reinforced concrete boxes, and multi-reinforced box culverts. The storm drainage collection system improvements will be designed and constructed in accordance with City standards and specifications and will be owned and operated by the City.

Table III-A
Estimated Major Improvement Costs

Authorized Improvements	Total Estimated Major Improvement Costs
Road improvements	\$2,700,879
Water distribution system improvements	\$471,557
Sanitary sewer collection system improvements	\$1,873,884
Storm drainage collection system improvements	\$1,119,874
Soft costs including PID creation, City, professional and miscellaneous soft costs	\$1,026,954
Total – Estimated Major Improvement Costs	\$7,193,148

The costs shown in Table III-A are current estimates and may be revised in Annual Service Plan Updates.

C. Description of Estimated Costs of Phase #1 Improvements

The Phase #1 Improvements descriptions are presented below as provided by the project engineer. The costs of the Phase #1 Improvements are shown in Table III-B. The costs shown in Table III-B are estimates and may be revised in Annual Service Plan Updates, including such other improvements as deemed necessary to further improve the properties within the PID.

Road Improvements:

The Phase #1 roadway improvements within the PID include construction of perimeter road and thoroughfare improvements, including related paving, drainage, curbs, gutters, sidewalks, retaining walls, signage, and traffic control devices. All roadway projects will be designed and constructed in accordance with City standards and specifications and will be owned and operated by the City.

Water Distribution System Improvements:

The Phase #1 water distribution system improvements within the PID consist of construction and installation of water lines, mains, pipes, valves and appurtenances necessary for the water distribution system, as well as related testing, trench safety and erosion protection, necessary to service the Assessed Property. The water distribution system improvements will be designed and constructed in accordance with City standards and specifications and will be owned and operated by the City.

Sanitary Sewer Collection System Improvements:

The Phase #1 sanitary sewer collection system improvements within consist of construction and installation of pipes, service lines, manholes, encasements and appurtenances necessary to provide sanitary sewer service to the Assessed Property. The sanitary sewer improvements will be designed and constructed in accordance with City standards and specifications and will be owned and operated by the City.

Storm Drainage Collection System Improvements

The Phase #1 storm drainage collection system improvements consist of reinforced concrete pipes, reinforced concrete boxes, and multi-reinforced box culverts. The storm drainage collection system improvements will be designed and constructed in accordance with City standards and specifications and will be owned and operated by the City.

Table III-B
Estimated Phase #1 Improvement Costs

Authorized Improvements	Total Estimated Phase #1 Improvement Costs
Road improvements	\$1,129,129
Water distribution system improvements	\$450,627
Sanitary sewer collection system improvements	\$545,213
Storm drainage collection system improvements	\$536,513
Soft costs including City, professional and miscellaneous soft costs	\$193,558
Subtotal – Estimated Phase #1 Improvement Costs	\$2,855,040
Add: Proportional share of estimated Major Improvement Costs ¹	\$2,566,646
Total Estimated Phase #1 Improvement Costs	\$5,421,686

¹ See Section V(C) for allocation of Major Improvement costs to Phase #1.

Additional details of the Phase #1 Improvements are shown in Appendix B attached to this Service and Assessment Plan. The method of cost allocation is explained in Section V (C).

The costs shown in Tables III-A and III-B are estimates and may be revised in Annual Service Plan Updates. The detailed costs of the Authorized Improvements are shown in Appendix B to this Service and Assessment Plan. Savings from one line item may be applied to a cost increase in another line item. These savings may be applied only to increases in costs of the Authorized Improvements (i.e., the improvements for the benefit of property within the PID).

D. Future Phase Authorized Improvements

As Phases are developed, additional Bonds for Future Phases will be issued to finance Authorized Improvements for each Future Phase. As Phased PID Bonds are issued for each Future Phase, this Service and Assessment Plan will be updated to identify the specific Authorized Improvements financed by such Phased PID Bonds that benefit each Phase (e.g., a Table III-C will be added to show the estimated costs for Phase #2 Authorized Improvements, etc.).

Section IV SERVICE PLAN

A. Sources and Uses of Funds

The PID Act requires the service plan to cover a period of at least five years. The service plan is required to define the annual projected costs and indebtedness for the Authorized Improvements undertaken within the PID during the five year period. It is anticipated that it will take approximately __ months to construct the Major Improvements and approximately __ months for the Phase #1 Improvements to be constructed. At some point after all or a portion of the Major Improvements and Phase #1 Improvements are constructed, Phase #2 will begin development. After Phase #2 is developed, it is anticipated that Phase #3 will begin development, with each Future Phase to be subsequently developed corresponding to the Service and Assessment Plan to be updated with that development.

The estimated Actual Costs for Major Improvements and Phase #1 Improvements plus costs related to the issuance of the Bonds, in one or more series, for the Major Improvements and Phase #1 Improvements and payment of expenses incurred in the establishment, administration and operation of the PID is \$12,252,938 as shown in Table IV-A. The service plan shall be reviewed and updated at least annually for the purpose of determining the annual budget for Administrative Expenses, updating the estimated Authorized Improvement costs, and updating the Assessment Roll(s). Any update to this Service and Assessment Plan is herein referred to as an “Annual Service Plan Update.”

Table IV-A summarizes the sources and uses of funds required to construct the Major Improvements and Phase #1 Improvements, establish the PID, and issue the Phase #1 Bonds and Phases #2 – 3 Major Improvement Bonds. The sources and uses of funds shown in Table IV-A shall be updated each year in the Annual Service Plan Update to reflect any budget revisions and Actual Costs.

As Future Phases are developed in connection with the issuance of Phased PID Bonds, this Service and Assessment Plan will be amended (e.g. Table IV-A will be amended to add Phase #2, etc.).

Bonds to finance the Major Improvements and Phase #1 Improvements are expected to be issued starting in 2018. Table IV-A shows the sources and uses of the Bonds.

Table IV-A
Estimated Sources and Uses

Sources of Funds	Phases #2-3 Major Improvement Bonds		Phase #1 Bonds	Total
Par amount	\$2,275,000	\$4,325,000		\$6,600,000
Other funding sources	\$3,127,252	\$2,525,686		\$5,652,938
Total Sources	\$5,402,252	\$6,850,686		\$12,252,938
Uses of Funds				
<u>Major Improvements</u>				
Road improvements	\$1,737,156	\$963,723		\$2,700,879
Water distribution system improvements	\$303,297	\$168,260		\$471,557
Sanitary sewer improvements	\$1,205,248	\$668,636		\$1,873,884
Storm drainage improvements	\$720,283	\$399,591		\$1,119,874
Other soft and miscellaneous costs	\$660,518	\$366,436		\$1,026,954
Subtotal	\$4,626,502	\$2,566,646		\$7,193,148
<u>Phase #1 Improvements</u>				
Road improvements	\$0	\$1,129,129		\$1,129,129
Water distribution system improvements	\$0	\$450,627		\$450,627
Sanitary sewer improvements	\$0	\$545,213		\$545,213
Storm drainage improvements	\$0	\$536,513		\$536,513
Other soft and miscellaneous costs	\$0	\$193,558		\$193,558
Subtotal	\$0	\$2,855,040		\$2,855,040
Estimated Bond issue costs	\$775,750	\$1,429,000		\$2,204,750
Total Uses	\$5,402,252	\$6,850,686		\$12,252,938

Notes: Phase #1 Improvements include the Authorized Improvements listed under this heading plus the estimated \$2,566,646 mil pro rata share of the Major Improvements allocated to Phase #1.

The Phases #2 - 3 Major Improvement Bonds shown in Table IV-A are anticipated to be issued in 2018. The Phases #2 - 3 Major Improvement Bonds to be issued in 2018 will be used to pay and/or reimburse the Developer for a portion of the costs of Phases #2 - 3 Major Improvements. The remaining costs of Phases #2 - 3 Major Improvements will be financed through future Bonds, which may be issued separately or combined with improvement costs for Future Phases.

The Phase #1 Improvement Bonds shown in Table IV-A are anticipated to be issued in 2018. The Phase #1 Improvement Bonds to be issued in 2018 will be used to pay and/or reimburse the Developer for a portion of the costs of the Phase #1 Improvements and the prorate share of the Phases #2 - 3 Major Improvements.

As Future Phases are developed, additional Bonds will be issued for each new future phase improvements. Phase #2 Bonds will be issued to finance the Authorized Improvements required for Phase #2 and Phase #3 Bonds will be issued to finance the Authorized Improvements required for Phase #3 as each future phase is developed. Each Future Phase Bond may also be issued in one or more series of Bonds.

The annual projected costs and annual projected indebtedness is shown by Table IV-C. The annual projected costs and indebtedness is subject to revision and each shall be updated in the Annual Service Plan Update to reflect any changes in the costs or indebtedness expected for each year.

Table IV-C
Annual Projected Costs and Annual Projected Indebtedness

Year	Annual Projected Cost	Annual Projected Indebtedness	Sources other than PID Bonds
2018	\$12,252,938	\$6,600,000	\$5,652,938
2019	\$0	\$0	\$0
2020	\$0	\$0	\$0
2021	\$0	\$0	\$0
2022	\$0	\$0	\$0
Total	\$12,252,938	\$6,600,000	\$5,562,938

The annual projected costs shown in Table IV-C are the annual expenditures relating to the Major Improvements shown in Table III-A, the Phase #1 Improvements shown in Table III-B, and the costs associated with setting up the PID and costs of issuance including reserves shown in Table IV-A. The difference between the total projected cost and the total projected indebtedness, if any, is the amount contributed by the Developer. As Future Phases are developed, in association with issuing Bonds for each Future Phase, this Table IV-C will be updated to identify the Authorized Improvements to be financed by each new series of the Bonds and the projected indebtedness resulting from each additional series of the Bonds.

Section V ASSESSMENT PLAN

A. Introduction

The PID Act requires the City Council to apportion the costs of the Authorized Improvements on the basis of special benefits conferred upon the property because of the Authorized Improvements. The PID Act provides that the costs of the Authorized Improvements may be assessed: (i) equally per front foot or square foot; (ii) according to the value of the property as determined by the governing body, with or without regard to improvements on the property; or (iii) in any other manner that results in imposing equal shares of the cost on property similarly benefited. The PID Act further provides that the governing body may establish by ordinance or order reasonable classifications and formulas for the apportionment of the cost between the municipality and the area to be assessed and the methods of assessing the special benefits for various classes of improvements.

The proposed bond issuance program entails a series of bond financings that are intended to finance the public infrastructure required for the development. This financing will necessarily be undertaken in phases to coincide with the private investment and development of the Authorized Improvements. Following the initial Phase #1 Bonds and the Phases #2 – 3 Major Improvement Bonds to be issued in _____, subsequent financings are to be issued over the upcoming decade as the subsequent phases (Phases #2 and #3) of the development are gradually constructed.

The purpose of this gradual issuance of bonds in phases is to mirror the actual private development of the Authorized Improvements. The Bonds to be issued are most prudently and efficiently utilized when directly coinciding with construction of public infrastructure needed for private development that is to occur once the infrastructure is completed; it is most effective to issue the Bonds when the infrastructure is needed, not before. Furthermore, there is no economic advantage, and several disadvantages, to issuing debt and encumbering property within the PID prior to the need for the Authorized Improvements.

Additionally, phased issuance of debt will maintain a prudent value to lien ("VtL") within the financing program. In order to maintain a prudent VtL, the initial issuance of bonds for a specific set of Authorized Improvements may not fund the entire desired level of public infrastructure because the property value is not high enough to support the entire debt load at the VtL chosen for the development. In that case, the Developer will need to fund the additional infrastructure costs with cash at closing. This cash investment by the Developer for certain Authorized Improvements can be reimbursed by a subsequent parity lien bond financing, secured by the same special assessments, once the assessed property is partially or fully developed and the value has increased sufficiently to permit the issuance of the additional bonds in a prudent fashion. For example, the Phase #1 Bonds to be issued to finance a portion of the Phase #1 Improvements, including the pro-rata costs of the Major Improvements allocable to Phase #1 Assessed Property, followed by a second parity lien issuance of bonds (the Phase #1B Bonds) demonstrates this analysis.

For purposes of this Service and Assessment Plan, the City Council has determined that the costs of the Major Improvements and Phase #1 Improvements shall be allocated as described below:

1. The Major Improvement and Phase #1 Improvement costs shall be allocated on the basis of the relative value of Parcels once such property is developed, and that such method of allocation will result in the imposition of equal shares of the costs of the Authorized Improvements to Parcels similarly benefited.

2. The Major Improvement costs are proportionally allocated to the Phases #2 – 3 Assessed Property and the Phase #1 Assessed Property based on the ratio of total estimated number of units for the Phases #2 - 3 Assessed Property and the Phase #1 Assessed Property.
6. The Phases #2 - 3 Assessed Property's proportional share of the costs for the Major Improvements is allocated to each Parcel within the Phases #2 – 3 Assessed Property based on the total estimated number of units for each Parcel.
7. The Phase #1 Improvement costs (including Phase #1 Assessed Property's proportional share of the costs of the Major Improvements) are allocated to each Parcel within the Phase #1 Assessed Property based on the total estimated number of units for each Parcel.

Table V-A provides the estimated allocation of costs of the Authorized Improvements constituting Major Improvements and Phase #1 Improvements.

At this time it is impossible to determine with absolute certainty the amount of special benefit each Parcel within Future Phases will receive from internal subdivision Authorized Improvements that will benefit each individual phase and that are to be financed with Phased PID Bonds. Therefore, will only be assessed for the special benefits conferred upon the Parcel at this time Parcels because of the Major Improvements and Phase #1 Improvements.

In connection with the issuance of Phased PID Bonds and/or execution of related reimbursement agreements, this Service and Assessment Plan will be updated to reflect the special benefit each Parcel of Assessed Property within a Future Phase receives from the specific Authorized Improvements funded with those Phased PID Bonds issued with respect to that Future Phase. Prior to assessing Parcels located within Future Phases in connection with issuance of Phased PID Bonds, each owner of the Parcels to be assessed must acknowledge that the Authorized Improvements to be financed confer a special benefit on their Parcel and must consent to the imposition of the Assessments to pay for the Actual Costs of such Authorized Improvements.

This section of this Service and Assessment Plan currently (i) describes the special benefit received by each Parcel within the PID as a result of the Major Improvements and Phase #1 Improvements, (ii) provides the basis and justification for the determination that this special benefit exceeds the amount of the Assessments to be levied on the Phase #1 Assessed Property and Phases #2 – 3 Assessed Property for such improvements, and (iii) establishes the methodologies by which the City Council allocates and reallocates the special benefit of the Major Improvements and Phase #1 Improvements to Parcels in a manner that results in equal shares of the Actual Costs of such improvements being apportioned to Parcels similarly benefited. The determination by the City Council of the assessment methodologies set forth below is the result of the discretionary exercise by the City Council of its legislative authority and governmental powers and is conclusive and binding on the Developer and all future owners and developers of the Assessed Property.

As Future Phases are developed, in connection with the issuance of Phased PID Bonds this Service and Assessment Plan will be updated based on the City's determination of the assessment methodology for each Future Phase.

B. Special Benefit

Assessed Property must receive a direct and special benefit from the Authorized Improvements, and this benefit must be equal to or greater than the amount of the Assessments. The Authorized Improvements are provided specifically for the benefit of the Assessed Property. The Authorized Improvements (more particularly described in line-item format in Appendix B to this Service and Assessment Plan) and the costs of issuance and payment of costs incurred in the establishment of

the PID shown in Table IV-A are authorized by the PID Act. These improvements are provided specifically for the benefit of the Assessed Property.

Each owner of the Assessed Property has acknowledged that the Authorized Improvements confer a special benefit on the Assessed Property and has consented to the imposition of the Assessments to pay for the Actual Costs associated therewith. Each of the owners is acting in its interest in consenting to this apportionment and levying of the Assessments because the special benefit conferred upon the Assessed Property by the Authorized Improvements exceeds the amount of the Assessments.

The Authorized Improvements provide a special benefit to the Assessed Property as a result of the close proximity of these improvements to the Assessed Property and the specific purpose of these improvements of providing infrastructure for the Assessed Property. In other words, the Assessed Property could not be used in the manner proposed without the construction of the Authorized Improvements. The Authorized Improvements are being provided specifically to meet the needs of the Assessed Property as required for the proposed use of the property.

The Assessments are being levied to provide the Authorized Improvements that are required for the highest and best use of the Assessed Property (i.e., the use of the property that is most valuable, including any costs associated with that use). Highest and best use can be defined as “the reasonably probable and legal use of property, which is physically possible, appropriately supported, financially feasible, and that results in the highest value.” (*Dictionary of Real Estate Appraisal, Third Edition.*) The Authorized Improvements are expected to be required for the proposed use of the Assessed Property to be physically possible, appropriately supported, financially feasible, and maximally productive.

The Developer has evaluated the potential use of the property and has determined that the highest and best use of the property is the use intended and the legal use for the property as described in Section II of this Service and Assessment Plan. The use of the Assessed Property as described herein will require the construction of the Authorized Improvements.

The special assessments will repay financing that is on advantageous terms, as the Bonds issued to finance the Authorized Improvements will pay interest that is exempt from federal income tax. As a result, all other terms being equal (e.g., maturity, fixed vs. variable rate, credit quality), the tax-exempt bonds will have a lower interest rate than debt that is not tax-exempt. The Bonds also have a longer term than other available financings and may either be repaid or assumed by a buyer at the buyer’s option. As a result of these advantageous terms, the financing provided by the PID is the most beneficial means of financing the Authorized Improvements.

Each owner of the Assessed Property will ratify, confirm, accept, agree to and approve; (i) the determinations and finding by the City Council as to the special benefits described in this Service and Assessment Plan and the Assessment Ordinance; (ii) the Service and Assessment Plan and the Assessment Ordinance, and (iii) the levying of Assessments on the Assessed Property. Use of the Assessed Property as described in this Service and Assessment Plan and as authorized by the PID Act requires that Authorized Improvements be acquired, constructed, installed, and/or improved. Funding the Actual Costs of the Authorized Improvements through the PID has been determined by the City Council to be the most beneficial means of doing so. As a result, the Assessments result in a special benefit to the Assessed Property, and this special benefit exceeds the amount of the Assessment. This conclusion is based on and supported by the evidence, information, and testimony provided to the City Council.

In summary, the Assessments result in a special benefit to the Assessed Property for the following reasons:

1. The Authorized Improvements are being provided specifically for the use of the Assessed Property, are necessary for the proposed best use of the property and provide a special benefit to the Assessed Property as a result;
2. The Developer has consented to the imposition of the Assessments for the purpose of providing the Authorized Improvements and the Developer is acting in its interest by consenting to this imposition;
3. The Authorized Improvements are required for the highest and best use of the property;
4. The highest and best use of the Assessed Property is the use of the Assessed Property that is most valuable (including any costs associated with the use of the Assessed Property);
5. Financing of the costs of the Authorized Improvement through the PID is determined to be the most beneficial means of providing for the Authorized Improvements; and,
6. As a result, the special benefits to the Assessed Property from the Authorized Improvements will be equal to or greater than the Assessments.

C. Allocation of Costs to Assessed Property

The Major Improvements will provide a special benefit to all property in the PID. Accordingly, the estimated Major Improvement costs must be allocated throughout all Assessed Property in the District. Table V-A summarizes the allocation of estimated costs for each Major Improvement. The costs shown in Table V-A are estimates and may be revised in Annual Service Plan Updates, but the related Assessment may not be increased.

Phase #1 is projected to contain 157 residential units. Phases #2 – 3 are projected to contain 283 residential units, resulting in a total projected number of units in the PID of 440. As a result, 35.68 percent of the estimated costs of Major Improvements (i.e. $157 \div 440 = 35.68\%$) are allocated to the Phase #1 Assessed Property and 64.32 percent of the estimated costs Major Improvements (i.e., $283 \div 440 = 64.32\%$) are allocated to the Phases #2 - 3 Assessed Property. The Phases #2 – 3 Major Improvement Bonds will fund the proportionate share of the estimated costs of the Major Improvement allocated to Phases #2 – 3; and, Phase #1 Bonds will fund Phase #1's proportionate share of the estimated costs of the Major Improvements.

Table V-A
Allocation of Major Improvement Costs

Major Improvement Estimated Costs	
Authorized Improvement	Estimated Costs
Road Improvements	\$2,700,879
Water Improvements	\$471,557
Sanitary Sewer Improvements	\$1,873,884
Storm Drainage Improvements	\$1,119,874
Other soft and miscellaneous costs	\$1,026,954
Total Major Improvements	\$7,193,148
Phase #1	
Projected total number of units	157
% of total units	35.68%
Proportionate Share of Costs	\$2,566,646
Phases #2 - 3	
Projected total number of units	283
% of total units	64.32%
Proportionate Share of Costs	\$4,626,502

D. Assessment Methodology

The Actual Costs may be assessed by the City Council against the Assessed Property so long as the special benefit conferred upon the Assessed Property by the Authorized Improvements equals or exceeds the Assessments. The Actual Costs may be assessed using any methodology that results in the imposition of equal shares of the Actual Costs on Assessed Property similarly benefited.

1. Assessment Methodology for the Major Improvements for Phases #2 - 3

For purpose of this Service and Assessment Plan, the City Council determined that the portion of Actual Costs of the Major Improvement costs to be allocated to Phases #2 - 3 shall be allocated to the Phases #2 - 3 Assessed Property by spreading the entire Assessment across the Parcels based on the estimated number of units anticipated to be developed on each Parcel.

Upon subsequent divisions of any Parcel, the Assessment applicable to it will then be apportioned pro rata based on the estimated number of units of each newly created Parcel. For residential Lots, when final residential building sites are platted, Assessments will be apportioned proportionately among each Parcel based on the ratio of the estimated number of units at the time residential Lots are platted to the total estimated number of all Lots in the platted Parcel, as determined by the Administrator and confirmed by the City Council.

The Assessment and Annual Installments for each Parcel or Lot located within Phases #2 - 3 is shown on the Phases #2 – 3 Major Improvement Assessment Roll, attached as Appendix D, and no

Assessment shall be changed except as authorized by this Service and Assessment Plan or the PID Act.

2. *Assessment Methodology for Phase #1*

For purpose of this Service and Assessment Plan, the City Council has determined that the Actual Costs of the Phase #1 Improvements, including the portion of the Major Improvements to be financed with the Phase #1 Bonds, shall be allocated to the Phase #1 Assessed Property by spreading the entire Assessment across the Parcels based on the estimated number of units anticipated to be developed on each Parcel within Phase #1.

Based on the estimates of the costs of the Phase #1 Improvements, as set forth in Table III-B, the City Council has determined that the benefit to Phase #1 property of the Phase #1 Improvements is at least equal to the Assessments levied on the Phase #1 property.

Upon subsequent divisions of any Parcel, the Assessment applicable to it will then be apportioned pro rata based on the estimated number of units of each newly created Parcel. For residential Lots, when final residential building sites are platted, Assessments will be apportioned proportionately among each Parcel based on the ratio of the estimated number of units at the time residential Lots are platted to the total estimated number of all Lots in the platted Parcel, as determined by the Administrator and confirmed by the City Council.

The Assessment and Annual Installments for each Parcel or Lot located within Phase #1 is shown on the Phase #1 Assessment Roll, attached as Appendix E, and no Assessment shall be changed except as authorized by this Service and Assessment Plan or the PID Act.

3. *Assessment Methodology for Future Phases*

When any given Future Phase is developed, and Phased PID Bonds for that Future Phase are to be issued, this Service and Assessment Plan will be amended to determine the assessment methodology that results in the imposition of equal shares of the Actual Costs on Assessed Property similarly benefited within that Phase.

E. Assessments

The Assessments for the Phase #1 Bonds and the Phases #2 – 3 Major Improvement Bonds will be levied on each Parcel according to the Phases #2 – 3 Major Improvement Assessment Roll and the Phase #1 Assessment Roll, attached hereto as Appendix D and Appendix E, respectively. The Annual Installments for the Phases #2 – 3 Major Improvement Bonds and the Phase #1 Bonds will be collected at the time and in the amounts shown on the Phases #2 – 3 Major Improvement Assessment Roll and the Phase #1 Assessment Roll, respectively, subject to any revisions made during an Annual Service Plan Update.

F. Administrative Expenses

The cost of administering the PID and collecting the Annual Installments shall be paid for on a pro rata basis by each Parcel based on the amount of Assessment levied against the Parcel. The Administrative Expenses shall be collected as part of and in the same manner as Annual Installments in the amounts shown on each Assessment Roll, which may be revised based on actual costs incurred in Annual Service Plan Updates.

G. Prepayment and Delinquency Reserve

Pursuant to the PID Act, the interest rate for Assessments may exceed the actual interest rate per annum paid on the related Bonds by no more than one half of one percent (0.50%) (the “Additional Interest”). The interest rate used to determine the Assessments is one half of one percent (0.50%) per annum higher than the actual rate paid on the Bonds, with the 0.5% Additional Interest component of the Annual Installments allocated to fund a reserve to be used for paying prepayment and delinquency related costs (the “Prepayment and Delinquency Reserve”). The Prepayment and Delinquency Reserve shall be funded until it reaches 5.50% of the outstanding Bonds as stipulated in the Bond documents. Once the Prepayment and Delinquency Reserve is funded in full, the City may allocate the Additional Interest component of the Annual Installments to pay for Administrative Expenses, improvement costs, any other use that benefits the Assessed Property or redeem Bonds and reduce the Assessments, as determined by the City Council.

H. TIRZ Credit

Pursuant to the TIRZ Ordinance, the City has agreed to use TIRZ Revenues generated from each Parcel to offset a portion of such Parcel’s Assessments (the “TIRZ Annual Credit Amount”). The Annual Installment for each Parcel shall be calculated by taking into consideration any TIRZ Annual Credit Amount applicable to the Parcel then on deposit in the TIRZ No. 10 tax increment fund. The TIRZ Annual Credit Amount applicable to each Parcel shall be calculated as described under Section VI of this Service and Assessment Plan.

Section VI TERMS OF THE ASSESSMENTS

A. Amount of Assessments and Annual Installments for Parcels Located within Phases #2 - 3

The Assessment and Annual Installments for each Assessed Property located within Phases #2 - 3 are shown on the Phases #2 – 3 Major Improvement Assessment Roll, attached as Appendix D, and no Assessment shall be changed except as authorized by this Service and Assessment Plan and the PID Act.

The Phases #2 - 3 Annual Installments shall be collected in an amount sufficient to pay (i) principal and interest on the Phases #2 – 3 Major Improvement Bonds, (ii) to fund the Prepayment and Delinquency reserve described in Section V, and (iii) to pay Administrative Expenses related to the PID. The Annual Installment for each Parcel shall be calculated by taking into consideration any available capitalized interest and TIRZ Annual Credit Amount applicable to the Parcel. The TIRZ Annual Credit Amount shall be calculated separately for each Parcel and such TIRZ Annual Credit Amount shall be applied on a Parcel-by-Parcel basis. As described in Section V.H., the TIRZ Revenues attributable to each Parcel of Assessed Property collected in any given year shall be used to calculate each Parcel's TIRZ Annual Credit Amount for such Parcel in the following year (i.e., TIRZ Revenues collected in 2018 shall be used to calculate the TIRZ Annual Credit Amount applicable to Annual Installments to be collected in 2019). TIRZ Annual Credit Amounts shall be calculated for those Parcels that are subject to Assessments in the PID. The number of units to be used for the calculation of the TIRZ Annual Credit Amount, if applicable, shall be determined by the Administrator based on the information available to the Administrator at the time of such calculations.

B. Amount of Assessments and Annual Installments for Parcels Located Within Phase #1

The Assessment and Annual Installments for each Assessed Property located within Phase #1 is shown on the Phase #1 Assessment Roll, attached as Appendix E, and no Assessment shall be changed except as authorized by this Service and Assessment Plan and the PID Act.

The Phase #1 Annual Installments shall be collected in an amount sufficient to pay (i) principal and interest on the Phase #1 Bonds, (ii) to fund the Prepayment and Delinquency reserve described in Section V, and (iii) to pay Administrative Expenses related to the PID. The Annual Installment for each Parcel shall be calculated by taking into consideration any available capitalized interest and TIRZ Annual Credit Amount applicable to the Parcel. The TIRZ Annual Credit Amount shall be calculated separately for each Parcel and such TIRZ Annual Credit Amount shall be applied on a Parcel-by-Parcel basis. As described in Section V.H., the TIRZ Revenues attributable to each Parcel of Assessed Property collected in any given year shall be used to calculate each Parcel's TIRZ Annual Credit Amount for such Parcel in the following year (i.e., TIRZ Revenues collected in 2018 shall be used to calculate the TIRZ Annual Credit Amount applicable to Annual Installments to be collected in 2019). TIRZ Annual Credit Amounts shall be calculated for those Parcels that are subject to Assessments in the PID. The number of units to be used for the calculation of the TIRZ Annual Credit Amount, if applicable, shall be determined by the Administrator based on the information available to the Administrator at the time of such calculations.

C. Amount of Assessments and Annual Installments for Parcels Located Within Future Phases

As Future Phases are developed, this Service and Assessment Plan will be amended to determine the Assessment and Annual Installments for each Assessed Property located within Future Phases (e.g., an Appendix will be added as the Assessment Roll for Phase #2, etc.). The Assessments shall not exceed the benefit received by the Assessed Property.

D. Reallocation of Assessments

1. Subdivision

Upon the subdivision of any Parcel, the Assessment for the Parcel prior to the subdivision shall be reallocated among the new subdivided Parcels according to the following formula:

$$A = B \times (C \div D)$$

Where the terms have the following meanings:

- A = the Assessment for each new subdivided Parcel
- B = the Assessment for the Parcel prior to subdivision
- C = the estimated number of units to be built on each new subdivided Parcel
- D = the sum of the estimated number of units to be built on all of the new subdivided Parcels

The calculation of the estimated number of units to be built on a Parcel shall be performed by the Administrator and confirmed by the City Council based on the information available regarding the use of the Parcel. The estimate as confirmed shall be conclusive. The number of units to be built on a Parcel may be estimated by net land area and reasonable density ratios.

The sum of the Assessments for all newly subdivided Parcels shall equal the Assessment for the Parcel prior to subdivision. The calculation shall be made separately for each newly subdivided Parcel. The reallocation of an Assessment for a Parcel that is a homestead under Texas law may not exceed the Assessment prior to the reallocation and to the extent the reallocation would exceed such amount, it shall be prepaid by such amount by the party requesting the subdivision of the Parcels. Any reallocation pursuant to this section shall be reflected in an Annual Service Plan Update approved by the City Council.

2. Consolidation

Upon the consolidation of two or more Parcels, the Assessment for the consolidated Parcel shall be the sum of the Assessments for the Parcels prior to consolidation. The reallocation of an Assessment for a Parcel that is a homestead under Texas law may not exceed the Assessment prior to the reallocation and to the extent the reallocation would exceed such amount, it shall be prepaid by such amount by the party requesting the consolidation of the Parcels. Any reallocation pursuant to this section shall be reflected in an Annual Service Plan Update approved by the City Council.

E. Mandatory Prepayment of Assessments

1. If a Parcel subject to Assessments is transferred to a party that is exempt from the payment of the Assessment under applicable law, or if an owner causes a Parcel subject to Assessments to become Non-Benefited Property, the owner of such Parcel shall pay to the City the full amount of the principal portion of the Assessment on such Parcel, plus all Prepayment Costs, prior to any such transfer or act.
2. The payments required above shall be treated the same as any Assessment that is due and owing under the PID Act, the Assessment Ordinance, and this Service and Assessment Plan, including the same lien priority, penalties, procedures, and foreclosure specified by the PID Act.

F. Reduction of Assessments

1. If after all Authorized Improvements to be funded with a series of Bonds have been completed and Actual Costs for such Authorized Improvements are less than the Actual Costs used to calculate the Assessments securing such series of Bonds, resulting in excess Bond proceeds being available to redeem Bonds of such series, then the Assessment securing such series of Bonds for each Parcel of Assessed Property shall be reduced by the City Council pro rata such that the sum of the resulting reduced Assessments for all Assessed Properties equals the actual reduced Actual Costs and such excess Bond proceeds shall applied to redeem Bonds of such series. The Assessments shall not be reduced to an amount less than the related outstanding series of Bonds. If all of the Authorized Improvements are not completed, the City may reduce the Assessments in another method if it determines such method would better reflect the benefit received by the Parcels from the Authorized Improvements completed.
2. If all the Authorized Improvements are not undertaken, resulting in excess Bond proceeds being available to redeem Bonds, then the Assessments and Annual Installments for each Parcel shall be appropriately reduced by the City Council to reflect only the amounts required to repay the Bonds, including interest on the Bonds and Collection Costs, and such excess Bond proceeds shall be applied to redeem Bonds. The City Council may reduce the Assessments and the Annual Installments for each Parcel (i) in an amount that represents the Authorized Improvements provided for each Parcel or (ii) by an equal percentage calculated based on number of units, if determined by the City Council to be the most fair and practical means of reducing the Assessments for each Parcel, such that the sum of the resulting reduced Assessments equals the amount required to repay the Bonds, including interest on the Bonds and Collection Costs. The Principal Portion of the Assessment for each Parcel shall be reduced pro rata to the reduction in the Assessments for each Parcel such that the sum of the resulting reduced Principal Portion of the Bonds is equal to the outstanding principal amount of the Bonds.

G. Payment of Assessments

1. Payment in Full

- (a) The Assessment for any Parcel may be paid in full at any time. Such payment shall include all Prepayment Costs. If prepayment in full will result in redemption of Bonds, the payment amount shall be reduced by the amount, if any, of interest through the date of redemption of Bonds and reserve funds applied to the redemption under the Trust Indenture, net of any other costs applicable to the redemption of Bonds.

(b) If an Annual Installment has been billed prior to payment in full of an Assessment, the Annual Installment shall be due and payable and shall be credited against the payment-in-full amount.

(c) Upon payment in full of the Assessment and all Prepayment Costs, the City shall deposit the payment in accordance with the Trust Indenture; whereupon, the Assessment shall be reduced to zero, and the owner's obligation to pay the Assessment and Annual Installments thereof shall automatically terminate.

(d) At the option of the owner, the Assessment on any Parcel plus Prepayment Costs may be paid in part in an amount sufficient to allow for a convenient redemption of Bonds as determined by the Administrator. Upon the payment of such amounts for a Parcel, the Assessment for the Parcel shall be reduced, the Assessment Roll shall be updated to reflect such partial payment, and the obligation to pay the Annual Installment for such Parcel shall be reduced to the extent the partial payment is made.

2. Payment in Annual Installments

The PID Act provides that an Assessment for a Parcel may be paid in full at any time. If not paid in full, the PID Act authorizes the Assessment to be paid in installments and additionally allows the City to collect interest, administrative expenses and other authorized charges in installments. An Assessment for a Parcel that is not paid in full will be collected in Annual Installments each year in the amounts shown on the Assessment Roll, as updated as provided for herein, which include interest, Administrative Expenses, and payments required for the Prepayment Reserve and Delinquency Reserve. Payment of the Annual Installments shall commence with tax bills mailed after the initial issuance of Bonds.

Each Assessment shall be paid with interest of no more than the lesser of (i) the actual interest rate paid on the Bonds and (ii) ___ percent per annum. The Phases #2 - 3 Assessment Roll sets forth for each year the Annual Installment for each Parcel based on an estimated Bond interest rate of 6.5% and additional interest at the rate of 0.5% for administrative expenses or the Prepayment and Delinquency Reserve. The Phase #1 Assessment Roll sets forth for each year the Annual Installment for each Parcel based on the estimated Bond interest rates of 6.0%, and additional interest at the rate of 0.5% for administrative expenses or Prepayment and Delinquency Reserve. Furthermore, the Annual Installments may not exceed the amounts shown on the Assessment Rolls. The Assessment Rolls, updated with the actual interest rates on the Bonds, are shown as Appendix D and Appendix E.

The Annual Installments shall be reduced to equal the actual costs of repaying the Bonds and actual Administrative Expenses (as provided for in the definition of such term), taking into consideration any other available funds for these costs, such as interest income on account balances.

The City reserves and shall have the right and option to refund the Bonds in accordance with Section 372.027 of the PID Act. In the event of such refunding, the Administrator shall recalculate the Annual Installments, and if necessary, may adjust, or decrease, the amount of the Annual Installments so that total Annual Installments of Assessments will be produced in annual amounts that are required to pay the refunding bonds when due and payable as required by and established in the ordinance and/or the indenture authorizing and securing the refunding bonds, and such refunding bonds shall constitute Bonds for purposes of this Service and Assessment Plan.

H. Collection of Annual Installments

No less frequently than annually, the Administrator shall prepare, and the City Council shall approve, an Annual Service Plan Update to allow for the billing and collection of Annual Installments. Each Annual Service Plan Update shall include an updated Assessment Roll and a calculation of the Annual Installment for each Parcel. Administrative Expenses shall be allocated among Parcels in proportion to the amount of the Annual Installments for the Parcels. Each Annual Installment shall be reduced by any credits applied under the applicable Trust Indenture, such as capitalized interest, interest earnings on any account balances, and any other funds available to the Trustee for such purpose, including any existing deposits for a prepayment reserve. Annual Installments shall be collected by the City in the same manner and at the same time as ad valorem taxes and shall be subject to the same penalties, procedures, and foreclosure sale in case of delinquencies as are provided for ad valorem taxes of the City. The City Council may provide for other means of collecting the Annual Installments to the extent permitted under the PID Act. The Assessments shall have lien priority as specified in the PID Act.

Any sale of property for nonpayment of the Annual Installments shall be subject to the lien established for the remaining unpaid Annual Installments against such property and such property may again be sold at a judicial foreclosure sale if the purchaser thereof fails to make timely payment of the non-delinquent Annual Installments against such property as they become due and payable.

Section VII THE ASSESSMENT ROLL

A. Major Improvement Area Assessment Roll

Each Parcel within Phases #2 - 3 has been evaluated by the City Council (based on the concept plan, developable area, proposed Homeowner Association Property and Public Property, the Major Improvements, best and highest use of land, and other development factors deemed relevant by the City Council) to determine the Assessed Property within each Parcel.

Phases #2 – 3 Assessed Property will be assessed for the special benefits conferred upon the property as a result of the Major Improvements. Table IV-A summarizes the \$5,402,252 in special benefit received by Phases #2 - 3 from a portion of the Major Improvements, the pro rata costs of the PID formation, and issuance costs for the proposed Phases #2 – 3 Major Improvement Bonds. The amount of Phases #2 – 3 Major Improvement Bonds is \$2,275,000, which is equal to the benefit received by Phases #2 – 3 Assessed Property, and as such the total Assessment for all Assessed Property within Phases #2 - 3 is \$2,275,000 plus annual Administrative Expenses. The Assessment for each Parcel of Assessed Property within the Phases #2 - 3 is calculated based on the allocation methodologies described in Section V.D of this Service and Assessment Plan. The Phases #2 – 3 Major Improvement Assessment Roll is attached hereto as Appendix D.

B. Phase #1 Assessment Roll

Phase #1 Assessed Property will be assessed for the special benefits conferred upon the property as a result of the Phase #1 Improvements that benefit Phase #1, which include a proportionate share of the Major Improvements allocable to Phase #1. Table IV-A summarizes the \$6,850,686 in special benefit received by Phase #1 Assessed Property from the Phase #1 Improvements that benefit Phase #1, including the proportionate share of the Major Improvements allocable to Phase #1, the pro rata costs of the PID formation, and Bond issuance costs. The amount of Phase #1 Bonds is \$4,325,000, which is equal to the benefit received by Phase #1 Assessed Property, and as such the total Assessment for all Assessed Property within Phase #1 is \$4,325,000 plus annual Administrative Expenses and other authorized charges. The Assessment for each Parcel of Assessed Property within Phase #1 is calculated based on the allocation methodologies described in Section V.D of this Service and Assessment Plan. The Phase #1 Assessment Roll is attached hereto as Appendix E.

C. Future Phase Assessment Roll

As Future Phases are developed, this Service and Assessment Plan will be updated to determine the Assessment for each Parcel located within Future Phases (e.g., an Appendix will be added as the Assessment Roll for Phase #2, etc.).

D. Annual Assessment Roll Updates

The Administrator shall prepare, and shall submit to the City Council for approval, annual updates to the Phases #2 – 3 Major Improvement Assessment Roll and Phase #1 Assessment Roll in conjunction with the Annual Service Plan Update to reflect the following matters, together with

any other changes helpful to the Administrator or the City and permitted by the PID Act: (i) the identification of each Parcel (ii) the Assessment for each Parcel of Assessed Property, including any adjustments authorized by this Service and Assessment Plan or in the PID Act; (iii) the Annual Installment for the Assessed Property for the year (if the Assessment is payable in installments); and (iv) payments of the Assessment, if any, as provided by Section VI.G of this Service and Assessment Plan.

Once Bonds are issued, the Assessment Rolls shall be updated, which update may be done in the next Annual Service Plan Update, to reflect any changes resulting from the issuance of the Bonds. This update shall reflect the actual interest on the Bonds on which the Annual Installments shall be paid, any reduction in the Assessments, and any revisions in the Actual Costs to be funded by the Bonds and Developer funds.

Section VIII MISCELLANEOUS PROVISIONS

A. Administrative Review

The City may elect to designate a third party to serve as Administrator. The City shall notify Developer in writing at least thirty (30) days in advance before appointing a third party Administrator.

To the extent consistent with the PID Act, an owner of an Assessed Parcel claiming that a calculation error has been made in the Assessment Roll(s), including the calculation of the Annual Installment, shall send a written notice describing the error to the City not later than thirty (30) days after the date any amount which is alleged to be incorrect is due prior to seeking any other remedy. The Administrator shall promptly review the notice, and if necessary, meet with the Assessed Parcel owner, consider written and oral evidence regarding the alleged error and decide whether, in fact, such a calculation error occurred.

If the Administrator determines that a calculation error has been made and the Assessment Roll should be modified or changed in favor of the Assessed Parcel owner, such change or modification shall be presented to the City Council for approval to the extent permitted by the PID Act. A cash refund may not be made for any amount previously paid by the Assessed Parcel owner (except for the final year during which the Annual Installment shall be collected or if it is determined there are sufficient funds to meet the expenses of the PID for the current year), but an adjustment may be made in the amount of the Annual Installment to be paid in the following year. The decision of the Administrator regarding a calculation error relating to the Assessment Roll may be appealed to the City Council. Any amendments made to the Assessment Roll(s) pursuant to calculation errors shall be made pursuant to the PID Act.

The decision of the Administrator, or if such decision is appealed to the City Council, the decision of the City Council shall be conclusive as long as there is a reasonable basis for such determination. This procedure shall be exclusive and its exhaustion by any property owner shall be a condition precedent to any other appeal or legal action by such owner.

B. Termination of Assessments

Each Assessment shall be extinguished on the date the Assessment is paid in full, including unpaid Annual Installments and Delinquent Collection Costs, if any. After the extinguishment of an Assessment and the collection of any delinquent Annual Installments and Delinquent Collection Costs, the City shall provide the owner of the affected Parcel a recordable "Notice of the PID Assessment Termination".

C. Amendments

Amendments to the Service and Assessment Plan can be made as permitted or required by the PID Act and under Texas law.

The City Council reserves the right to the extent permitted by the PID Act to amend this Service and Assessment Plan without notice under the PID Act and without notice to property owners of Parcels:

(i) to correct mistakes and clerical errors; (ii) to clarify ambiguities; and (iii) to provide procedures for the collection and enforcement of Assessments, Prepayment Costs, Collection Costs, and other charges imposed by the Service and Assessment Plan.

D. Administration and Interpretation of Provisions

The City Council shall administer the PID, this Service and Assessment Plan, and all Annual Service Plan Updates consistent with the PID Act, and shall make all interpretations and determinations related to the application of this Service and Assessment Plan unless stated otherwise herein or in the Trust Indenture, such determination shall be conclusive.

E. Severability

If any provision, section, subsection, sentence, clause or phrase of this Service and Assessment Plan or the application of same to an Assessed Parcel or any person or set of circumstances is for any reason held to be unconstitutional, void or invalid, the validity of the remaining portions of this Service and Assessment Plan or the application to other persons or sets of circumstances shall not be affected thereby, it being the intent of the City Council in adopting this Service and Assessment Plan that no part hereof or provision or regulation contained herein shall become inoperative or fail by reason of any unconstitutionality, voidness or invalidity of any other part hereof, and all provisions of this Service and Assessment Plan are declared to be severable for that purpose.

If any provision of this Service and Assessment Plan is determined by a court to be unenforceable, the unenforceable provision shall be deleted from this Service and Assessment Plan and the unenforceable provision shall, to the extent possible, be rewritten to be enforceable and to give effect to the intent of the City.

Appendix A

The PID MAP

PROPERTY DESCRIPTION:

Being a 94.827 acre tract of land situated in the George W. Eastes Survey, Abstract Number 299, the William W. Shawver Survey, Abstract Number 810, and the William B. Tucker Survey, Abstract Number 912, City of Celina, Collin County, Texas, and being a part of that certain tract of land described by deed to CADG CELINA 156, LLC, recorded under Document Number 20141015001128280, Official Public Records of Collin County, Texas, and being more particularly described by metes and bounds as follows:

COMMENCING at a 1/2 inch iron rod found for the most northwest corner of a tract of land described to A.P. Sommerhalder, LLC, by deed recorded in document number 20150625000764600, Deed Records, Collin County, Texas, and the southwest corner of that certain tract of land described by deed to Preston 51 CR 102, LP, recorded under Document Number 20071120001569950 of the Official Public Records of Collin County, Texas, and being in the east line of State Highway No. 289, also known as Preston Road, having a variable width right-of-way, and being within County Road 102;

THENCE South 89 degrees 43 minutes 35 seconds East, within said County Road 102 and with the north line of said A. P. Sommerhalder tract and the south line of said Preston 51 CR 102 tract, a distance of 737.08 feet to a point for corner, being the POINT OF BEGINNING;

THENCE South 89 degrees 43 minutes 35 seconds East, continuing within said County Road 102, a distance of 1803.23 feet to a point for the southeast corner of said Preston 51 CR 102, LP tract, same being an inner ell corner of said CADG Celina 156, LLC tract;

THENCE North 00 degrees 26 minutes 05 seconds West, with the east line of said Preston 51 CR 102, LP tract and the northernmost west line of said CADG Celina 156, LLC tract, a distance of 640.81 feet to a 1/2 inch iron rod found for the southwest corner of that same tract of land described to Mohammad Ali Dalaki, by deed recorded in Document Number 20141119001266880, Official Public Records, Collin County, Texas, same being the northernmost northwest corner of said CADG Celina 156, LLC tract;

THENCE North 89 degrees 49 minutes 17 Seconds East, with the south line of said Dalaki tract and the north line of said CADG Celina 156, LLC tract, a distance of 1391.00 feet to a point for the southeast corner of said Dalaki tract and the northeast corner of said CADG Celina 156, LLC tract, said point lying on the west line of that same tract of land described to Nanda Estates, LLC, by deed recorded in Document Number 20140709000706790, Official Public Records, Collin County, Texas;

THENCE South 00 degrees 30 minutes 42 seconds East, with the west line of said Nanda Estates, LLC tract and the easternmost line of said CADG Celina 156, LLC tract, a distance of 1391.70 feet to a 5/8 inch iron rod found for the easternmost southeast corner thereof, same being the southwest corner of said Nanda Estates, LLC tract, and lying on the north line of that same tract of land described to Four Winds Enterprises, Ltd., by deed recorded in Volume 5476, Page 8080, Official Public Records, Collin County, Texas;

THENCE South 88 degrees 45 minutes 36 seconds West, with the north line of said Four Winds Enterprises, Ltd. tract, and the easternmost south line of said CADG Celina 156, LLC tract, a distance of 551.59 feet to a point for corner;

THENCE South 89 degrees 08 minutes 14 seconds West, continuing with the north line of said Four Winds Enterprises, Ltd. tract, and the easternmost south line of said CADG Celina 156, LLC tract, a distance of 1442.68 feet to a 1/2 inch iron rod found for the northwest corner of said Four Winds Enterprises, Ltd. tract and an inner ell corner of said CADG Celina 156, LLC tract;

THENCE South 00 degrees 08 minutes 33 seconds West, with the west line of said Four Winds Enterprises, Ltd. tract, and the southernmost east line of said CADG Celina 156, LLC tract, a distance of 45.11 feet to point for corner in the west line of said Four Winds Enterprises, Ltd., and at the beginning of a curve to the left having a radius of 708.00 feet, with a delta angle of 36 degrees 15 minutes 41 seconds, whose chord bears South 72 degrees 00 minutes 02 seconds West, a distance of 440.64 feet;

THENCE, in a southwesterly direction, departing the southernmost east line of said CADG Celina 156 tract, over, across, and upon said CADG Celina 156 tract, and with said curve, an arc length of 448.08 feet to a point for corner;

THENCE South 53 degrees 52 minutes 12 seconds West, continuing within said CADG Celina 156 tract, a distance of 1001.46 feet to a point for corner lying on the west line thereof, same being the east line of that certain tract of land described in deed to Sutton Field Investments, LLC, recorded under Document Number 20150305000240910, Official Public Records of Collin County, Texas;

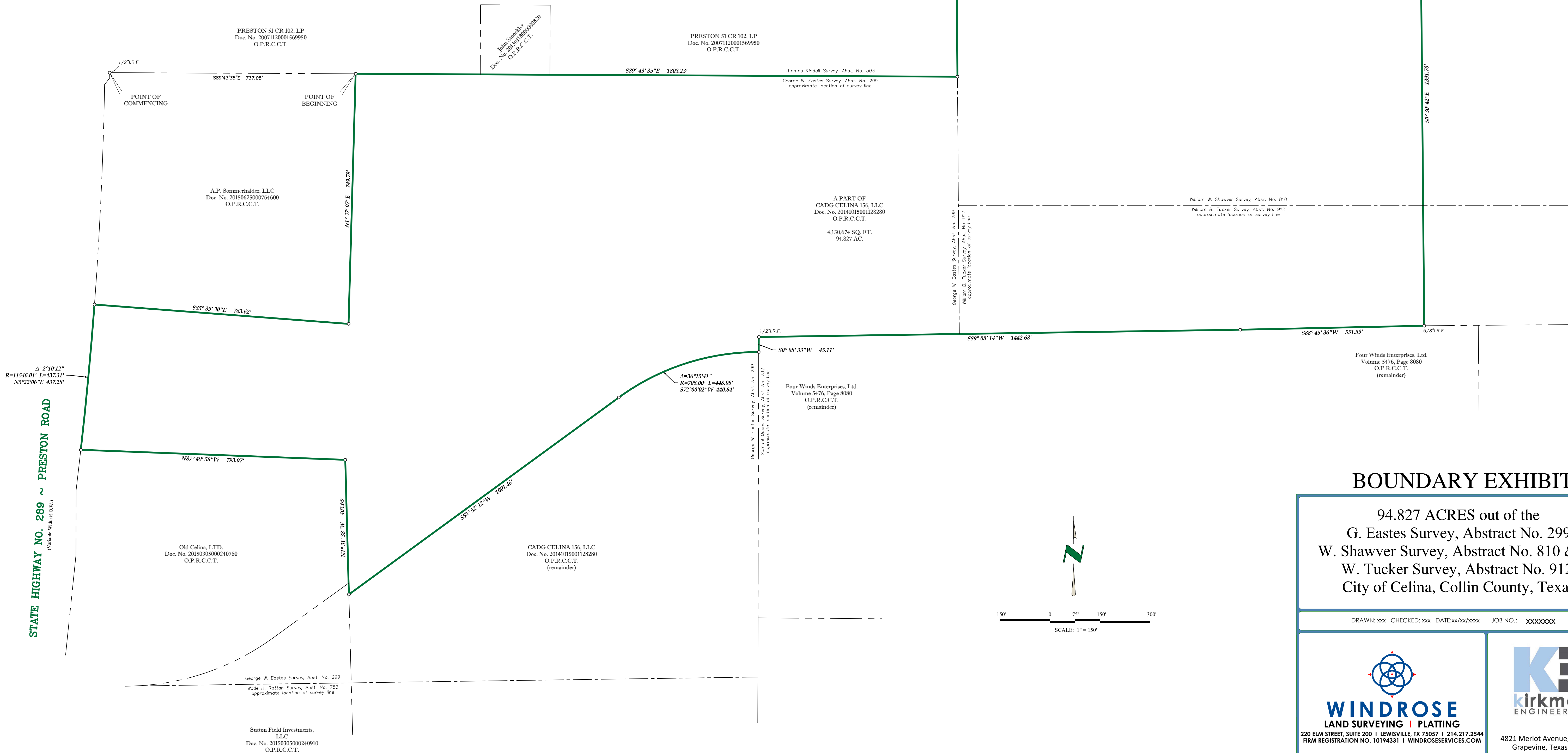
THENCE North 01 degrees 31 minutes 38 seconds West, with the west line of said CADG Celina 156 tract, the east line of said Sutton Field Investments, LLC, tract, and the east line of that certain tract of land described to Old Celina, LTD., by deed recorded under Document Number 20150305000240780 of the Official Public Records of Collin County, Texas, a distance of 403.65 feet to point for corner;

THENCE North 87 degrees 49 minutes 58 seconds West, with the westernmost south line of said CADG Celina 156 tract, and the north line of said Old Celina, LTD. tract, a distance of 793.07 feet to a 1/2 inch iron rod with a yellow cap stamped "ASC" set for corner in the east line of said Preston Road, lying in a curve to the left having a radius of 11546.01 feet, with a delta angle of 02 degrees 10 minutes 12 seconds, whose chord bears North 05 degrees 22 minutes 06 seconds East, a distance of 437.28 feet;

THENCE continuing with the east line of said Preston Road and with said curve, an arc length of 437.31 feet to a point for the westernmost northwest corner of said CADG Celina 156 tract and the southwest corner of said A.P. Sommerhalder, LLC tract;

THENCE South 85 degrees 39 minutes 30 seconds East, with the westernmost north line of said CADG Celina 156 tract and the south line of said A.P. Sommerhalder, LLC tract, a distance of 763.62 feet to point for the southeast corner of said A.P.Sommerhalder, LLC. tract and an interior corner of said CADG Celina 156 tract;

THENCE North 01 degrees 37 minutes 07 seconds East, with the northernmost west line of said CADG Celina 156 tract and the east line of said A.P. Sommerhalder, LLC. tract, a distance of 749.79 feet to the POINT OF BEGINNING, and containing 94.827 acres of land, more or less, and being subject to any and all easements that may affect.



BOUNDARY EXHIBIT

94.827 ACRES out of the
G. Eastes Survey, Abstract No. 299
W. Shawver Survey, Abstract No. 810 & the
W. Tucker Survey, Abstract No. 912,
City of Celina, Collin County, Texas

DRAWN: xxx CHECKED: xxx DATE:xx/xx/xxxx JOB NO.: XXXXXXX

WINDROSE
LAND SURVEYING | PLATTING
220 ELM STREET, SUITE 200 | LEWISVILLE, TX 75057 | 214.217.2544
FIRM REGISTRATION NO. 10194331 | WINDROSESERVICES.COM

Kirkman
ENGINEERING
4821 Merlot Avenue, Suite 210
Grapevine, Texas 76051
Phone: 817-488-4960

Appendix B

ESTIMATED COSTS OF AUTHORIZED IMPROVEMENTS



POD COST SUMMARY - CITY OF CELINA
PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST - IMPORTANT NOTES APPLY
THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT - CITY OF CELINA
OCTOBER 31, 2017

DIVISION / PHASE / COST TYPE SUMMARY - CITY OF CELINA IMPROVEMENTS

DIVISION	DIRECT PUBLIC				MASTER PUBLIC				PRIVATE				TOTAL	TOTAL
	1	2	3	TOTAL	1	2	3	TOTAL	1	2	3	TOTAL		
CLEARING & EXCAVATION	\$62,250	\$95,010	\$83,350	\$240,610	\$76,505	\$51,800	\$64,894	\$193,199	\$726,679	\$587,550	\$592,670	\$1,906,899	\$2,340,708	
WATER	\$450,627	\$405,023	\$366,253	\$1,221,904	\$260,853	\$28,525	\$182,180	\$471,557	\$0	\$0	\$0	\$0	\$1,693,461	
SEWER	\$545,213	\$395,678	\$366,570	\$1,307,462	\$1,748,283	\$0	\$125,601	\$1,873,884	\$0	\$0	\$0	\$0	\$3,181,345	
STORM SEWER	\$505,963	\$385,529	\$351,283	\$1,242,775	\$500,655	\$303,998	\$223,449	\$1,028,102	\$0	\$0	\$0	\$0	\$2,270,878	
PAVEMENT	\$1,066,879	\$987,224	\$863,966	\$2,918,070	\$759,511	\$1,106,703	\$641,467	\$2,507,680	\$0	\$0	\$0	\$0	\$5,425,749	
RETAINING WALLS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$245,000	\$60,000	\$60,000	\$365,000	\$365,000	
EROSION CONTROL	\$30,550	\$20,006	\$32,056	\$82,612	\$50,070	\$14,150	\$27,552	\$91,772	\$39,380	\$35,458	\$30,727	\$105,564	\$279,948	
AMENITIES, LANDSCAPE, & SCREENING	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$237,650	\$182,300	\$408,900	\$828,850	\$828,850	
FRANCHISE UTILITIES	\$27,200	\$18,700	\$20,400	\$66,300	\$40,800	\$5,100	\$10,200	\$56,100	\$0	\$0	\$0	\$0	\$122,400	
MISCELLANEOUS & OTHER	\$5,000	\$5,000	\$5,000	\$15,000	\$5,000	\$5,000	\$5,000	\$15,000	\$39,540	\$36,900	\$35,360	\$111,800	\$141,800	
SUB-TOTAL	\$2,693,684	\$2,312,170	\$2,088,879	\$7,094,732	\$3,441,676	\$1,515,276	\$1,280,342	\$6,237,294	\$1,288,249	\$902,208	\$1,127,657	\$3,318,113	\$16,650,139	
SURVEY, PLATTING, ENG., LA, PERMITTING, & STAKING (7%)	\$188,558	\$161,852	\$146,222	\$496,631	\$240,917	\$106,069	\$89,624	\$436,611	\$90,177	\$63,155	\$78,936	\$232,268	\$1,165,510	
SUB-TOTAL	\$2,882,241	\$2,474,022	\$2,235,100	\$7,591,363	\$3,682,593	\$1,621,345	\$1,369,966	\$6,673,905	\$1,378,426	\$965,362	\$1,206,592	\$3,550,381	\$17,815,649	
MISCELLANEOUS & CONTINGENCY (10% NOT INCL ENG OR CM)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
TOTAL	\$2,882,241	\$2,474,022	\$2,235,100	\$7,591,363	\$3,682,593	\$1,621,345	\$1,369,966	\$6,673,905	\$1,378,426	\$965,362	\$1,206,592	\$3,550,381	\$17,815,649	

PHASE TOTAL SUMMARY - CITY OF CELINA IMPROVEMENTS

COST TYPE	1	2	3	TOTAL
DIRECT PUBLIC	\$2,882,241	\$2,474,022	\$2,235,100	\$7,591,363
MASTER PUBLIC	\$3,682,593	\$1,621,345	\$1,369,966	\$6,673,905
PRIVATE	\$1,378,426	\$965,362	\$1,206,592	\$3,550,381
TOTAL	\$7,943,261	\$5,060,729	\$4,811,659	\$17,815,649

Notes:

- This estimate is based on the attached concept plan.
- Earthwork quantities do not include costs for rock excavation. A Geotech should be consulted regarding the treatment of cultivated soil and its use on the project.
- Sidewalks adjacent to residential lots are excluded from above costs. Sidewalks are assumed to be constructed by the home builders, except where adjacent to park dedication, collectors, thoroughfare, or open space. ADA ramps are required to be built by the Developer.
- All fees need to be verified by the City of Celina at the time of construction & permitting.
- Turn lanes and deceleration lanes are not included in this cost estimate.
- Construction timing of improvements are assumed to run concurrent with adjacent off-site master infrastructure improvements.
- Jurisdictional Water of the U.S. permitting is not included in this estimate.
- It is assumed that no additional offsite easements will need to be acquired for the proposed utilities.
- All earthwork numbers are contained to the limits of the ROW. Onsite earthwork numbers have been separated to the ROW and lots only.



PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT - CELINA TRACT
MASTER PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017

				1	2	3	TOTAL
PROJECT NAME: Chalk Hill	CREATED BY: JMC	NO. OF LOTS: 157		145	138	440	
CITY: <i>City of Celina, Collin County, Texas</i>	CHECKED BY: BSM	GROSS AC: 41.0		28.0	25.0	94.0	
JOB NUMBER:	REVISED BY:	NET AC: 0.0		0.0	0.0	0.0	

A.1 CLEARING & EXCAVATION - LEGACY DRIVE (100' ROW, 74' B-B, 3,440 LF)

DESCRIPTION	UNIT	UNIT PRICE	1 (2,439 LF)		2 (1,187 LF)		3 (706 LF)		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
CLEARING / GRUBBING	AC	\$2,500.00	5.2	\$13,100	3	\$6,800	2	\$4,125	9.61	\$24,025
STREET / ROW EXCAVATION/DETENTION	CY	\$3.00	21,135	\$63,405	15,000	\$45,000	6,655	\$19,965	42,790.00	\$128,370
TOTAL CLEARING & EXCAVATION - LEGACY DRIVE				\$76,505		\$51,800		\$24,090		\$152,395

A.2 CLEARING & EXCAVATION - COIT RD. (60' ROW, 37' B-B, 1,342 LF)

DESCRIPTION	UNIT	UNIT PRICE	1		2		3 (1,342 LF)		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
CLEARING / GRUBBING	AC	\$2,500.00	0	\$0	0.0	\$0	2.8	\$6,925	2.77	\$6,925
STREET / ROW EXCAVATION	CY	\$3.00	0	\$0	0	\$0	11,293	\$33,879	11,293	\$33,879
TOTAL CLEARING & EXCAVATION - COIT RD.				\$0		\$0		\$40,804		\$40,804



**PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT - CELINA TRACT
MASTER PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017**

				1	2	3	TOTAL
PROJECT NAME: Chalk Hill	CREATED BY: JMC	NO. OF LOTS: 157		145	138	440	
CITY: <i>City of Celina, Collin County, Texas</i>	CHECKED BY: BSM	GROSS AC. 41.0		28.0	25.0	94.0	
JOB NUMBER:	REVISED BY:	NET AC. 0.0		0.0	0.0	0.0	

B.1 WATER - ALONG LEGACY DRIVE

DESCRIPTION	UNIT	UNIT PRICE	1 (2,439 LF)		2 (1,187 LF)		3 (706 LF)		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
12" P.V.C. WATERLINE	LF	\$48.00	2,366	\$113,568	530	\$25,440	1,600	\$76,800	4,496	\$215,808
12" GATE VALVE & BOX	EA	\$2,300.00	4	\$9,200	0	\$0	0	\$0	4	\$9,200
12" PLUG	EA	\$750.00	1	\$750	1	\$750	1	\$750	3	\$2,250
FIRE HYDRANT ASSEMBLY	EA	\$4,180.00	4	\$16,720	0	\$0	0	\$0	4	\$16,720
CONNECT TO EXISTING LINE	EA	\$1,000.00	1	\$1,000	0	\$0	0	\$0	1	\$1,000
18"x12" TAPPING SLEEVE AND VALVE	EA	\$12,500.00	1	\$12,500	0	\$0	0	\$0	1	\$12,500
TRENCH SAFETY	LF	\$1.00	2,366	\$2,366	530	\$530	1,600	\$1,600	4,496	\$4,496
TESTING (EXCLUDING GEOTECH)	LF	\$0.60	2,366	\$1,420	530	\$318	1,600	\$960	4,496	\$2,698
BONDS	%	2.00%	\$157,524	\$3,150	\$27,038	\$541	\$80,110	\$1,602	264,672	\$5,293
INSPECTION FEE	%	3.50%	\$157,524	\$5,513	\$27,038	\$946	\$80,110	\$2,804	264,672	\$9,264
TOTAL WATER - ALONG LEGACY DRIVE				\$166,187		\$28,525		\$84,516		\$279,229

B.2 WATER - ALONG PRESTON RD.

DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
12" P.V.C. WATERLINE	LF	\$48.00	1,400	\$67,200	0	\$0	0	\$0	1,400	\$67,200
12" GATE VALVE & BOX	EA	\$2,300.00	6	\$13,800	0	\$0	0	\$0	6	\$13,800
12" PLUG	EA	\$750.00	1	\$750	0	\$0	0	\$0	1	\$750
FIRE HYDRANT ASSEMBLY	EA	\$4,180.00	1	\$4,180	0	\$0	0	\$0	1	\$4,180
CONNECT TO EXISTING LINE	EA	\$1,000.00	1	\$1,000	0	\$0	0	\$0	1	\$1,000
TRENCH SAFETY	LF	\$1.00	1,400	\$1,400	0	\$0	0	\$0	1,400	\$1,400
TESTING (EXCLUDING GEOTECH)	LF	\$1.00	1,400	\$1,400	0	\$0	0	\$0	1,400	\$1,400
BONDS	%	2.00%	\$89,730	\$1,795	\$0	\$0	\$0	\$0	89,730	\$1,795
INSPECTION FEE	%	3.50%	\$89,730	\$3,141	\$0	\$0	\$0	\$0	89,730	\$3,141
TOTAL WATER - ALONG PRESTON RD.				\$94,665		\$0		\$0		\$94,665



PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT - CELINA TRACT
MASTER PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017

PROJECT NAME: <i>Chalk Hill</i>	CREATED BY: JMC	NO. OF LOTS: 157	1	2	3	TOTAL
CITY: <i>City of Celina, Collin County, Texas</i>	CHECKED BY: BSM	GROSS AC: 41.0	41.0	28.0	25.0	94.0
JOB NUMBER:	REVISED BY:	NET AC: 0.0	0.0	0.0	0.0	0.0

B.3 WATER - ALONG COIT RD.

DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
12" P.V.C. WATERLINE	LF	\$48.00	0	\$0	0	\$0	1,342	\$64,416	1,342	\$64,416
12" GATE VALVE & BOX	EA	\$2,300.00	0	\$0	0	\$0	4	\$10,289	4	\$10,289
12" PLUG	EA	\$750.00	0	\$0	0	\$0	1	\$750	1	\$750
FIRE HYDRANT ASSEMBLY	EA	\$4,180.00	0	\$0	0	\$0	3	\$11,219	3	\$11,219
CONNECT TO EXISTING LINE	EA	\$1,000.00	0	\$0	0	\$0	1	\$1,000	1	\$1,000
TRENCH SAFETY	LF	\$1.00	0	\$0	0	\$0	1,342	\$1,342	1,342	\$1,342
TESTING (EXCLUDING GEOTECH)	LF	\$1.00	0	\$0	0	\$0	1,342	\$1,342	1,342	\$1,342
TESTING (GEOTECH)	LF	\$1.65	0	\$0	0	\$0	1,342	\$2,214	1,342	\$2,214
BONDS	%	2.00%	\$0	\$0	\$0	\$0	\$92,572	\$1,851	92,572	\$1,851
INSPECTION FEE	%	3.50%	\$0	\$0	\$0	\$0	\$92,572	\$3,240	92,572	\$3,240
TOTAL WATER - ALONG COIT RD.				\$0		\$0		\$97,664		\$97,664

C.1 SEWER - ALONG LEGACY DRIVE

DESCRIPTION	UNIT	UNIT PRICE	1 (2,439 LF)		2 (1,187 LF)		3 (706 LF)		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
8" SANITARY SEWER MAIN (SDR-26)	LF	\$39.00	0	\$0	0	\$0	1,403	\$54,717	1,403	\$54,717
MANHOLE - STD 4 DIA	LF	\$4,500.00	0	\$0	0	\$0	5	\$22,500	5	\$22,500
TRENCH SAFETY	LF	\$1.00	0	\$0	0	\$0	1,403	\$1,403	1,403	\$1,403
POST CONSTRUCTION CCTV	LF	\$1.25	0	\$0	0	\$0	1,403	\$1,754	1,403	\$1,754
BONDS	%	2.00%	\$0	\$0	\$0	\$0	\$80,374	\$1,607	80,374	\$1,607
INSPECTION FEE	%	3.50%	\$0	\$0	\$0	\$0	\$78,620	\$2,752	78,620	\$2,752
TOTAL SEWER				\$0		\$0		\$84,733		\$84,733



**PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT - CELINA TRACT
MASTER PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017**

PROJECT NAME: <i>Chalk Hill</i>	CREATED BY: JMC	NO. OF LOTS: 157	1	2	3	TOTAL
CITY: <i>City of Celina, Collin County, Texas</i>	CHECKED BY: BSM	GROSS AC: 41.0	41.0	28.0	25.0	94.0
JOB NUMBER:	REVISED BY:	NET AC: 0.0	0.0	0.0	0.0	0.0

C.2 SEWER - ALONG PRESTON ROAD										
DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
8" SANITARY SEWER MAIN (SDR-35)	LF	\$34.00	900	\$30,600	0	\$0	0	\$0	900	\$30,600
8" SANITARY SEWER FORCE MAIN	LF	\$48.00	2,130	\$102,240	0	\$0	0	\$0	2,130	\$102,240
MANHOLE - STD 5 DIA	EA	\$9,500.00	2	\$19,000	0	\$0	0	\$0	2	\$19,000
CONNECT TO EXISTING MANHOLE	EA	\$3,500.00	1	\$3,500	0	\$0	0	\$0	1	\$3,500
LIFT STATION	EA	\$1,500,000.00	1	\$1,500,000	0	\$0	0	\$0	1	\$1,500,000
TRENCH SAFETY	LF	\$1.00	900	\$900	0	\$0	0	\$0	900	\$900
POST CONSTRUCTION CCTV	LF	\$1.00	900	\$900	0	\$0	0	\$0	900	\$900
BONDS	%	2.00%	\$1,657,140	\$33,143	\$0	\$0	\$0	\$0	1,657,140	\$33,143
INSPECTION FEE	%	3.50%	\$1,657,140	\$58,000	\$0	\$0	\$0	\$0	1,657,140	\$58,000
TOTAL SEWER				\$1,748,283		\$0		\$0		\$1,748,283



**PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT - CELINA TRACT
MASTER PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017**

				1	2	3	TOTAL
PROJECT NAME: Chalk Hill	CREATED BY: JMC	NO. OF LOTS: 157		145	138	440	
CITY: <i>City of Celina, Collin County, Texas</i>	CHECKED BY: BSM	GROSS AC. 41.0		28.0	25.0	94.0	
JOB NUMBER:	REVISED BY:	NET AC. 0.0		0.0	0.0	0.0	0.0

C.3 SEWER - ALONG COIT RD.

DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
8" SANITARY SEWER MAIN (SDR-26)	LF	\$39.00	0	\$0		\$0	830	\$32,370	830	\$32,370
MANHOLE - STD 4 DIA	LF	\$4,500.00	0	\$0		\$0	1	\$4,500	1	\$4,500
TRENCH SAFETY	LF	\$1.00	0	\$0	0	\$0	830	\$830	830	\$830
POST CONSTRUCTION CCTV	LF	\$1.25	0	\$0	0	\$0	830	\$1,038	830	\$1,038
BONDS	%	2.00%	\$0	\$0	\$0	\$0	\$38,738	\$775	38,738	\$775
INSPECTION FEE	%	3.50%	\$0	\$0	\$0	\$0	\$38,738	\$1,356	38,738	\$1,356
TOTAL SEWER ALONG COIT RD.				\$0		\$0		\$40,868		\$40,868

D.1 STORM SEWER - LEGACY DRIVE

DESCRIPTION	UNIT	UNIT PRICE	1 (2,439 LF)		2 (1,187 LF)		3 (706 LF)		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
18" RCP	LF	\$50.50	1,000	\$50,500	110	\$5,555	200	\$10,100	1,310	\$66,155
24" RCP	LF	\$61.00	71	\$4,331	0	\$0	0	\$0	71	\$4,331
42" RCP	LF	\$133.00	270	\$35,910	0	\$0	400	\$53,200	670	\$89,110
48" RCP	LF	\$156.95	270	\$42,377	500	\$78,475	200	\$31,390	970	\$152,242
4x3 SBC	LF	\$180.00	0	\$0	939	\$169,020	0	\$0	939	\$169,020
2-4'X4' MULTI BOX CULVERT	LF	\$1,100.00	100	\$110,000	0	\$0	0	\$0	100	\$110,000
5-5'X5' MULTI BOX CULVERT	LF	\$1,100.00	100	\$110,000	0	\$0	0	\$0	100	\$110,000
10' STD CURB INLET	EA	\$3,500.00	8	\$28,000	2	\$7,000	4	\$14,000	14	\$49,000
4' JUNCTION BOX	EA	\$5,000.00	1	\$6,100	0	\$0	1	\$5,000	2	\$10,000
5-5'X5' MULTI BOX CULVERT HEADWALLS	EA	\$15,000.00	2	\$30,000	0	\$0	0	\$0	2	\$30,000
2-4'X4' MULTI BOX CULVERT HEADWALLS	EA	\$12,000.00	2	\$24,000	0	\$0	0	\$0	2	\$24,000
12" GROUTED ROCK RIP RAP	SY	\$105.00	283	\$29,715	0	\$0	0	\$0	283	\$29,715
POND OUTFALL STRUCTURE	EA	\$25,000.00	0	\$0	1	\$25,000	0	\$0	1	\$25,000
TRENCH SAFETY	LF	\$1.00	1,811	\$1,811	1,549	\$1,549	800	\$800	4,166	\$4,166
TESTING (TV)	LF	\$1.00	1,811	\$1,811	1,551	\$1,551	804	\$804	4,166	\$4,166
BONDS	%	2.00%	\$474,555	\$9,491	\$288,150	\$5,763	\$115,294	\$2,306	877,999	\$17,560
INSPECTION FEE	%	3.50%	\$474,555	\$16,609	\$288,150	\$10,085	\$115,294	\$4,035	877,999	\$30,730
TOTAL STORM SEWER - LEGACY DRIVE				\$500,655		\$303,998		\$121,635		\$925,188



**PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT - CELINA TRACT
MASTER PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017**

				1	2	3	TOTAL
PROJECT NAME: Chalk Hill	CREATED BY: JMC	NO. OF LOTS: 157		157	145	138	440
CITY: <i>City of Celina, Collin County, Texas</i>	CHECKED BY: BSM	GROSS AC: 41.0		41.0	28.0	25.0	94.0
JOB NUMBER:	REVISED BY:	NET AC: 0.0		0.0	0.0	0.0	0.0

D.2 STORM SEWER - COIT RD.

DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
18" RCP	LF	\$50.50	0	\$0		\$0	1,400	\$70,700	1,400	\$70,700
30" RCP	LF	\$90.00	0	\$0	0	\$0	0	\$0	0	\$0
36" RCP	LF	\$125.00	0	\$0	0	\$0	0	\$0	0	\$0
42" RCP	LF	\$133.00	0	\$0	0	\$0	0	\$0	0	\$0
10' STD CURB INLET	EA	\$3,600.00	0	\$0		\$0	6	\$21,600	6	\$21,600
3' X 3' WYE INLET	EA	\$3,500.00	0	\$0		\$0		\$0	0	\$0
5' JUNCTION BOX	EA	\$6,000.00	0	\$0		\$0	0	\$0	0	\$0
TEMPORARY HEADWALL, GTD, & RIP-RAP	EA	\$5,000.00	0	\$0	0	\$0	0	\$0	0	\$0
12" GROUTED ROCK RIP RAP	SY	\$75.00	0	\$0	0	\$0	0	\$0	0	\$0
TRENCH SAFETY	LF	\$1.00	0	\$0	0	\$0	1,400	\$1,400	1,400	\$1,400
TESTING (GEOTECH)	LF	\$1.00	0	\$0	0	\$0	1,400	\$1,400	1,400	\$1,400
TESTING (TV)	LF	\$1.00	0	\$0	0	\$0	1,406	\$1,406	1,406	\$1,406
BONDS	%	2.00%	\$0	\$0	\$0	\$0	\$96,506	\$1,930	96,506	\$1,930
INSPECTION FEE	%	3.50%	\$0	\$0	\$0	\$0	\$96,506	\$3,378	96,506	\$3,378
TOTAL STORM SEWER - E. COIT RD.				\$0		\$0		\$101,814		\$101,814

E.1 PAVEMENT - LEGACY DRIVE

DESCRIPTION	UNIT	UNIT PRICE	1 (2,439 LF)		2 (1,187 LF)		3 (706 LF)		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
SECTION, PHASE 2: 28' B-B HALF SECTION + PHASE 1 SOUTH HALF SECTION, PHASE 3: 28' B-B HALF SECTION); EACH PHASE WILL INCLUDE 9' OF MEDIAN	SY	\$45.00	10,050	\$452,250	14,910	\$670,950	3,000	\$135,000	27,960	\$1,258,200
8" LIME STABILIZED SUBGRADE PREPARATION	SY	\$3.30	11,055	\$36,482	16,401	\$54,123	3,300	\$10,890	30,756	\$101,495
HYDRATED LIME FOR STREET (53#/SY)	TON	\$155.00	293	\$45,408	394	\$61,012	79	\$12,276	766	\$118,696
PAVEMENT HEADER	LF	\$15.00	28	\$420	28	\$420	28	\$420	84	\$1,260
BARRIER FREE PEDESTRIAN RAMP	EA	\$1,350.00	4	\$5,400	2	\$2,700	2	\$2,700	8	\$10,800
BARRICADES	EA	\$1,500.00	1	\$1,500	1	\$1,500	1	\$1,500	3	\$4,500
STREET SIGN	EA	\$1,300.00	3	\$3,900	1	\$1,300	1	\$1,300	5	\$6,500
10' CONCRETE SIDEWALK	LF	\$60.00	2,439	\$146,340	3,626	\$217,560	706	\$42,360	6,771	\$406,260
TRAFFIC CONTROL	LS	\$5,000.00	1.0	\$5,000	1	\$5,000	1	\$5,000	3	\$15,000
TESTING	SY	\$2.10	11,055	\$23,216	16,401	\$34,442	3,300	\$6,930	30,756	\$64,588
BONDS	%	2.00%	\$719,915	\$14,398	\$1,049,007	\$20,980	\$218,376	\$4,368	1,987,299	\$39,746
INSPECTION FEE	%	3.50%	\$719,915	\$25,197	\$1,049,007	\$36,715	\$218,376	\$7,643	1,987,299	\$69,555
TOTAL PAVEMENT - LEGACY DRIVE				\$759,511		\$1,106,703		\$230,387		\$2,096,600



**PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT - CELINA TRACT
MASTER PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017**

				1	2	3	TOTAL
PROJECT NAME: Chalk Hill	CREATED BY: JMC	NO. OF LOTS: 157		157	145	138	440
CITY: <i>City of Celina, Collin County, Texas</i>	CHECKED BY: BSM	GROSS AC: 41.0		41.0	28.0	25.0	94.0
JOB NUMBER:	REVISED BY:	NET AC: 0.0		0.0	0.0	0.0	0.0

E.2 PAVEMENT - COIT ROAD (60' ROW)

DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
8" REINF. CONCRETE STREET PAVEMENT (37" B-B, 1,342 LF)	SY	\$45.00	0	\$0	0	\$0	5,520	\$248,400	5,520	\$248,400
8" LIME STABILIZED SUBGRADE PREPARATION	SY	\$3.30	0	\$0	0	\$0	6,072	\$20,038	6,072	\$20,038
HYDRATED LIME FOR STREET (53#/SY)	TON	\$155.00	0	\$0	0	\$0	109	\$16,941	109	\$16,941
PAVEMENT HEADER	LF	\$15.00	0	\$0	0	\$0	37	\$555	37	\$555
BARRIER FREE PEDESTRIAN RAMP	EA	\$1,350.00	0	\$0		\$0	2	\$2,700	2	\$2,700
BARRICADES	EA	\$1,500.00	0	\$0	0	\$0	1	\$1,500	1	\$1,500
STREET SIGN	EA	\$1,300.00	0	\$0	0	\$0	2	\$2,600	2	\$2,600
STOP SIGN	EA	\$1,250.00	0	\$0	0	\$0	2	\$2,500	2	\$2,500
6" CONCRETE SIDEWALK	LF	\$30.00	0	\$0	0	\$0	2,684	\$80,520	2,684	\$80,520
TRAFFIC CONTROL	LS	\$3,000.00	0	\$0	0	\$0	1	\$3,000	1	\$3,000
TESTING	SY	\$2.10	0	\$0	0	\$0	6,072	\$12,751	6,072	\$12,751
BONDS	%	2.00%	0	\$0	\$0	\$0	\$391,505	\$7,830	391,505	\$7,830
INSPECTION FEE	%	3.00%	0	\$0	\$0	\$0	\$391,505	\$11,745	391,505	\$11,745
TOTAL PAVEMENT - COIT ROAD (60' ROW)				\$0		\$0	\$411,080		\$411,080	



**PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT - CELINA TRACT
MASTER PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017**

				1	2	3	TOTAL
PROJECT NAME: Chalk Hill	CREATED BY: JMC	NO. OF LOTS: 157		145	138	440	
CITY: <i>City of Celina, Collin County, Texas</i>	CHECKED BY: BSM	GROSS AC: 41.0		28.0	25.0	94.0	
JOB NUMBER:	REVISED BY:	NET AC: 0.0		0.0	0.0	0.0	

F.1 EROSION CONTROL - PRESTON ROAD

DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
SILT FENCE	LF	\$1.50	6,500	\$9,750	0	\$0	0	\$0	6,500	\$9,750
EROSION CONTROL INSPECTION & MAINTENANCE	LS	\$5,000.00	1	\$5,000	0	\$0	0	\$0	1	\$5,000
TOTAL EROSION CONTROL				\$14,750		\$0		\$0		\$14,750

F.2 EROSION CONTROL - LEGACY DRIVE

DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
INLET PROTECTION	EA	\$200.00	8	\$1,600	2	\$400	4	\$800	14	\$2,800
SWPPP	LS	\$5,000.00	0	\$0	0	\$0	0	\$0	0	\$0
SILT FENCE	LF	\$1.50	9,300	\$13,950	3,200	\$4,800	5,000	\$7,500	17,500	\$26,250
CONSTRUCTION ENTRANCE	EA	\$5,000.00	1	\$5,000	0	\$0	0	\$0	1	\$5,000
CURLEX AFTER PAVING (8' WIDE)	LF	\$1.50	5,180	\$7,770	1,300	\$1,950	2,800	\$4,200	9,280	\$13,920
DRAINAGE EROSION CONTROL	LS	\$2,000.00	1	\$2,000	1	\$2,000	1	\$2,000	3	\$6,000
EROSION CONTROL INSPECTION & MAINTENANCE	LS	\$5,000.00	1	\$5,000	1	\$5,000	1	\$5,000	3	\$15,000
TOTAL EROSION CONTROL				\$35,320		\$14,150		\$19,500		\$68,970

F.3 EROSION CONTROL - COIT ROAD

DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
INLET PROTECTION	EA	\$175.00	0	\$0	0	\$0	0	\$0	0	\$0
SWPPP	LS	\$5,000.00	0	\$0	0	\$0	0	\$0	0	\$0
SILT FENCE	LF	\$1.50	0	\$0	0	\$0	2,684	\$4,026	2,684	\$4,026
CONSTRUCTION ENTRANCE	EA	\$2,500.00	0	\$0	0	\$0	0	\$0	0	\$0
CURLEX AFTER PAVING (8' WIDE)	LF	\$1.50	0	\$0	0	\$0	2,684	\$4,026	2,684	\$4,026
ROCK CHECK DAM	EA	\$1,500.00	0	\$0	0	\$0	0	\$0	0	\$0
SEEDING	AC	\$285.00	0	\$0	0	\$0	0	\$0	0	\$0
EROSION CONTROL INSPECTION & MAINTENANCE	LS	\$5,000.00	0	\$0	0	\$0	0	\$0	0	\$0
TOTAL EROSION CONTROL				\$0		\$0		\$8,052		\$8,052



PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT - CELINA TRACT
MASTER PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017

					1	2	3	TOTAL
PROJECT NAME:	Chalk Hill	CREATED BY:	JMC	NO. OF LOTS:	157	145	138	440
CITY:	City of Celina, Collin County, Texas	CHECKED BY:	BSM	GROSS AC:	41.0	28.0	25.0	94.0
JOB NUMBER:		REVISED BY:		NET AC:	0.0	0.0	0.0	0.0

G. FRANCHISE UTILITIES

DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
STREET LIGHTS	EA	\$1,700.00	24	\$40,800	3	\$5,100	6	\$10,200	33	\$56,100
TOTAL FRANCHISE UTILITIES				\$40,800		\$5,100		\$10,200		\$56,100

H. MISCELLANEOUS & OTHER

DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
CITY REVIEW FEES	LS	\$5,000.00	1	\$5,000	1	\$5,000	1	\$5,000	3	\$15,000
TOTAL MISCELLANEOUS & OTHER				\$5,000		\$5,000		\$5,000		\$15,000



**PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT DISTRICT - CELINA TRACT
MASTER PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017**

PROJECT NAME: <i>Chalk Hill</i>	CREATED BY: JMC	NO. OF LOTS: 157	1	2	3	TOTAL
CITY: <i>City of Celina, Collin County, Texas</i>	CHECKED BY: BSM	GROSS AC: 41.0	145	138		440
JOB NUMBER:	REVISED BY:	NET AC: 0.0	28.0	25.0		94.0
			0.0	0.0	0.0	0.0

SUMMARY - MASTER PUBLIC IMPROVEMENTS - CITY OF CELINA	1	2	3	TOTAL
A.1 CLEARING & EXCAVATION - LEGACY DRIVE	\$76,505	\$51,800	\$24,090	\$152,395
A.2 CLEARING & EXCAVATION - COIT	\$0	\$0	\$40,804	\$40,804
B.1 WATER - LEGACY DRIVE	\$166,187	\$28,525	\$84,516	\$279,229
B.2 WATER - PRESTON ROAD	\$94,665	\$0	\$0	\$94,665
B.3 WATER - COIT ROAD	\$0	\$0	\$97,664	\$97,664
C.1 SEWER - LEGACY DRIVE	\$0	\$0	\$84,733	\$84,733
C.2 SEWER - PRESTON ROAD	\$1,748,283	\$0	\$0	\$1,748,283
C.3 SEWER - COIT ROAD	\$0	\$0	\$40,868	\$40,868
D.1 STORM SEWER - LEGACY DRIVE	\$500,655	\$303,998	\$121,635	\$926,288
D.2 STORM SEWER - COIT ROAD	\$0	\$0	\$101,814	\$101,814
E.1 PAVEMENT - LEGACY DRIVE	\$759,511	\$1,106,703	\$230,387	\$2,096,600
E.2A PAVEMENT - COIT ROAD (90' ROW)	\$0	\$0	\$411,080	\$411,080
F. EROSION CONTROL	\$50,070	\$14,150	\$27,552	\$91,772
G. FRANCHISE UTILITIES	\$40,800	\$5,100	\$10,200	\$56,100
H. MISCELLANEOUS & OTHER	\$5,000	\$5,000	\$5,000	\$15,000
SUB-TOTAL	\$3,441,676	\$1,515,276	\$1,280,342	\$6,237,294
SURVEY, PLATTING, ENG., LA, PERMITTING, & STAKING (7%)	\$240,917	\$106,069	\$89,624	\$436,611
ROADWAY IMPACT FEES (4.233*#LOTS*694)	\$0	\$0	\$0	\$0
WATER IMPACT FEES (\$3,276/LOT) (BUILDER)	\$0	\$0	\$0	\$0
WASTEWATER IMPACT FEES (\$4,631/LOT) (BUILDER)	\$0	\$0	\$0	\$0
PARK AND OPEN SPACE FEE (\$1500/LOT)	\$0	\$0	\$0	\$0
SUB-TOTAL	\$3,682,593	\$1,621,345	\$1,369,966	\$6,673,905
MISCELLANEOUS & CONTINGENCY (10%)	\$344,168	\$151,528	\$128,034	\$623,729
TOTAL COST	\$4,026,761	\$1,772,873	\$1,498,000	\$7,297,634



**PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT - CELINA TRACT
DIRECT PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017**

					1	2	3	TOTAL
PROJECT NAME:	Chalk Hill - Direct Public Improvements	CREATED BY:	JMC	NO. OF LOTS:	157	145	138	440
CITY:	City of Celina, Collin County, Texas	CHECKED BY:	BSM	GROSS AC.	41.0	28.0	25.0	94.0
JOB NUMBER:		REVISED BY:		NET AC.	0.0	0.0	0.0	0.0

A. CLEARING & EXCAVATION

DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
CLEARING / GRUBBING	AC	\$2,500.00	3.3	\$8,250	6.5	\$16,350	5.7	\$14,350	15.6	\$38,950
STREET / ROW EXCAVATION	CY	\$3.00	18,000	\$54,000	26,220	\$78,660	23,000	\$69,000	67,220	\$201,660
TOTAL CLEARING & EXCAVATION				\$62,250		\$95,010		\$83,350		\$240,610

B. WATER

DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
8" P.V.C. WATERLINE	LF	\$30.00	6,500	\$195,000	5,976	\$179,280	5,257	\$157,710	17,733	\$531,990
8" GATE VALVE & BOX	EA	\$1,350.00	23	\$31,050	20	\$26,892	18	\$23,657	60	\$81,599
1" WATER SERVICE	EA	\$785.00	157	\$123,245	145	\$113,825	138	\$108,330	440	\$345,400
FIRE HYDRANT ASSEMBLY (INC. 6" GATE VALVE)	EA	\$4,180.00	13	\$54,340	12	\$49,959	11	\$43,949	35	\$148,248
AUTOMATIC FLUSH VALVE	EA	\$6,500.00	1	\$6,500	0	\$0	0	\$0	1	\$6,500
2" FLUSH LINE	EA	\$2,000.00	1	\$2,000	0	\$0	0	\$0	1	\$2,000
CONNECT TO EXISTING 12" LINE	EA	\$1,000.00	0	\$0	2	\$2,000	3	\$3,000	5	\$5,000
CONNECT TO EXISTING 18" LINE	EA	\$2,000.00	1	\$2,000	0	\$0	0	\$0	1	\$2,000
TRENCH SAFETY	LF	\$1.00	6,500	\$6,500	5,976	\$5,976	5,257	\$5,257	17,733	\$17,733
TESTING (EXCLUDING GEOTECH)	LF	\$1.00	6,500	\$6,500	5,976	\$5,976	5,257	\$5,257	17,733	\$17,733
BONDS	%	2.00%	\$427,135	\$8,543	\$383,908	\$7,678	\$347,159	\$6,943	1,158,202	\$23,164
INSPECTION FEE	%	3.50%	\$427,135	\$14,950	\$383,908	\$13,437	\$347,159	\$12,151	1,158,202	\$40,537
TOTAL WATER				\$450,627		\$405,023		\$366,253		\$1,221,904



PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT - CELINA TRACT
DIRECT PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017

					1	2	3	TOTAL
PROJECT NAME:	Chalk Hill - Direct Public Improvements	CREATED BY:	JMC	NO. OF LOTS:	157	145	138	440
CITY:	City of Celina, Collin County, Texas	CHECKED BY:	BSM	GROSS AC.	41.0	28.0	25.0	94.0
JOB NUMBER:		REVISED BY:		NET AC.	0.0	0.0	0.0	0.0

C. SEWER										
DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
8" SDR-26 P.V.C. SEWERLINE (ALL DEPTHS)	LF	\$39.00	6,700	\$261,300	5,700	\$222,300	5,000	\$195,000	17,400	\$678,600
8" PLUG	EA	\$500.00	3	\$1,500	3	\$1,500	1	\$500	7	\$3,500
4' DIAMETER MANHOLE (ALL DEPTHS)	EA	\$4,500.00	10	\$45,000	12	\$54,000	13	\$58,500	35	\$157,500
5' DIAMETER MANHOLE (ALL DEPTHS)	EA	\$9,500.00	11	\$104,500	0	\$0	0	\$0	11	\$104,500
4" SERVICE WITH CLEANOUT	EA	\$570.00	157	\$89,490	145	\$82,650	138	\$78,660	440	\$250,800
CONNECT TO EXISTING SANITARY SEWER	EA	\$1,600.00	1	\$1,600	2	\$3,200	3	\$4,800	6	\$9,600
TRENCH SAFETY	LF	\$1.00	6,700	\$6,700	5,700	\$5,700	5,000	\$5,000	17,400	\$17,400
TESTING (EXCLUDING GEOTECH)	LF	\$1.00	6,700	\$6,700	5,700	\$5,700	5,000	\$5,000	17,400	\$17,400
BONDS	%	2.00%	\$516,790	\$10,336	\$375,050	\$7,501	\$347,460	\$6,949	1,239,300	\$24,786
INSPECTION FEE	%	3.50%	\$516,790	\$18,088	\$375,050	\$13,127	\$347,460	\$12,161	1,239,300	\$43,376
TOTAL SEWER				\$545,213		\$395,678		\$366,570		\$1,307,462



PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT - CELINA TRACT
DIRECT PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017

					1	2	3	TOTAL
PROJECT NAME:	Chalk Hill - Direct Public Improvements	CREATED BY:	JMC	NO. OF LOTS:	157	145	138	440
CITY:	City of Celina, Collin County, Texas	CHECKED BY:	BSM	GROSS AC.	41.0	28.0	25.0	94.0
JOB NUMBER:		REVISED BY:		NET AC.	0.0	0.0	0.0	0.0

D. STORM SEWER										
DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
18" RCP CLASS III	LF	\$50.50	1,038	\$52,419	600	\$30,300	700	\$35,350	2,338	\$118,069
24" RCP CLASS III	LF	\$61.00	1,084	\$66,124	1,200	\$73,200	1,100	\$67,100	3,384	\$206,424
24" RCP CLASS IV	LF	\$70.00	291	\$20,370	0	\$0	0	\$0	291	\$20,370
30" RCP CLASS III	LF	\$75.10	546	\$41,005	600	\$45,060	800	\$60,080	1,946	\$146,145
33" RCP CLASS III	LF	\$89.00	0	\$0	0	\$0		\$0	0	\$0
36" RCP CLASS III	LF	\$98.80	0	\$0	600	\$59,280	300	\$29,640	900	\$88,920
42" RCP CLASS III	LF	\$133.00	0	\$0	0	\$0	300	\$39,900	300	\$39,900
48" RCP CLASS III	LF	\$156.95	527	\$82,713	200	\$31,390	0	\$0	727	\$114,103
10' STD CURB INLET	EA	\$3,650.00	17	\$62,050	20	\$73,000	18	\$65,700	55	\$200,750
3'X3' WYE INLET	EA	\$3,575.00	2	\$7,150	0	\$0	0	\$0	2	\$7,150
4'X4' JUNCTION BOX	EA	\$5,000.00	5	\$25,000	4	\$20,000	4	\$20,000	13	\$65,000
5'X5' JUNCTION BOX	EA	\$6,000.00	4	\$24,000	4	\$24,000	1	\$6,000	9	\$54,000
18" HEADWALL	EA	\$2,500.00	1	\$2,500	0	\$0		\$0	1	\$2,500
24" HEADWALL	EA	\$2,900.00	1	\$2,900	0	\$0	0	\$0	1	\$2,900
30" HEADWALL	EA	\$3,250.00	1	\$3,250	0	\$0	0	\$0	1	\$3,250
46" HEADWALL	EA	\$4,000.00	0	\$0	0	\$0	0	\$0	0	\$0
48" HEADWALL	EA	\$4,620.00	1	\$4,620	0	\$0	0	\$0	1	\$4,620
RIP RAP OUTFALL PROTECTION	EA	\$3,000.00	4	\$12,000	2	\$6,000	2	\$6,000	8	\$24,000
GABION STRUCTURES - OPEN SPACE	EA	\$35,000.00	2	\$70,000	0	\$0	0	\$0	2	\$70,000
TRENCH SAFETY	LF	\$1.00	3,486	\$3,486	3,200	\$3,200	3,200	\$3,200	9,886	\$9,886
BONDS	%	2.00%	\$479,586	\$9,592	\$365,430	\$7,309	\$332,970	\$6,659	1,177,986	\$23,560
INSPECTION FEE	%	3.50%	\$479,586	\$16,786	\$365,430	\$12,790	\$332,970	\$11,654	1,177,986	\$41,230
TOTAL STORM SEWER				\$505,963		\$385,529		\$351,283		\$1,242,775



PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT - CELINA TRACT
DIRECT PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017

					1	2	3	TOTAL
PROJECT NAME:	Chalk Hill - Direct Public Improvements	CREATED BY:	JMC	NO. OF LOTS:	157	145	138	440
CITY:	City of Celina, Collin County, Texas	CHECKED BY:	BSM	GROSS AC.	41.0	28.0	25.0	94.0
JOB NUMBER:		REVISED BY:		NET AC.	0.0	0.0	0.0	0.0

E. PAVEMENT										
DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
7" CONCRETE PAVEMENT WITH 6" CURBS (29' B-B)	SY	\$39.00	19,944	\$777,816	19,194	\$748,566	16,983	\$662,337	56,121	\$2,188,719
6" LIME STABILIZED SUBGRADE PREPARATION	SY	\$3.00	21,938	\$65,815	21,113	\$63,340	18,681	\$56,044	61,733	\$185,199
HYDRATED LIME FOR STREET (36#/SY)	TON	\$150.00	395	\$59,234	380	\$57,006	336	\$50,440	1,111	\$166,679
PAVEMENT HEADER	LF	\$15.00	124	\$1,860	93	\$1,395	31	\$465	248	\$3,720
5' REINFORCED CONCRETE SIDEWALK, 4" THICK	LF	\$27.50	1,080	\$29,700	0	\$0	0	\$0	1,080	\$29,700
GUARDRAIL	LF	\$35.00	585	\$20,475	0	\$0	0	\$0	585	\$20,475
BARRIER FREE PEDESTRIAN RAMP	EA	\$1,350.00	22	\$29,700	26	\$35,100	18	\$24,300	66	\$89,100
STREET/STOP SIGN COMBO	EA	\$1,850.00	10	\$18,500	11	\$20,350	8	\$14,800	29	\$53,650
CONDUIT - 2" (OPEN CUT) STREET LIGHTS/FRANCHISE	LF	\$10.00	816	\$8,160	1,000	\$10,000	1,054	\$10,540	2,870	\$28,700
BONDS	%	2.00%	\$1,011,260	\$20,225	\$935,757	\$18,715	\$818,925	\$16,379	2,765,943	\$55,319
INSPECTION FEE	%	3.50%	\$1,011,260	\$35,394	\$935,757	\$32,752	\$818,925	\$28,662	2,765,943	\$96,808
TOTAL PAVEMENT			\$1,066,879		\$987,224		\$863,966		\$2,918,070	

F. EROSION CONTROL										
DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL	
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL
INLET PROTECTION	EA	\$200.00	18	\$3,600	20	\$4,000	18	\$3,600	56	\$11,200
CURLEX AFTER PAVING (4' WIDE)	LF	\$1.50	11,300	\$16,950	4,004	\$6,006	0	\$18,456	15,304	\$22,956
DRAINAGE EROSION CONTROL	LS	\$10,000.00	1	\$10,000	1	\$10,000	1	\$10,000	3	\$30,000
TOTAL EROSION CONTROL			\$30,550		\$20,006		\$32,056		\$64,156	



PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT - CELINA TRACT
DIRECT PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017

					1	2	3	TOTAL
PROJECT NAME:	Chalk Hill - Direct Public Improvements	CREATED BY:	JMC	NO. OF LOTS:	157	145	138	440
CITY:	City of Celina, Collin County, Texas	CHECKED BY:	BSM	GROSS AC.	41.0	28.0	25.0	94.0
JOB NUMBER:		REVISED BY:		NET AC.	0.0	0.0	0.0	0.0

G. FRANCHISE UTILITIES									
DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY TOTAL
STREET LIGHTS	EA	\$1,700.00	16	\$27,200	11	\$18,700	12	\$20,400	39 \$66,300
TOTAL FRANCHISE UTILITIES			\$27,200		\$18,700		\$20,400		\$66,300

H. MISCELLANEOUS & OTHER									
DESCRIPTION	UNIT	UNIT PRICE	1		2		3		TOTAL
			QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY	TOTAL	QUANTITY TOTAL
CITY REVIEW FEES	LS	\$5,000.00	1	\$5,000	1	\$5,000	1	\$5,000	3 \$15,000
TOTAL MISCELLANEOUS & OTHER			\$5,000		\$5,000		\$5,000		\$15,000



**PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST
THE CHALK HILL PUBLIC IMPROVEMENT - CELINA TRACT
DIRECT PUBLIC IMPROVEMENTS - CITY OF CELINA
OCTOBER 31, 2017**

					1	2	3	TOTAL
PROJECT NAME:	Chalk Hill - Direct Public Improvements	CREATED BY:	JMC	NO. OF LOTS:	157	145	138	440
CITY:	City of Celina, Collin County, Texas	CHECKED BY:	BSM	GROSS AC.	41.0	28.0	25.0	94.0
JOB NUMBER:		REVISED BY:		NET AC.	0.0	0.0	0.0	0.0

SUMMARY - DIRECT PUBLIC IMPROVEMENTS - CITY OF CELINA	1	2	3	TOTAL
A. CLEARING & EXCAVATION	\$62,250	\$95,010	\$83,350	\$240,610
B. WATER	\$450,627	\$405,023	\$366,253	\$1,221,904
C. SEWER	\$545,213	\$395,678	\$366,570	\$1,307,462
D. STORM SEWER	\$505,963	\$385,529	\$351,283	\$1,242,775
E. PAVEMENT	\$1,066,879	\$987,224	\$863,966	\$2,918,070
F. EROSION CONTROL	\$30,550	\$20,006	\$32,056	\$64,156
G. FRANCHISE UTILITIES	\$27,200	\$18,700	\$20,400	\$66,300
H. MISCELLANEOUS & OTHER	\$5,000	\$5,000	\$5,000	\$15,000
SUB-TOTAL	\$2,693,684	\$2,312,170	\$2,088,879	\$7,076,276
SURVEY, PLATTING, ENG., LA, PERMITTING, & STAKING (7%)	\$188,558	\$161,852	\$146,222	\$495,339
ROADWAY IMPACT FEES (4.233*#LOTS*694)	\$0	\$0	\$0	\$0
WATER IMPACT FEES (\$3,276/LOT) (BUILDER)	\$0	\$0	\$0	\$0
WASTEWATER IMPACT FEES (\$4,631/LOT) (BUILDER)	\$0	\$0	\$0	\$0
PARK AND OPEN SPACE FEE (\$1500/LOT)	\$0	\$0	\$0	\$0
SUB-TOTAL	\$2,882,241	\$2,474,022	\$2,235,100	\$7,571,615
MISCELLANEOUS & CONTINGENCY (10%)	\$269,368	\$231,217	\$208,888	\$709,473
TOTAL COST	\$3,151,610	\$2,705,239	\$2,443,988	\$8,300,836

Appendix C

DIAGRAMS OF THE AUTHORIZED IMPROVEMENTS

Attachment: Chalk Hill PID No. 2 - Draft SAP - v1.1 (Chalk Hill Costs Resolution)

6/15/17	CEN15001
---------	----------

© Copyright 2016, Kirkman Engineering

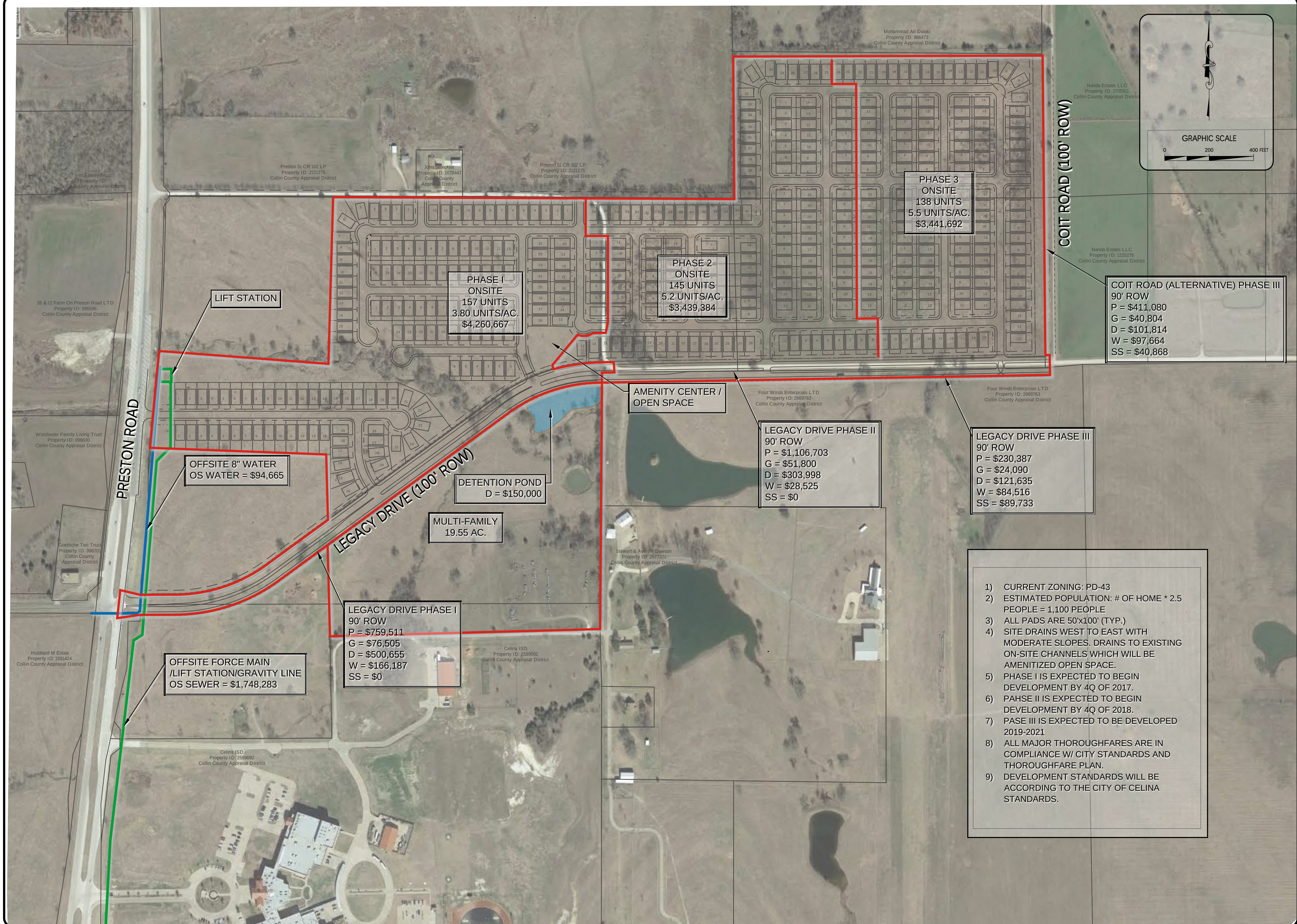


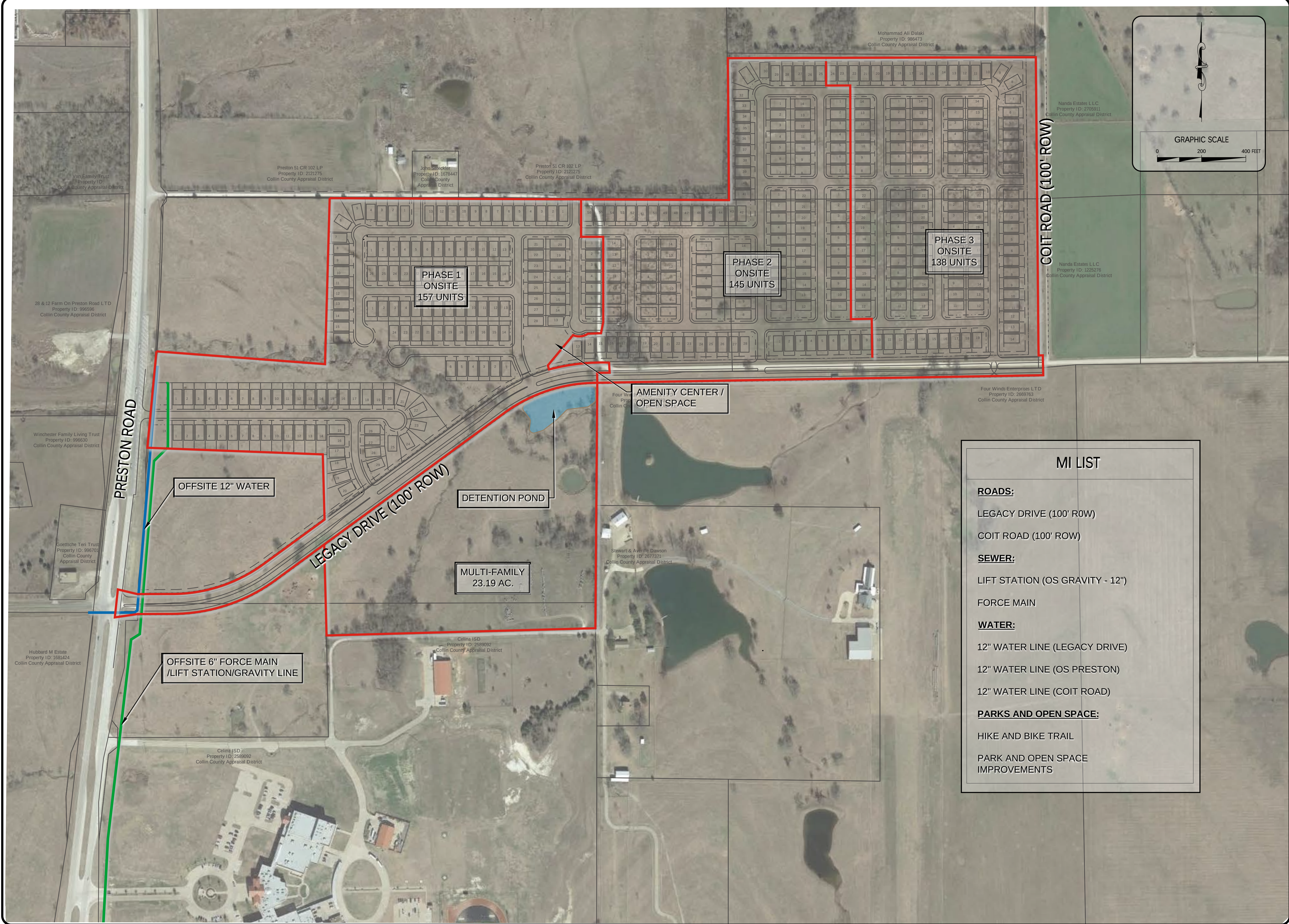


EXHIBIT D
CHALK HILL CONCEPT PLAN
CELINA, TEXAS

SHEET:
V1.1

6/15/17

CEN15001



Appendix D

PROPOSED ASSESSMENT ROLL –Phases #2-3 Assessed Property

Appendix D
Phase #2 - 3 Major Improvement Assessment Roll

Parcel	All Parcels
Assessment	\$2,275,000
Total Estimated Units	283

Year	Principal¹	Interest¹	Administrative Expenses²	Total Annual Installment³
1	\$0	\$159,250	\$25,000	\$184,250
2	\$0	\$159,250	\$25,500	\$184,750
3	\$30,000	\$159,250	\$26,010	\$215,260
4	\$35,000	\$157,150	\$26,530	\$218,680
5	\$35,000	\$154,700	\$27,061	\$216,761
6	\$35,000	\$152,250	\$27,602	\$214,852
7	\$40,000	\$149,800	\$28,154	\$217,954
8	\$40,000	\$147,000	\$28,717	\$215,717
9	\$45,000	\$144,200	\$29,291	\$218,491
10	\$50,000	\$141,050	\$29,877	\$220,927
11	\$50,000	\$137,550	\$30,475	\$218,025
12	\$55,000	\$134,050	\$31,084	\$220,134
13	\$55,000	\$130,200	\$31,706	\$216,906
14	\$60,000	\$126,350	\$32,340	\$218,690
15	\$65,000	\$122,150	\$32,987	\$220,137
16	\$70,000	\$117,600	\$33,647	\$221,247
17	\$75,000	\$112,700	\$34,320	\$222,020
18	\$80,000	\$107,450	\$35,006	\$222,456
19	\$85,000	\$101,850	\$35,706	\$222,556
20	\$90,000	\$95,900	\$36,420	\$222,320
21	\$95,000	\$89,600	\$37,149	\$221,749
22	\$100,000	\$82,950	\$37,892	\$220,842
23	\$110,000	\$75,950	\$38,649	\$224,599
24	\$115,000	\$68,250	\$39,422	\$222,672
25	\$120,000	\$60,200	\$40,211	\$220,411
26	\$130,000	\$51,800	\$41,015	\$222,815
27	\$140,000	\$42,700	\$41,835	\$224,535
28	\$150,000	\$32,900	\$42,672	\$225,572
29	\$155,000	\$22,400	\$43,526	\$220,926
30	\$165,000	\$11,550	\$44,396	\$220,946
Total	\$2,275,000	\$3,248,000	\$1,014,202	\$6,537,202

1 - The principal and interest amount are estimated and will be updated with final pricing numbers.

2 - The Administrative Expenses shown include the estimated PID administration and assessment collection costs.

3- Amounts shown do not include any TIRZ Credit.

Attachment: Chalk Hill PID No. 2 - Draft SAP - v1.1 (Chalk Hill Costs Resolution)

Appendix E

PROPOSED ASSESSMENT ROLL – Phase #1 Assessed Property

Appendix E
Phase #1 Assessment Roll

Parcel	All Parcels
Assessment	\$4,325,000
Total Estimated Units	157

Year	Principal¹	Interest¹	Administrative Expenses²	Total Annual Installment³
1	\$0	\$281,125	\$30,000	\$311,125
2	\$0	\$281,125	\$30,600	\$311,725
3	\$25,000	\$281,125	\$31,212	\$337,337
4	\$30,000	\$279,500	\$31,836	\$341,336
5	\$35,000	\$277,550	\$32,473	\$345,023
6	\$40,000	\$275,275	\$33,122	\$348,397
7	\$45,000	\$272,675	\$33,785	\$351,460
8	\$50,000	\$269,750	\$34,461	\$354,211
9	\$60,000	\$266,500	\$35,150	\$361,650
10	\$65,000	\$262,600	\$35,853	\$363,453
11	\$75,000	\$258,375	\$36,570	\$369,945
12	\$80,000	\$253,500	\$37,301	\$370,801
13	\$90,000	\$248,300	\$38,047	\$376,347
14	\$100,000	\$242,450	\$38,808	\$381,258
15	\$110,000	\$235,950	\$39,584	\$385,534
16	\$120,000	\$228,800	\$40,376	\$389,176
17	\$135,000	\$221,000	\$41,184	\$397,184
18	\$145,000	\$212,225	\$42,007	\$399,232
19	\$160,000	\$202,800	\$42,847	\$405,647
20	\$175,000	\$192,400	\$43,704	\$411,104
21	\$190,000	\$181,025	\$44,578	\$415,603
22	\$205,000	\$168,675	\$45,470	\$419,145
23	\$225,000	\$155,350	\$46,379	\$426,729
24	\$240,000	\$140,725	\$47,307	\$428,032
25	\$265,000	\$125,125	\$48,253	\$438,378
26	\$285,000	\$107,900	\$49,218	\$442,118
27	\$305,000	\$89,375	\$50,203	\$444,578
28	\$330,000	\$69,550	\$51,207	\$450,757
29	\$360,000	\$48,100	\$52,231	\$460,331
30	\$380,000	\$24,700	\$53,275	\$457,975
Total	\$4,325,000	\$6,153,550	\$1,217,042	\$11,695,592

1 - The principal and interest amount are estimated and will be updated with final pricing numbers.

2 - The Administrative Expenses shown include the estimated PID administration and assessment collection costs.

3- Amounts shown do not include any TIRZ Credit.

Attachment: Chalk Hill PID No. 2 - Draft SAP - v1.1 (Chalk Hill Costs Resolution)



Planning and Zoning Commission
City of Celina, Texas

Memorandum

To: **Honorable Mayor Terry and the Celina City Council**
From: Ben Rodriguez, Senior Planner
CC: Jason Laumer, City Manager
Date: December 12, 2017
Re: Building & Permitting fee amendments

Action Requested:

Consider and act upon an ordinance amending the City's Code of Ordinances, Appendix A, Fee Schedule, to adopt revised fees for building permits and inspections, plan review fees, water and sewer rates, garbage collection and development review fees. (Hernandez)

Background Information:

Staff has proposed to amend current fees for Building Permits, Plan Review, Engineering Plan Review fee, Professional Review fees and Sewer and Water rates, garbage rates to be more in line with current neighboring cities fees schedules

Board Review/Citizen Input:

N/A

Alternatives:

N/A

Legal Review:

The City Attorney has reviewed the proposed Ordinance.

Supporting Documents:

- Proposed Ordinance

Staff Recommendation: