



April 5, 2022

Notice is hereby given of a Regular Meeting of Nacogdoches City Council to be held on the above date in the City Council Chambers of City Hall, 202 E. Pilar Street, Nacogdoches, Texas, beginning at 5:30 p.m. for the purpose of considering the following agenda items.

Some City Council Members may attend via videoconference but a quorum of the City Council and the Presiding Officer will be present at the above-stated physical location. The meeting will be streamed live at <https://www.nactx.us/21> There will be an opportunity for the public to comment on agenda items either by teleconference or in person in Council Chambers.

Members of the public who wish to submit comments on a listed agenda by telephone item must contact the City Secretary's office by email at vinsonj@nactx.us or by calling 936-559-2506 and providing their name, telephone number and relevant agenda item upon which they wish to speak. All requests to make comments must be received by 12:00 p.m. on April 5, 2022. For all timely requests received, staff will call the submitted phone numbers directly during the meeting when the corresponding item comes up for comment. NOTE: The incoming phone call from City staff will be an unfamiliar number.

**PLEASE LIMIT PRESENTATIONS TO THREE MINUTES
(UNLESS PRIOR APPROVAL IS OBTAINED)**

1. CALL TO ORDER.
2. PLEDGE OF ALLEGIANCE.
3. OPEN FORUM. Open Forum is an opportunity for citizens to speak about items not listed on the agenda. In order to address City Council please complete the Open Forum Form and submit it to the City Secretary prior to the start of the meeting. In accordance with the Texas Open Meetings Act, City Council shall not discuss, deliberate, or make any decisions on items discussed during Open Forum. Comments are limited to 3 minutes per person. Open Forum is limited to the first 5 citizens who submit an Open Forum Form.
4. ITEMS TO BE REMOVED FROM CONSENT AGENDA.
5. CONSENT AGENDA: Items included under Consent Agenda require little or no deliberation by Council. Approval of Consent Agenda authorizes the City Manager or his designee to proceed with conclusion of each in accordance with staff recommendations as reflected in the minutes of this meeting.
 - A. Consider approval of minutes for March 15, 2022 regular meeting. (City Secretary)
 - B. Consider a Resolution amending authorized representatives to Texas Local Government Investment Pool (TexPool) to add Assistant Director of Finance. (Director of Finance)
 - C. Consider an Ordinance Amending Chapter 34, Article IV "Junked Vehicles" of the City of Nacogdoches, Texas Code of Ordinances to update and streamline the regulation of junked vehicles. (Assistant Chief of Police Dan Taravella)

- D. Consider cancellation of the construction contract of the ongoing 2021 Seal Coat Project (Assistant Director of Public Works)
 - E. Consider rejecting bid for fleet vehicles. (Director of Finance)
6. REGULAR AGENDA: City Council will receive staff recommendations and public input on the following items, and may deliberate and take formal action on the item.
- A. Receive a presentation from the Texas Police Chiefs' Association by Chief Todd Hunter, Kilgore Police Department, regarding the successful completion of the TPCA Accreditation Program by the Nacogdoches Police Department. (Chief Todd Hunter)
 - B. Consider approval of a contract by and between the City of Nacogdoches and Stolz Mechanical Contractors, LLC for the 2021 SWTP Filter 7 Rehabilitation Project in a not-to-exceed amount of \$885,732.00. (Project Engineer).
 - C. Consider a resolution regarding the application of Centerpoint Energy Resources Corp., Beaumont/East Texas Division, to increase rates under the Gas Reliability Infrastructure Program; suspending Centerpoint's proposed effective date for forty-five days; and authorizing the City's continued participation in a coalition of cities known as the "Alliance Of Centerpoint Municipalities." (City Attorney)
 - D. Consider adopting a fee waiver policy to leverage the efforts of nonprofit agencies in improving the lives of the citizens of Nacogdoches in a fiscally responsible manner. (City Attorney)
 - E. Receive a report, hold a discussion and give staff direction on an ordinance or policy to provide local preferences in procurement. (City Attorney)

7. ADJOURN.



Jan Vinson, City Secretary



This agenda is posted as required under G. C. Section 551.041. For more information or a copy of the Open Meetings Act, please contact Attorney General of Texas at 1-800-252-8011; City Secretary at 936/559-2506 or visit City of Nacogdoches web site at www.nactx.us.

CERTIFICATION

I certify the notice of meeting was posted in the directory outside of City Hall, 202 E. Pilar Street, Nacogdoches, Texas on March 30, 2022 at 10 a.m. and remained posted until meeting convened.

Jan Vinson, City Secretary



City Council Meeting

Date: April 5, 2022

Agenda Item: 5.A.

PRESENTER: Jan Vinson, City Secretary

ITEM/SUBJECT: Consider approval of minutes for March 15, 2022 regular meeting. (City Secretary)

SUMMARY/BACKGROUND:

FINANCIAL:

COUNCIL PRIORITIES: THIS AGENDA ITEM IS CONSISTENT WITH THE FOLLOWING CITY COUNCIL PRIORITIES

CITY CONTACT: Jan Vinson, City Secretary
vinsonj@nactx.us
936-559-2506

ATTACHMENTS: 1. Minutes



Regular Session
Nacogdoches City Council
March 15, 2022 – 5:30 p.m.
City Council Room – City Hall
202 East Pilar Street

DRAFT

City Council present in person: Mayor Jimmy Mize, Council Members Kathleen Belanger, Roy Boldon, Amelia Fischer and Jay Anderson.

1. Called to order at 5:30 p.m.
2. Pledge of Allegiance.
3. No one spoke during Open Forum.
4. **EXECUTIVE SESSION:**
 - A. Deliberation regarding Economic Development negotiations under Government Code Section 551.087 as follows:
 1. Discuss or deliberate regarding commercial or financial information the City has received from business projects the City body seeks to have locate in the City of Nacogdoches and with which the City is conducting economic development negotiations; and
 2. Deliberate offer of financial or other incentive to business prospects described by Subdivision 1 above.
5. City Council reconvened in Regular Session at 6:16 p.m. taking no action.
6. No items removed from the Consent Agenda.
7. **CONSENT AGENDA:** Items included under Consent Agenda require little or no deliberation by Council. Approval of Consent Agenda authorizes the City Manager or his designee to proceed with conclusion of each in accordance with staff recommendations as reflected in the minutes of this meeting.
 - A. Consider approval of minutes for February 22, 2022 and March 1, 2022 regular meeting.
 - B. Consider renewal of Taxicab Franchise No. 8 to Samuel Jamison dba Nac Cab for an additional five years.

Council Member Kathleen Belanger moved approval; motion duly seconded by Council Member Jay Anderson and carried by unanimous vote.

8. **REGULAR AGENDA:**
 - A. Receive presentation from Auditors regarding the Annual Comprehensive Financial Report for fiscal year ending September 30, 3031.

Clayton Rogers, CPA, with Pattillo, Brown and Hill LLP reviewed the results of the audit. The City has received a Certificate of Excellence in Financial Reporting for the past twelve years The independent auditor's report rendered a clean opinion regarding the financial statements of the City. Mr. Rogers discussed fund balances, cash in investments, capital assets and bond refunding. He also stated that the City is in a solid financial position.

- B. Consider approval of a proposed inflation cost adjustment for City employees.

Bonita Hall, Human Resources Director, discussed the 2020 increase for employees based on a salary survey and the 1% cost of living adjustment given to employees in 2021. As we move into 2022 we have seen economic and political instability. The annual inflation rate in the U.S. accelerated to 7.5% in January 2022. As a result of these rising costs staff is recommending an inflation cost adjustment for employees which will be a onetime payment. Ms. Hall discussed the details of the adjustment and how employees will reimburse the City if they decide to resign soon after the adjustments are paid. These funds will come from the CARES Restricted Cash Account.

Council Member Belanger asked about merit based increases and CARES funding. She also discussed how inflation is affecting everyone including our citizens and business owners. She stated

Minutes unofficial until approved by City Council

this money could be used on many other things such as helping local business, not increasing taxes, capital improvement projects, etc. Council Member Belanger believes it might be wiser to consider this onetime payment to employees at the same time City Council considers other capital improvement projects at an upcoming Special City Council meeting.

Council Member Boldon stated the employee's needs should be taken seriously and he is in favor of the proposal.

Council Member Fischer discussed previous cost of living adjustment and salary survey increases for employees. She stated City Council should lessen the load on the employees that provide essential services to our citizens by approving this onetime payment.

Council Member Anderson stated that City Council does have a responsibility to the citizens and part of that responsibility is taking care of City staff so that we can provide the services that the citizens expect. This increase is targeted at the employees that need it the most. Council Member Anderson supports this request.

Mayor Mize stated that it is difficult to decide where to spend the City's funds but retaining the City's employees is important.

Council Member Belanger would like to have seen other alternatives for these funds such as lessening the tax burden on businesses or helping local businesses. She stated she is sorry to lose \$301,000 out of the City's budget.

Council Member Amelia Fischer moved approval; motion duly seconded by Council Member Roy Boldon and carried by the following vote:

Ayes – Mayor Mize and Council Members Boldon, Fischer and Anderson

Nays – Council Member Belanger

- C. Consider an ordinance amending Ordinance No. 1881-09-21 appropriating various amounts in accordance with the budget adopted for the ensuing fiscal year beginning October 1, 2021 and ending September 30, 2022 for employee inflation adjustment payments.

Bonita Hall, Human Resources Director explained the budget amendment ordinance would allocate the monies for the inflation cost adjustment for City employees into the correct account for disbursement.

Council Member Jay Anderson moved approval; motion duly seconded by Council Member Amelia Fischer and carried by the following vote:

Ayes – Mayor Mize and Council Members Boldon, Fischer and Anderson

Nays – Council Member Belanger

- D. Consider approval of a resolution closing East Main Street for the Nacogdoches Music and Arts Festival event, April 23, 2022.

Joanna Temple, CVB Director of Sales and Promotions, stated the Music and Arts Festival is a new event to be held on April 23rd in downtown Nacogdoches. The Convention and Visitors Bureau will be working with SFA Music Preparatory Division for this event which will include music, arts and dance. The event will begin at 11 a.m. and will end at 7 p.m.

Lily Phou and Alba Madrid spoke in support of the Music and Arts Festival. Ms. Madrid discussed sponsorship opportunities for this event.

Council Member Roy Boldon moved approval; motion duly seconded by Council Member Jay Anderson and carried by unanimous vote.

- E. Discuss and consider adopting an ordinance amending Chapter 6-Animals, Article II-Care of Animals, of the Code of Ordinances, City of Nacogdoches, Texas to amend the tethering requirements for animals.

Alaina Helton, City Planner, stated that in 2021 the Texas Legislature passed SB 5 (Safe Outdoor Dogs Act) to protect unattended restrained dogs. This proposed ordinance amendment will bring the City's Code of Ordinances in alignment with state regulations.

Ms. Helton discussed eliminating tethering in the City and asked for City Council direction. City Council requested that a work session be scheduled at a future meeting to discuss eliminating tethering.

Council Member Jay Anderson moved approval; motion duly seconded by Council Member Kathleen Belanger and carried by unanimous vote.

- F. Receive a report, hold a discussion and give staff direction regarding Demolition by Neglect Ordinance.

Brian Bray, Director of Community Services, he stated that the demolition by neglect ordinance states that a person cannot let their buildings in historic districts deteriorate to the point that demolition is necessary. This ordinance was adopted in 1998 although it has not been enforced for several years. The ordinance only applies to structures in one of the five historic overlay districts. The Historic Landmark Preservation Committee (HLPC) met on March 7, 2022 and was in support of enforcing the ordinance and the five step process to work with the property owners in an effort to abate the violations before bringing the cases back to HLPC.

City Council directed staff to proceed with enforcing the ordinance utilizing the five step process.

- G. Receive a report, hold a discussion, and give staff direction regarding Nacogdoches Code Enforcement.

Alaina Helton, City Planner, discussed the importance of code enforcement, common code violations, violation process, windshield surveys and alternative programs. Ms. Helton discussed a tool lending program, community clean-up day and an abandoned property program.

City Council discussed temporary sign violations, residential home violations such as abandoned homes, land banking and taking control of abandon properties.

City Attorney Steve Kirkland discussed a process of bringing abandoned property to foreclosure quicker. He also discussed a proposal from our tax delinquency firm to implement a more aggressive foreclosure process. Things to consider are marketing the property to sell or land banking the property. Mr. Kirkland also stated the City should work with Nacogdoches ISD and Nacogdoches County to get these properties back on the tax rolls.

City Council directed staff to schedule a work session at a future City Council meeting to discuss code enforcement including abandoned properties, foreclosure on properties and tax resale.

- H. Consider approval of an ordinance establishing a residential economic development program pursuant to Chapter 380 of the Local Government Code, to be administered by the Economic Development Department.

Larissa Philpot, Economic Development Director, asked City Council to table this item for further review and discussion of the policy. Item 8-I will be presented under the City's current Chapter 380 Program and Policy.

- I. Consider approval of a resolution creating a Chapter 380 Economic Development Program and authorizing an agreement by and between the City of Nacogdoches and JBSC Development, LLC regarding development of a residential subdivision and an associated budget amendment.

Larissa Philpot-Brown, Economic Development Director, stated this proposed Chapter 380 Economic Development Agreement is with JBSC Development, LLC represented by Jake Crawford and Crawford Construction. Mr. Crawford is proposing a 143 lot subdivision on the eastern end of Park Street. He is proposing to build homes between 1,500 and 1,700 square feet at a cost of \$300,000 or more. Mr. Crawford is requesting \$8,000 per lot not to exceed 30% of his lot costs. The agreement has a five year term, and grant payment will be issued upon the issuance of a Certificate of Occupancy and a request for grant payment.

Pat Castella who lives on Logansport Street asked questions about the developer's ability to pay for the development without the City's assistance, profitability, subsidizing a high end residential subdivision and the need for subdivisions with lower priced homes for ordinary people.

Mrs. Philpot-Brown stated housing price per square foot has increased dramatically. She also stated that the grant payment is contingent upon a home being built on the a lot. Based on information from the Nacogdoches County Board of Realtors the median asking price for homes in 2021 rose 17% over 2020 and the active listings dropped 33%.

Jake Crawford stated he is hoping sell for approximately \$185 per square foot including the lot. Mr. Crawford has built several small subdivisions in Nacogdoches County. He said the infrastructure cost in the City limits make this project impossible without the incentives. Mr. Crawford also discussed the return on investment for the City.

Keith Rayburn spoke during public comment stating this is an important part of growing our community. He also discussed other developers asking for the same incentives, reassigning incentive payments and carrying this money through the budget.

Ed Pool stated he is in favor of this agreement because inventory is so low. He also said there has not been a new subdivision in the city limits in ten years and new industry is not going to come to Nacogdoches because of the housing shortage.

Olivia Kiritsy stated she is in favor of the 380 agreement. She discussed infrastructure, economic impact, social mobility and increase in median home prices.

Council Member Anderson stated he is in favor of this 380 agreement. He stated this kind of development can open the City up to economic development opportunities.

Council Member Fischer does recognize the need for housing across the board. She stated that return on investment for a company that will be making jobs available is very different than a home builder. She also discussed return on investment taking into consideration that the City will be responsible for repairs to infrastructure. Council Member Fischer stated that she does not think she can, in good conscience, say that waiting for the comprehensive plan to be developed was a good reason to postpone low income housing and also ignore it as a good reason here. No one spoke up for low income housing a few weeks ago when it was brought before Council and the need is the same.

Roy Boldon stated when he talks to City Council Members from other cities about housing issues; they say if housing and education are not done correctly growth will come to a halt.

Mayor Mize discussed Mr. Crawford's comments regarding developments in the City versus the County. If we don't have development in our City it hurts not only our taxes but it hurts our schools.

Mike Liebrum stated he has developed subdivision outside the city limits for the past 20 years and only one inside the city limits but he did not make any money on the city project. If subdivisions are to be built in the city limits then City Council will need to participate in incentive programs.

Pat Castella believes there is a double standard when low income housing is denied and high income housing projects are accepted.

Robert Flores spoke in favor of the development. He also stated we need to support our community and our schools, and housing is needed in the City.

Council Member Kathleen Belanger moved approval of the resolution waiving the Economic Investment Committee review and to modify the program grant payment to 30% or \$8,000 of the infrastructure cost, whichever is the lesser; motion duly seconded by Council Member Jay Anderson and carried by the following vote:

Ayes – Mayor Mize and Council Members Boldon, Belanger and Anderson

Nays – Council Member Fischer

9. Adjourned 9:00 p.m.

ATTEST:

Mayor Jimmy Mize
City Council
City of Nacogdoches

Jan Vinson, City Secretary



City Council Meeting

Date: April 5, 2022

Agenda Item: 5.B.

PRESENTER: Pam Curbow, Finance Director

ITEM/SUBJECT: Consider a Resolution amending authorized representatives to Texas Local Government Investment Pool (TexPool) to add Assistant Director of Finance. (Director of Finance)

SUMMARY/BACKGROUND: This resolution is required by TexPool in order to authorize the Assistant Director of Finance to complete investment transactions on behalf of the City in the absence of the Director of Finance.

FINANCIAL:

No financial impact associated with this item

COUNCIL PRIORITIES: THIS AGENDA ITEM IS CONSISTENT WITH THE FOLLOWING CITY COUNCIL PRIORITIES

Not Applicable

CITY CONTACT: Pamela Curbow, Director of Finance
curbowp@nactx.us
936-559-2526

ATTACHMENTS: 1. TexPool Resolution Amending Reps



Resolution Amending Authorized Representatives

Please complete this form to amend or designate Authorized Representatives. *This document supersedes all prior Authorized Representative forms.*

* Required Fields

1. Resolution

WHEREAS,

City of Nacogdoches

Participant Name*

7 8 0 5 3

Location Number*

("Participant") is a local government of the State of Texas and is empowered to delegate to a public funds investment pool the authority to invest funds and to act as custodian of investments purchased with local investment funds; and

WHEREAS, it is in the best interest of the Participant to invest local funds in investments that provide for the preservation and safety of principal, liquidity, and yield consistent with the Public Funds Investment Act; and

WHEREAS, the Texas Local Government Investment Pool ("TexPool / Texpool Prime"), a public funds investment pool, were created on behalf of entities whose investment objective in order of priority are preservation and safety of principal, liquidity, and yield consistent with the Public Funds Investment Act.

NOW THEREFORE, be it resolved as follows:

- That the individuals, whose signatures appear in this Resolution, are Authorized Representatives of the Participant and are each hereby authorized to transmit funds for investment in TexPool / TexPool Prime and are each further authorized to withdraw funds from time to time, to issue letters of instruction, and to take all other actions deemed necessary or appropriate for the investment of local funds.
- That an Authorized Representative of the Participant may be deleted by a written instrument signed by two remaining Authorized Representatives provided that the deleted Authorized Representative (1) is assigned job duties that no longer require access to the Participant's TexPool / TexPool Prime account or (2) is no longer employed by the Participant; and
- That the Participant may by Amending Resolution signed by the Participant add an Authorized Representative provided the additional Authorized Representative is an officer, employee, or agent of the Participant;

List the Authorized Representative(s) of the Participant. Any new individuals will be issued personal identification numbers to transact business with TexPool Participant Services.

1. Pamela Curbow Director of Finance

Name Title

9 3 6 5 5 9 2 5 2 6 curbowp@nactx.us

Phone Fax Email

Signature *Pamela Curbow*
2. Ashley Grimes Asst Director of Finance

Name Title

9 3 6 5 5 9 2 5 2 9 grimesa@nactx.us

Phone Fax Email

Signature *Ashley Grimes*
3. John Raney Senior Accountant

Name Title

9 3 6 5 5 9 2 5 3 3 raneyb@nactx.us

Phone Fax Email

Signature *John Raney*

1. Resolution (continued)

Name										Title																			
Phone										Fax										Email									
Signature																													

Pamela Curbow

Name										Title																			
Phone										Fax										Email									

Note: Document is to be signed by your Board President, Mayor or County Judge and attested by your Board Secretary, City Secretary or County Clerk.

City of Nacogdoches

Jimmy Mize

Mayor

Jan Vinson

City Secretary

2. Delivery Instructions

Page 11 of 359



City Council Meeting

Date: April 5, 2022

Agenda Item: 5.C.

PRESENTER: Dan Taravella, Assistant Police Chief

ITEM/SUBJECT: Consider an Ordinance Amending Chapter 34, Article IV "Junked Vehicles" of the City of Nacogdoches, Texas Code of Ordinances to update and streamline the regulation of junked vehicles. (Assistant Chief of Police Dan Taravella)

SUMMARY/BACKGROUND: The current ordinance was adopted in 1971 with minor amendments in 2009 and refers to old state agencies and outdated state registration requirements. This revision updates the Code of Ordinances to track with current statutes and streamlines the process for abatement of junked vehicles.

FINANCIAL:

No financial impact associated with this item

COUNCIL PRIORITIES: THIS AGENDA ITEM IS CONSISTENT WITH THE FOLLOWING CITY COUNCIL PRIORITIES

Neighborhood Revitalization and Attainable Housing

CITY CONTACT: Dan Taravella, Assistant Police Chief
taravellad@nactx.us
936-559-2610

ATTACHMENTS: 1. Ordinance

ORDINANCE NO. 1904-04-22

AN ORDINANCE AMENDING CHAPTER 34, ARTICLE IV "JUNKED VEHICLES" OF THE CITY OF NACOGDOCHES, TEXAS CODE OF ORDINANCES TO UPDATE AND STREAMLINE THE REGULATION OF JUNKED VEHICLES

WHEREAS, the current City of Nacogdoches Code of Ordinances declares junked vehicles to be a public nuisance and provides for the abatement of the nuisance after notice and hearing; and

WHEREAS, the current Code was adopted in 1971 and amended in part in 2009, and

WHEREAS, the current Code has not kept pace with changes in State statutes and regulation of automobiles, and

WHEREAS, junked vehicles continue to be a public nuisance requiring regulation and abatement by the City,

NOW, THEREFORE BE IT ORDAINED by the City Council of the City of Nacogdoches, Texas

SECTION I

All of the above recitals are found to be true and correct legislative and factual findings.

SECTION II

Sections 34-116 to 34-125 of the Code of Ordinances of the City of Nacogdoches, Texas are repealed and replaced in their entirety with the following:

Sec. 34-116. - Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Antique vehicle means a passenger *car* or truck that is at least 35 years old.

Junked vehicle means a vehicle that is self-propelled and:

- (1) Does not have an unexpired motor vehicle registration decal lawfully attached to it;
or
- (2) Is wrecked, dismantled or partially dismantled or discarded; or
- (3) Is inoperable and has remained inoperable for more than:
 - a. Seventy-two consecutive hours, if the vehicle is on public property; or
 - b. Thirty consecutive days, if the vehicle is on private property

Motor vehicle collector means a person who:

- (1) Owns one or more antique or special interest vehicles; and

- (2) Acquires, collects, or disposes of an antique or special interest vehicle or part of an antique or special interest vehicle for personal use to restore and preserve an antique or special interest vehicle for historic interest.

Special interest vehicle means a motor vehicle of any age that has not been changed from original manufacturer's specifications and, because of its historic interest, is being preserved by a hobbyist.

State Law reference— Similar provisions, V.T.C.A., Transportation Code §§ 683.071, 683.077(b).

Sec. 34-117. - Public nuisance declared.

- (a) A junked vehicle, including a part of a junked vehicle, that is visible from a public place or public right-of-way:
 - (1) Is detrimental to the safety and welfare of the public;
 - (2) Tends to reduce the value of private property;
 - (3) Invites vandalism;
 - (4) Creates a fire hazard;
 - (5) Is an attractive nuisance creating a hazard to the health and safety of minors;
 - (6) Produces urban blight adverse to the maintenance and continuing development of the city; and
 - (7) Is a public nuisance.
- (b) The location or presence of any junked vehicle on any lot, tract or parcel of land or any portion thereof, occupied or unoccupied, improved or unimproved, private or public land or public right-of-way, within the city is prohibited and deemed a public nuisance.
- (c) It shall be unlawful for any person to create or maintain such a public nuisance or to permit or allow the nuisance to exist on his property or by him on the property of another.

State Law reference— Similar provisions, V.T.C.A., Transportation Code § 683.072.

Sec. 34-118. - Offense.

- (a) A person commits an offense under this division if the person maintains a public nuisance described by section 34-117.
- (b) An offense under this section is a misdemeanor punishable by a fine not to exceed \$200.00.
- (c) The court shall order abatement and removal of the nuisance on conviction. Any order so entered shall take effect immediately upon conviction becoming final. If abatement is not accomplished as ordered by the court, the city is authorized to abate the nuisance and assess the reasonable costs of abatement against the guilty party.

State Law reference— Similar provisions, V.T.C.A., Transportation Code § 683.073

Sec. 34-119. - Affirmative Defense.

It is an affirmative defense to prosecution of an offense or to abatement and removal procedures of this Division if a vehicle or vehicle part is:

- (1) Completely enclosed in a building in a lawful manner and is not visible from the street or other public or private property; or
- (2) Stored or parked in a lawful manner on private property in connection with the business of a licensed vehicle dealer or junkyard, or mechanic's garage/business or that is an antique or special interest vehicle stored by a motor vehicle collector on the collector's property, if the vehicle or part and the outdoor storage area, if any, are:
 - a. Maintained in an orderly manner;
 - b. Not a health hazard; and
 - c. Screened from ordinary public view by appropriate means, including a fence, rapidly growing trees, or shrubbery; or
- (3) The only antique or special interest vehicle stored by a motor vehicle collector on the collector's residential property and it is covered by a fitted car cover that covers the full body of the car without holes or heavily worn or threadbare areas.

State Law reference— Similar provisions, V.T.C.A., Transportation Code § 683.077.

Sec. 34-120. - Enforcement.

Administration of the abatement and removal procedures shall be coordinated by the Chief of Police, Fire Chief and the Code Enforcement Officer and each of them may enter private property to examine a public nuisance, to obtain information to identify the nuisance, and to remove or direct the removal of the nuisance.

This section shall not be construed to limit the enforcement authority of the city attorney or of officers of the police department.

State Law reference— Similar provisions, V.T.C.A., Transportation Code §§ 683.074(d)&(e).

Sec. 34-121. - Notice to abate.

- (a) Whenever any such public nuisance exists in the city in violation of this division, notice of such violation shall be given, as applicable,
 - (1) to the last known registered owner of the nuisance;
 - (2) each lienholder of record of the nuisance, and
 - (3) the owner or occupant of the property on which the nuisance is located, or if the nuisance is located on public right of way, the property adjacent to the right of way.

- (b) The notice must state that the nuisance must be abated and removed not later than the 10th day after the date on which the notice was personally delivered or mailed; and any request for a hearing must be made before the ten period expires.
- (c) The notice must be personally delivered, sent by certified mail with a five-day return requested, or delivered by the United States Postal Service with signature confirmation.
- (d) If any notice is returned undelivered by the United States Postal Service, official action to abate the nuisance shall be continued to a date not earlier than the 11th day after the date of the return.
- (e) If the post office address of the last known registered owner of the nuisance is unknown, notice may be placed on the nuisance or, if the owner is located, hand delivered.

State Law reference— Similar provisions, V.T.C.A., Transportation Code § 683.075.

Sec. 34-122. - Hearing.

- (a) The city council shall conduct hearings requested by persons who received notice under section 34-121 (the “Protestant”). The hearing shall be held not earlier than the 11th day after the date of the service of notice.
- (b) At the hearing, the junked motor vehicle is presumed to be inoperable, unless demonstrated otherwise by the owner.
- (c) If the information is available at the location of the nuisance, a resolution or order requiring removal of the nuisance must include the vehicle's: Description; Vehicle identification number; and License plate number.

State Law reference— Similar provisions, V.T.C.A., Transportation Code § 683.076.

Sec. 34-123. - Hearing procedure.

The city manager shall place a matter under this division on the agenda of the city council, shall give notice to the Protestant, of the time and place of the meeting of the city council, and shall invite the protestant to appear in person or by an attorney and present the reasons for his protest. If, after hearing the evidence and making such investigation as the council deems necessary, the council shall determine that the vehicle in question constitutes a nuisance, the council may order the vehicle removed from the premises as provided in section 34-124.

Sec. 34-124. - Abatement of nuisance.

- (a) If the owner or occupant of the premises or premises adjacent or the owner of the junked vehicle fails, neglects or refuses
 - (1) to either file notice of protest or to comply with the terms of any notice issued under section 34-121 or
 - (2) to abate the nuisance after the hearing as provided in section 34-123,
 the city enforcement officer shall abate such public nuisance by removing the junked vehicle from its location and transporting the vehicle to a scrapyard, a motor vehicle demolisher or a suitable disposal site.

- (b) All expenses incurred in the abatement of such nuisance and costs of preserving such vehicle prior to final disposition shall be charged against the owner of the junked vehicle or the owner or occupant of the premises or premises adjacent to the site of the nuisance. The city shall have a privileged lien on such *junked* vehicle, together with ten-percent interest on the delinquent amount from the date of impounding such vehicle.
- (c) As required by the Texas Transportation Code, no junked vehicle removed under this division shall be reconstructed or made operable after being removed by the city enforcement officer.

State Law reference— Similar provisions, V.T.C.A., Transportation Code § 683.074 and 683.078.

Sec. 34-125. - Notice to state.

The city enforcement officer shall give notice to the Texas Department of Transportation (TXDOT) not later than the fifth day after the date of disposition of any junked vehicle or vehicle part under this division.

State Law reference— Similar provisions, V.T.C.A., Transportation Code § 683.074(b)(3), (f).

SECTION III

All ordinances, resolutions, or parts thereof, that are inconsistent with any provision of this Ordinance are hereby repealed to the extent of such conflict, and the provisions of this Ordinance shall be and remain controlling as to the matter regulated.

SECTION IV

If any word, article, phrase, paragraph, sentence, clause, or provision of this Ordinance shall be held to be invalid or unconstitutional, such holding shall in no way affect other provisions or applications of this Ordinance which can be given effect without the invalid provision, and to this end the provisions of this Ordinance are declared to be severable.

SECTION V

All provisions of Chapter 34 of the Code of Ordinances of the City of Nacogdoches not specifically amended or repealed herein remain in full force and effect. This ordinance shall be and is hereby declared to be cumulative of all other ordinances of the City of Nacogdoches, and this ordinance shall not operate to repeal or affect any of such other ordinances except insofar as the provisions thereof might be inconsistent or in conflict with the provisions of this ordinance, in which event such conflicting provisions, if any, in such other ordinance or ordinances are hereby repealed.

SECTION VI

This Ordinance shall take effect immediately upon its passage.

SECTION VII

Proper Notice & Open Meeting. It is hereby officially found and determined that the meeting at which this Ordinance was passed was open to the public as required and that public notice of the time, place, and purpose of said meeting was given as required by the Open Meetings Act, Chapter 551 of the Texas Government Code.

PASSED AND APPROVED, this the ____ day of _____, 2021.

CITY OF NACOGDOCHES

By: _____
JIMMY MIZE, Mayor

ATTEST:

Jan Vinson, City Secretary

APPROVED AS TO FORM:

Steven Kirkland, City Attorney

REQUESTED BY:

Dan Taravella, Asst. Police Chief

PRESENTER: Case Opperman, Public Works Asst Director

ITEM/SUBJECT: Consider cancellation of the construction contract of the ongoing 2021 Seal Coat Project (Assistant Director of Public Works)

SUMMARY/BACKGROUND: A seal coat project was awarded to L.S. Equipment Co., Inc. in 2021 and has included street patching on thirty-four (34) residential streets throughout the City, curb repair and installation of a concrete valley gutter. The remainder of the project would include single-course surface treatment (seal coat) on each of these streets. After street patching and curb repair efforts were completed in the Fall of 2021, cooler temperatures were not conducive for the seal coating of these streets, an application which requires warmer and drier weather for extended periods. Staff suspended the contract for the winter months to allow the seal coat applications to be made during the Spring of 2022 when temperatures would allow proper curing of the seal coats. During this extended suspension, prices have increased significantly above anticipated inflation. By March, the prices of materials required for this work had been severely impacted and to install the seal coats now the contractor would be doing so at a significant financial loss. Additionally, the pre-coated rock utilized for this process is currently unavailable in Texas or Oklahoma.

After discussions with the contractor, staff recommends cancelation of the current contract. Staff will monitor material availability and attempt to complete the seal coating of these streets in a future contract this year. L.S. Equipment Co., Inc. has been an outstanding contractor for the City on several projects and canceling this contract would in no way reflect poorly on their quality of work, their ability to do the work or the relationship between the contractor and City staff. The remaining balance of the contract to be canceled is \$632,901.50 which will be utilized in the near future for street improvements.

FINANCIAL:

No financial impact associated with this item

COUNCIL PRIORITIES: THIS AGENDA ITEM IS CONSISTENT WITH THE FOLLOWING CITY COUNCIL PRIORITIES

Infrastructure

CITY CONTACT: Case Opperman, Assistant Director of Public Works
oppermanc@nactx.us
936-559-2515

ATTACHMENTS:



City Council Meeting

Date: April 5, 2022

Agenda Item: 5.E.

PRESENTER: Pam Curbow, Finance Director

ITEM/SUBJECT: Consider rejecting bid for fleet vehicles. (Director of Finance)

SUMMARY/BACKGROUND: An invitation to bid was released on February 16, 2022 for fleet vehicles. Bids were opened on March 3, 2022. One bid was received from Lufkin Ford. Unfortunately, this bid response was incomplete and therefore disqualified. Having no other bidders, staff is requesting that the bid be rejected so that we can begin the process of procuring these fleet vehicles through other means.

FINANCIAL:

No financial impact associated with this item

COUNCIL PRIORITIES: THIS AGENDA ITEM IS CONSISTENT WITH THE FOLLOWING CITY COUNCIL PRIORITIES

Not Applicable

CITY CONTACT: Pamela Curbow, Director of Finance
curbowp@nactx.us
936-559-2526

ATTACHMENTS: 1. Bid Tab Sheet



City of Nacogdoches, Texas Bid Tabulation Sheet

DATE: 3/30/2022

REQUISITION NUMBER: _____

DEPARTMENT: Finance

Item No.	Qty.	UOM	Description	BIDDER A		BIDDER B		BIDDER C	
				Unit Cost	Extension	Unit Cost	Extension	Unit Cost	Extension
1	0	ea	Incomplete Bid Package	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2	0	ea		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
3	0	ea		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4	0			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
5	0			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
TOTAL:					\$0.00	TOTAL:	\$0.00	TOTAL:	\$0.00

BIDDER A:

Company Name: Lufkin Ford
 Contact: Carl Crain - President
 Phone: 936-632-6611
 Address: 800 N. Medford Dr. Lufkin, TX 75901

Disqualified Bidder

BIDDER B:

Company Name: _____
 Contact: _____
 Phone: _____
 Address: _____

BIDDER C:

Company Name: _____
 Contact: _____
 Phone: _____
 Address: _____

TABULATED BY: Drew Flores



City Council Meeting

Date: April 5, 2022

Agenda Item: 6.A.

PRESENTER: Jim Sevey, Police Chief

ITEM/SUBJECT: Receive a presentation from the Texas Police Chiefs' Association by Chief Todd Hunter, Kilgore Police Department, regarding the successful completion of the TPCA Accreditation Program by the Nacogdoches Police Department. (Chief Todd Hunter)

SUMMARY/BACKGROUND: The Law Enforcement Accreditation Program is a voluntary process where police agencies in Texas prove their compliance with 170 Texas Law Enforcement Best Practices. These Best Practices were carefully developed by Texas Law Enforcement professionals to assist agencies in the efficient and effective delivery of service, the reduction of risk and the protection of individual's rights.

Accreditation inspections occur every four years and this is the fourth successful inspection for NPD.

FINANCIAL:

No financial impact associated with this item

COUNCIL PRIORITIES: THIS AGENDA ITEM IS CONSISTENT WITH THE FOLLOWING CITY COUNCIL PRIORITIES

Not Applicable

CITY CONTACT: Jim Sevey, Police Chief
seveyj@nactx.us
936-559-2601

ATTACHMENTS:

PRESENTER: Sam Cramer, Project Engineer

ITEM/SUBJECT: Consider approval of a contract by and between the City of Nacogdoches and Stolz Mechanical Contractors, LLC for the 2021 SWTP Filter 7 Rehabilitation Project in a not-to-exceed amount of \$885,732.00. (Project Engineer).

SUMMARY/BACKGROUND: On March 17, 2022, the City received bids for the 2021 SWTP Filter 7 Rehabilitation Project. Four (4) contractors submitted base bids as follows:

Stolz Mechanical Contractors, LLC.	\$ 785,732.00
Horton Excavating, LLC.	\$ 983,112.00
Duplichain Contractors, LLC.	\$ 1,095,532.00
Davis Construction	\$ 1,113,532.00

The main goal of this project is the rehabilitation of Filter 7 at the Surface Water Treatment Plant (SWTP), which has been out of service awaiting repairs. Rehabilitation of the filter will include improvements to the underdrains and filter media, as well as disinfection and testing. Also included in the project is the replacement of thirty (30) butterfly valves and actuators, four (4) filter effluent turbidimeters, and ten (10) ultrasonic level transmitters throughout the filter gallery.

There were two (2) additive alternate bids for this project which included recoating of piping in the Filter 1-4 pipe gallery and recoating of piping in the Filter 5-10 pipe gallery in the amounts of \$35,000.00 and \$65,000.00, respectively. These are also recommended for award.

The City has not contracted with Stolz Mechanical Contractors on any previous projects, however the engineer for this project, KSA Engineering, has reviewed the contractor's references and past work and the contractor appears to be qualified to perform the work required and capable of successfully completing the project.

It is recommended that the low bid and both additive alternate bids be awarded to Stolz Mechanical Contractors, LLC. in the total amount of \$885,732.00.

FINANCIAL:

Item is budgeted:

Account No.: 30.179.36

Account Name: *Utility Fund Construction in Progress - Water Production*

Amount: \$1,500,000.00

COUNCIL PRIORITIES: THIS AGENDA ITEM IS CONSISTENT WITH THE FOLLOWING CITY COUNCIL PRIORITIES

Infrastructure

CITY CONTACT: Sam Cramer, Project Engineer
cramers@nactx.us
936-559-2518

ATTACHMENTS:

1. Bid Award Recommendation
2. Bid Tabulation
3. Contract Documents
4. PowerPoint Presentation

March 18, 2022

Mr. Steve Bartlett, P.E.
City Engineer
City of Nacogdoches
202 Pilar Street, Suite 239
Nacogdoches, TX 75961

via email

**RE: City of Nacogdoches
2021 SWTP Filter 7 Rehabilitation Project
KSA Project No. NC.145
Bid No. 22-10-103
Award Consideration & Bid Tabulation**

Dear Mr. Bartlett:

Sealed bids were received at the City of Nacogdoches Engineering office for the above referenced project on March 17, 2022 at 2:00 PM, publicly opened, and read aloud in Conference Room 203, same location. A total of four (4) bids were received, as shown on the attached bid tabulation.

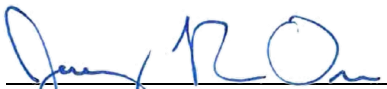
The notification and advertising process for this bid included advertisement in the local newspaper, electronic notifications to contractors and subcontractors known to perform this type of work, and presentation of the plans and specifications on www.civcastusa.com.

Stolz Mechanical Contractors, LLC of Washington, Texas submitted the low total bid in the amount of \$885,732.00

From the review of the information provided in the bid proposal, the low bidder appears qualified to perform the work required and is capable of successfully completing the project.

Sincerely,

KSA



Jeremy R. Orr, P.E.
Project Manager

Enclosure: Bid Tabulation

cc:

BID TABULATION

City of Nacogdoches
2021 SWTP Filter 7 Rehabilitation Project
KSA Project No. NC.145
Bid Date: 03/17/2022

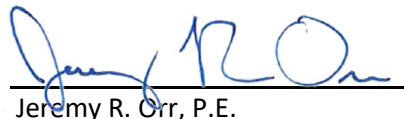
01 Stolz Mechanical Contractors, LLC 15101 FM 1155 E. Washington, TX 77880 979.551.6494	02 Horton Excavating, LLC 11111 US 69 N. Pollok, TX 75969 936.465.0192
--	--

BID ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	TOTAL PRICE	UNIT PRICE	TOTAL PRICE
BASE BID							
1.01	Mobilization, Insurance, and Bonds	LS	1	\$40,000.00	\$40,000.00	\$40,000.00	\$40,000.00
1.02	Filter Disinfection and Testing	LS	1	\$4,000.00	\$4,000.00	\$9,200.00	\$9,200.00
1.03	Plant Piping Disinfection and Testing	LS	1	\$20,000.00	\$20,000.00	\$8,625.00	\$8,625.00
1.04	Filter Underdrain and Media Improvements - Filter 7	LS	1	\$90,000.00	\$90,000.00	\$83,260.00	\$83,260.00
1.05	Filter Underdrain and Media Allowance - Filter 7	AL	1	\$93,550.00	\$93,550.00	\$93,550.00	\$93,550.00
1.06	Electronic Valve Positioner/ Controller Allowance Filters 1-10	AL	1	\$25,182.00	\$25,182.00	\$25,182.00	\$25,182.00
1.07	Filter Effluent Turbidimeters - Filters 6,7 9, and 10	EA	4	\$19,500.00	\$78,000.00	\$16,217.00	\$64,868.00
1.08	Ultrasonic Level Transmitters - Filters 1-10	EA	10	\$3,000.00	\$30,000.00	\$7,393.00	\$73,930.00
1.09	Remove Existing 24-in Butterfly Valve and Actuator	EA	3	\$1,500.00	\$4,500.00	\$5,992.00	\$17,976.00
1.10	Remove Existing 12-in Butterfly Valve and Actuator	EA	26	\$1,000.00	\$26,000.00	\$3,798.00	\$98,748.00
1.11	Remove Existing 8-in Butterfly Valve and Actuator	EA	1	\$1,000.00	\$1,000.00	\$3,335.00	\$3,335.00
1.12	Install 24-in Butterfly Valve and Actuator	EA	3	\$50,000.00	\$150,000.00	\$27,600.00	\$82,800.00
1.13	Install 12-in Butterfly Valve and Actuator	EA	26	\$6,500.00	\$169,000.00	\$12,343.00	\$320,918.00
1.14	Install 8-in Butterfly Valve and Actuator	EA	1	\$4,500.00	\$4,500.00	\$10,720.00	\$10,720.00
1.15	Miscellaneous Allowance	AL	1	\$50,000.00	\$50,000.00	\$50,000.00	\$50,000.00
					\$785,732.00		\$983,112.00
Additive Alternate 1							
2.01	Recoat All Piping in Filter 1-4 Pipe Gallery	LS	1	\$35,000.00	\$35,000.00	\$35,600.00	\$35,600.00
Additive Alternate 2							
3.01	Recoat all Piping in Filter 5-10 Pipe Gallery	LS	1	\$65,000.00	\$65,000.00	\$39,300.00	\$39,300.00
TOTAL BID AMOUNT (Base Bid & Alternates 1 &2)					\$885,732.00		\$1,058,012.00

Compiled by:

KSA

TBPE Firm Registration No. F-1356



Jeremy R. Orr, P.E.

Project Manager

BID TABULATION

City of Nacogdoches 2021 SWTP Filter 7 Rehabilitation Project KSA Project No. NC.145 Bid Date: 03/17/2022				03 Duplichain Contractors, LLC 100 Elkhart Street Alto, TX 75925 936.858.4100		04 Davis Construction 2584 Ted Trout Drive Lufkin, TX 75904 936.632.3984	
BID ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	TOTAL PRICE	UNIT PRICE	TOTAL PRICE
BASE BID							
1.01	Mobilization, Insurance, and Bonds	LS	1	\$73,600.00	\$73,600.00	\$95,000.00	\$95,000.00
1.02	Filter Disinfection and Testing	LS	1	\$3,000.00	\$3,000.00	\$15,000.00	\$15,000.00
1.03	Plant Piping Disinfection and Testing	LS	1	\$6,000.00	\$6,000.00	\$20,000.00	\$20,000.00
1.04	Filter Underdrain and Media Improvements - Filter 7	LS	1	\$61,500.00	\$61,500.00	\$125,000.00	\$125,000.00
1.05	Filter Underdrain and Media Allowance - Filter 7	AL	1	\$93,550.00	\$93,550.00	\$93,550.00	\$93,550.00
1.06	Electronic Valve Positioner/ Controller Allowance Filters 1-10	AL	1	\$25,182.00	\$25,182.00	\$25,182.00	\$25,182.00
1.07	Filter Effluent Turbidimeters - Filters 6,7 9, and 10	EA	4	\$21,250.00	\$85,000.00	\$17,350.00	\$69,400.00
1.08	Ultrasonic Level Transmitters - Filters 1-10	EA	10	\$6,200.00	\$62,000.00	\$3,390.00	\$33,900.00
1.09	Remove Existing 24-in Butterfly Valve and Actuator	EA	3	\$5,200.00	\$15,600.00	\$3,200.00	\$9,600.00
1.10	Remove Existing 12-in Butterfly Valve and Actuator	EA	26	\$4,800.00	\$124,800.00	\$2,500.00	\$65,000.00
1.11	Remove Existing 8-in Butterfly Valve and Actuator	EA	1	\$4,800.00	\$4,800.00	\$3,000.00	\$3,000.00
1.12	Install 24-in Butterfly Valve and Actuator	EA	3	\$22,200.00	\$66,600.00	\$25,500.00	\$76,500.00
1.13	Install 12-in Butterfly Valve and Actuator	EA	26	\$15,700.00	\$408,200.00	\$16,150.00	\$419,900.00
1.14	Install 8-in Butterfly Valve and Actuator	EA	1	\$15,700.00	\$15,700.00	\$12,500.00	\$12,500.00
1.15	Miscellaneous Allowance	AL	1	\$50,000.00	\$50,000.00	\$50,000.00	\$50,000.00
					\$1,095,532.00		\$1,113,532.00
Additive Alternate 1							
2.01	Recoat All Piping in Filter 1-4 Pipe Gallery	LS	1	\$70,000.00	\$70,000.00	\$56,500.00	\$56,500.00
Additive Alternate 2							
3.01	Recoat all Piping in Filter 5-10 Pipe Gallery	LS	1	\$70,000.00	\$70,000.00	\$75,800.00	\$75,800.00
TOTAL BID AMOUNT (Base Bid & Alternates 1 &2)					\$1,235,532.00		\$1,245,832.00



**BIDDING
and
CONTRACT DOCUMENTS

FOR

CONSTRUCTION SERVICES
FOR
2021 SWTP Filter 7 Rehabilitation Project**

Bid #: 22-10-103

**DUE DATE
MARCH 17, 2022 @ 2:00 P.M.**

City of Nacogdoches, Texas
City Hall
202 E. Pilar
Nacogdoches, TX 75961
936-559-2516

www.nactx.us

TABLE OF CONTENTS

INSTRUCTION TO BIDDERS

CONTRACTOR'S PROPOSAL

CONTRACTOR DATA SHEET

CERTIFICATION

GENERAL AND SPECIAL CONDITIONS OF AGREEMENT

STANDARD FORM OF AGREEMENT FOR CONSTRUCTION

DRAWINGS

INSTRUCTION TO BIDDERS

INSTRUCTIONS TO BIDDERS

1.0 NOTICE

Sealed bids addressed to the City of Nacogdoches Engineering Office, 202 Pilar St., Suite 239, Nacogdoches, TX 75961, will be received for **Construction Services for 2021 SWTP Filter 7 Rehabilitation Project** until **2:00 PM, March 17, 2022** after which time all qualified bids will be publicly opened and read aloud in **Conference Room 203**, same location. Bids received after that time will be returned unopened. No fax or email bids will be accepted.

LOCATION AND DESCRIPTION OF PROJECT

Rehabilitation of Filter 7 at the Surface Water Treatment Plant including Filter and Plant Piping disinfection and testing, Filter Underdrain and Media improvements, installation of Filter Effluent Turbidimeters and Ultrasonic Level Transmitters and removal and replacement of Butterfly Valves and Actuators, as shown on plans.

A Pre-bid Meeting will be held at the Surface Water Treatment Plant, 11618 FM 225, Nacogdoches, Texas at 10:00 AM on March 10, 2022. This meeting is not mandatory, but attendance is highly recommended.

COPIES OF BIDDING DOCUMENTS

A complete set of Bidding and Contract Documents will be made available for no charge on a flash drive (or other electronic means) at:

City of Nacogdoches City Hall
Engineering Office
202 Pilar Street, Suite 239
Nacogdoches, TX 75961

The successful bidder will be required to furnish a Payment Bond and Performance Bond in the amount of the contract. Bidders may not withdraw their Bid Proposal within 60 calendar days of the bid opening date.

Sealed bids shall be clearly marked with the words “Sealed Bid, 2021 SWTP Filter 7 Rehabilitation Project” and addressed to the City of Nacogdoches. Bids shall be delivered using one of the following methods:

Hand-deliver to:
Engineering Office
202 Pilar Street, Suite 239
Nacogdoches, TX 75961

Mail to:
Attn: Engineering
PO Box 635030
Nacogdoches, Texas 75963

Ship to (FedEx, UPS, DHL, etc.):
Attn: Engineering
202 East Pilar, Suite 239
Nacogdoches, Texas 75961

A Certified Cashier's Check or an acceptable Bid Bond in an amount of not less than five (5) percent of the total amount bid shall accompany each bid proposal.

2.0 DEFINITION OF TERMS

In order to simplify the language throughout this bid, the following definitions and those defined in the Contract Documents shall apply:

BIDDER - A contractor who submits a Bid directly to the City.

BIDDING DOCUMENTS - the Advertisement, Instructions to Bidders, the Proposal, Special Provisions, Technical Specifications and the proposed Contract Documents (including all Addenda issued prior to the receipt of Bids).

CITY – Same as City of Nacogdoches.

CITY COUNCIL – The elected officials of the City of Nacogdoches, Texas given the authority to exercise such powers and jurisdiction of all City business as conferred by the State Constitution and Laws.

CONTRACT – An agreement between the City and a Supplier to furnish supplies and/or services over a designated period of time during which repeated purchases are made of the commodity specified.

CONTRACTOR – The successful Bidder(s) of this bid request.

CITY – The government of the City of Nacogdoches, Texas.

OWNER – City of Nacogdoches.

SUB-CONTRACTOR – Any contractor hired by the Contractor or Supplier to furnish materials and services specified in this bid request.

SUCCESSFUL BIDDER - the lowest, qualified, responsible and responsive Bidder to whom the City (on the basis of the City's evaluation as hereinafter provided) makes an award.

SUPPLIER – Same as Contractor.

3.0 COPIES OF BIDDING DOCUMENTS

A complete set of Bidding Documents are available for no charge on a flash drive (or other electronic means) by contacting the following:

City of Nacogdoches City Hall
Engineering Office
202 Pilar Street, Suite 239
Nacogdoches, TX 75961

Complete sets of Bidding Documents must be used in preparing Bids; the City assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

4.0 COMMUNICATION

The Owner's Representative for all communication regarding the Bidding and Contract Documents, including specifications and drawings is:

Case Opperman, PE – Assistant Director of Public Works
oppermanc@nactx.us
(936) 559-2515

No oral questions and other interpretations or clarification will be considered official or binding.

5.0 PRE-BID CONFERENCE

A Pre-bid Meeting will be held at **Surface Water Treatment Plant, 11618 FM 225, Nacogdoches, Texas** at **10:00 AM on March 10, 2022**. This meeting is not mandatory, but attendance is highly recommended.

Representatives of the Owner will be present to discuss the project. Bidders are highly encouraged to attend and participate in the conference. Owner's Representative will transmit to all prospective bidders of record such Addenda as he considers necessary in response to questions arising at the conference.

6.0 GENERAL BID PROVISIONS

- a. The Invitation to Bid as advertised will be considered an inclusion of the specifications and conditions.
- b. Bid proposals will be submitted on the forms provided by Owner. All figures must be written in ink or typewritten. However, mistakes may be crossed out, corrections inserted adjacent thereto and initiated in ink by the person signing the proposal. Do not use a whiteout or other cover products on mistakes.
- c. Formal advertised bids indicate date and time by which the bids must be received at the designated location. Bids received after that time will be returned unopened to the bidder.
- d. The bidder will note any exceptions to the conditions of this bid. If no exceptions are stated, it will be understood that all general and specific conditions will be complied with, without exception.
- e. Bidders may request withdrawal of a posted sealed proposal prior to the scheduled bid opening time, provided the request for withdrawal is submitted to the City of Nacogdoches in writing. Owner reserves the right to reject any and all bids by reason of this request.
- f. If it becomes necessary to revise any part of this bid, a written addendum will be provided to all bidders. Owner is not bound by any oral representations, clarifications, or changes made in the written specifications by Owner's employees, unless such clarification of change is provided to bidders in written addendum form from the City of Nacogdoches.
- g. All bids will be awarded to the lowest responsible bidder. The determination of the lowest responsible bidder may involve all or some of the following factors: price, conformity to specifications, financial ability to perform the contract, previous performance, facilities and equipment, availability of repair parts, qualifications and experience, delivery promise, payment terms, compatibility as required, other costs, and other objectives and accountable factors which are reasonable.
- h. Owner may give an environmental preference to products or services that have a lesser or reduced effect on human health and the environment when compared with competing products and services that serve the same purpose. This comparison may consider raw materials acquisition, product, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product or service;
- i. Bidders may be disqualified and rejection of proposals may be recommended to the Owner for any (but not limited to) of the following causes: 1) Failure to use the proposal form furnished by the Owner; 2) Lack of signature by an authorized representative on the proposal form; 3) Failure to properly complete the proposal; 4) Evidence of collusion among proposers; 5) Omission of a certified Cashiers Check or Bid Bond (if required)

proposal guarantee; 6) Unauthorized alteration of bid form; 7) Lack of appropriate qualifications and experience relative to the size and scope of the work proposed; 8) Unsatisfactory performance; 9) Failure to complete projects or 10) Loaded or unbalanced bids. Owner reserved the right to waive any minor informality or irregularity.

- j. Whenever in this invitation, any particular materials, process and/or equipment are indicated or specified by patent, proprietary or brand name, or by name of manufacture, such wording will be deemed to be used for the purpose of facilitating description of the material, process and/or equipment desired and will be deemed to be followed by the words "or equal." Contractor shall provide exactly such items in his bid as described, unless approved pursuant to Paragraph 12.0 herein.
- k. Samples of items shall be furnished, if requested by the Owner, without charge, and if not destroyed, shall be returned upon request at the bidder's expense.
- l. It is agreed that the successful bidder will not assign, transfer, convey or otherwise dispose of the contract or its right, title or interest in or to the same, or any part thereof, without previous written consent of Owner and any sureties.
- m. Contractor must provide audited financial statements, if requested, to the City.
- n. Prices in the Bid Proposal shall be presented in the format requested (Unit Price, Lump Sum, etc.)
- o. No freight or delivery charges will be accepted unless shown on bid.
- p. Owner is exempt from State Retail Tax and Federal Excise Tax. The price bid must be net, exclusive of taxes.
- q. All bidders will comply with all Federal, State, and local laws relative to conducting business in the City of Nacogdoches. The laws of the State of Texas will govern as to the interpretation, validity, and effect of this bid, its award and any contract entered into.
- r. Advanced disclosures of any information to any particular bidder which gives that particular bidder any advantage over any other interested bidder in advance of the opening of bids, whether in response to advertising or an informal request for bids, made or permitted by a member of the governing body or an employee or representative thereof, will operate to void all proposals of that particular bid solicitation or request.
- s. Minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, creed, sex, or national origin in consideration for an award.

7.0 QUALIFICATIONS OF BIDDERS

To demonstrate qualifications to perform the Work, each Bidder must be prepared to submit within five days of City's request, written evidence, such as financial data, previous experience, present commitments and other such data as may be called for below. Each Bid must contain evidence of the Bidder's qualifications to do business in the State of Texas or covenant to obtain such qualification prior to award of the contract.

In determining a bidder's qualifications, the following factors will be considered:

- A. Work previously completed by the bidder and whether the bidder:
 - a. maintains a permanent place of business,
 - b. has adequate plant and equipment to do the work properly and expeditiously,
 - c. has paid or settled all claims for payment promptly,
 - d. has appropriate technical experience,

- e. has job references for work of similar size and scope to the project bid herein; and
- f. satisfactory performance and completion of public, or comparable, projects.

B. The safety record of the Bidder, of the corporation, partnership, or institution represented by the Bidder, or of any one acting for such firm, corporation, or partnership.

Each Bidder may be required to show that he has properly completed similar type work and that no claims are now pending against such work. No bid will be accepted from any bidder who is engaged in any work that would impair his ability to fully execute, perform or finance this work. The General/Subcontractors Experience Data Sheet following the proposal must be filled out and submitted with the bid for consideration. Failure to include a completed Data Sheet may result in the rejection of the bid.

8.0 EXAMINATION OF CONTRACT DOCUMENTS AND SITE

A. It is the responsibility of each Bidder before submitting a Bid, to:

- a. examine the Contract Documents thoroughly,
- b. visit the site to become familiar with local conditions that may affect cost, progress, performance or furnishing of the Work,
- c. consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishing of the Work,
- d. study and carefully correlate Bidder's observations with the Contract Documents, and
- e. notify the Owner's Representative of all conflicts, errors or discrepancies in the Contract Documents.
- f. visit with local utilities, including cable companies, and other entities that may have underground or above-ground infrastructure in the work area for infrastructure location.

B. Information and data reflected in the Contract Documents with respect to underground facilities at or contiguous to the site is based upon information and data from the Owner's files for its underground facilities and information and data furnished by owners of other underground facilities. Owner does not assume responsibility for the accuracy or completeness thereof.

C. Before submitting a Bid each Bidder will be responsible to make or obtain such explorations, at bidders expense and not to be added into cost of bid if accepted (tests and data concerning physical conditions - surface, subsurface and underground facilities - at or contiguous to the site, or otherwise) which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

D. The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment or disposal of spoil are to be provided by the Contractor. Contractor is responsible for obtaining all permits required for any of the before mentioned purposes prior to beginning work in accordance with the Standard Form Of Agreement, Paragraph 35 Permits and Licenses.

- E. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this section, that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

9.0 INTERPRETATIONS and ADDENDA

All questions about the meaning or intent of the Contract Documents are to be directed to the Owner. Interpretations or clarification considered necessary by the Owner's Representative in response to such questions will be issued by Addenda and mailed or otherwise delivered to all parties recorded by the Owner's Representative as having received the Bidding Documents. Questions received less than 48 hours prior to opening of Bids will not be answered. Only questions answered by formal written Addenda will be binding. No oral and other interpretations or clarification will be considered official or binding.

Addenda may also be issued to modify the Bidding Documents as deemed advisable by the City.

To properly qualify his bid, each Bidder shall, prior to filing his Bid, check the receipt of all Addenda or letters of clarification issued and acknowledge such receipt on the Proposal Form or on a separate attachment to the bid. Bids without such acknowledgment of all issued Addenda and letters of clarification may cause your bid to be considered non-responsive. Such Addenda and letters of clarification shall become a part of the executed contract and modify the contract documents accordingly.

10.0 BID SECURITY

Bidders must submit with their Bids a Cashier's Check or a Certified Check in the amount of five (5%) percent of the maximum amount of Bid payable without recourse to the City of Nacogdoches, Texas, or a bid bond in the same amount from a surety company holding permit from the State of Texas to act as a surety, as a guarantee that Bidder will enter into a contract and execute bond and guarantee forms within fifteen (15) days after notice of award of contract. Bids without checks, as stated above, or acceptable bid bond may not be considered.

Bid Security shall be in effect from the opening of the Bid and will be retained until a Bidder has executed the Agreement and furnished the required contract security, whereupon the Bid Security will be returned. A Bidder may withdraw its Bid at any time until the Agreement is signed. However, it will forfeit its Bid Security in doing so if no material mistake was made in the Bid.

The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required contract security, whereupon the Bid Security will be returned. If the Successful Bidder fails to execute and deliver the Agreement and furnish the required contract security within fifteen (15) days after the Notice of Award, the Owner may annul the Notice of Award and the Bid Security of that Bidder will be forfeited. The Bid Security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until 5 days after the Agreement is executed whereupon Bid Security furnished by such Bidders will be returned. Bid Security with Bids which are not competitive will be returned within seven days after the Bid opening.

11.0 CONTRACT TIME

The times for Substantial Completion and Final Completion are set forth in the Special Provisions and will be included in the Agreement. It will be necessary for the Successful Bidder to satisfy the City of the Bidder's ability to achieve Substantial Completion and Final Completion within the times designated in the Special Provisions.

12.0 SUBSTITUTE OR "OR EQUAL" ITEMS

The materials and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution. No substitution will be considered unless a written request for approval has been submitted by the Bidder and has been received by the Owner's Representative at least five (5) working days prior to the date for receipt of Bids or until after the contract for the work has been signed. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or work that incorporation of the substitute would require shall be included. The burden of proof of the merit of the proposed substitute is upon the Bidder. The Owner's Representative's decision of approval or disapproval of a proposed substitution shall be final. If the Owner's Representative approves any proposed substitution before the date for receipt of bids, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

13.0 BID FORM

All blanks on the Bid Form must be completed in ink or by typewriter. Unfilled blanks may result in the bid being disqualified.

Any financial amounts written in words will supersede amounts written by numbers in the Bid Form.

Bids by corporations must be executed in the corporate name by the corporate officer authorized to sign for the corporation, accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown below the signature.

Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and accompanied by evidence of authority to sign. The fiscal address of the partnership must be shown below the signature.

All names must be typed or printed below the signature.

The Bid shall contain an acknowledgment of receipt of all Addenda. The numbers and dates of which must be filled in on the Bid Form or on a separate attachment to the Bid.

The address and telephone number(s) for communication regarding the Bid must be shown.

All of the data on the GENERAL/SUBCONTRACTORS EXPERIENCE AND DATA INFORMATION sheet must be completely filled in.

14.0 SUBMISSION OF BIDS

A Bid shall be submitted at the time and place indicated in the Advertisement. It shall be enclosed in an opaque sealed envelope, marked with the project title, name and address of the Bidder. The Bid shall be accompanied by the Bid Security and other required documents. If the

Bid is sent through the mail or other delivery system the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it.

Each Bidder should, prior to filing his Bid check the receipt of all Addenda or letters of clarification issued and acknowledge such receipt on the outside of the envelope containing his Bid proposal.

15.0 MODIFICATION AND WITHDRAWAL OF BIDS

Bids may be modified or withdrawn by an appropriate document duly executed, in the described manner that a Bid must be executed and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

If prior to the award of the contract by the City Council, any Bidder files a duly signed, written notice with Owner's Representative and promptly thereafter demonstrates to the reasonable satisfaction of Owner's Representative that there was a material mistake in the preparation of his Bid, that Bidder may withdraw his Bid and the Bid Security will be returned. Thereafter, that Bidder will be disqualified from further bidding on the Work to be provided under the Contract Documents.

16.0 OPENING OF BIDS

Properly prepared Bids will be opened publicly and read aloud. A summary of the amounts of the base Bids and major alternates (if any) will be made available to Bidders after the opening of Bids. A tabulation of the Bids which are read will be available upon request as soon as it has been assembled and verified.

Bids received after the specified time of the opening will be returned unopened.

17.0 BIDS TO REMAIN SUBJECT TO ACCEPTANCE

All bids will remain subject to acceptance, for 60 days after the date of the Bid opening, but the Owner may, in its sole discretion, release any Bid and return the Bid Security prior to that date.

18.0 AWARD OF CONTRACT

Owner reserves the right to reject any and all Bids, to waive any and all informalities and irregularities not involving price, time, or changes in the Work and to disregard all non-conforming, non-responsive, unbalanced or conditional Bids. Owner reserves the right to reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by Owner. Discrepancies in the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

In evaluating Bids, the Owner will consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, time of construction, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

Owner may consider the qualifications and experience of subcontractors, suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of

subcontractors, suppliers, and other persons and organizations must be submitted as provided. Owner may also consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed subcontractors, suppliers and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

If the contract is to be awarded, it will be awarded to the lowest responsible Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project.

If the contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within 60 days after the day of the Bid opening.

Bid prices may be compared after adjusting for differences in the time designated in the Bid for Substantial Completion. The adjusting amount will be determined at the rate set forth in the Standard Form of Agreement for liquidated damages indicated for Substantial Completion for each day after the desired date appearing in the City's Standard Form of Agreement, Item 23.

19.0 CONTRACT SECURITY

Paragraph 28 BOND PROVISIONS of the Standard Form of Agreement set forth Owner's requirements as to performance and payment Bonds. When the Successful Bidder delivers the executed Agreement to the Owner, it must be accompanied by the required performance and payment Bonds.

20.0 SIGNING OF AGREEMENT

The Successful Bidder shall execute the Contract and provide proof of insurance as detailed in the Standard Form of Agreement based on Staff recommendation prior to Council action. Within

15 days of Award, all required Bonds shall be delivered to the Owner. A fully executed contract will be presented to the Successful Bidder.

21.0 PERSONAL INTEREST

Bidders shall comply with all applicable ordinances and with state law pertaining to conflict of interest and required disclosures, including, but not limited to, TEXAS LOCAL GOVERNMENT CODE, Chapter 171.

22.0 DISCLOSURE OF INTERESTED PARTIES

Contracting hereunder may require compliance with §2252.908 Texas Government Code/Disclosure of Interested Parties for contracts that (1) require an action or vote by the City Council before the contract may be signed; or (2) has a value of at least \$1 million. The law provides that a governmental entity may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the governmental entity at the time the business entity submits the signed contract to the governmental entity or state agency.

For purposes of this section, the following definitions apply:

“Interested party” means a person who has a controlling interest in a business entity with whom the City contracts or who actively participates in facilitating the contract or negotiating the terms of the contract, including a broker intermediary, advisor, or attorney for the business entity.

"Controlling interest" means: (1) an ownership interest or participating interest in a business entity by virtue of units, percentage, shares, stock, or otherwise that exceeds 10 percent; (2) membership on the board of directors or other governing body of a business entity of which the board or other governing body is composed of not more than 10 members; or (3) service as an officer of a business entity that has four or fewer officers, or service as one of the four officers most highly compensated by a business entity that has more than four officers.

"Intermediary," means a person who actively participates in the facilitation of the contract or negotiating the contract, including a broker, adviser, attorney, or representative of or agent for the business entity who:

1. Receives compensation from the business entity for the person's participation;
2. Communicates directly with the City on behalf of the business entity regarding the contract; and
3. Is not an employee of the business entity.

The process as implemented by the Texas Ethics Commission (“TEC”) is as follows:

1. The disclosure of interested parties must be performed using the [Texas Ethics Commission’s electronic filing application](#) listing each interested party of which the business entity is aware of Form 1295, obtaining a certification of filing number for this form from the TEC, and printing a copy of it to submit to the City.
2. The copy of Form 1295 submitted to the City must be notarized and contain the unique certification number from the TEC. The form must be filed with the City pursuant to §2252.908 Texas Government Code, “at the time the business entity submits the signed contract” to the City.

The City, in turn, will submit a copy of the disclosure form to the TEC not later than the 30th day after the date the City receives the disclosure of interested parties from the business entity.

CONTRACTOR'S PROPOSAL

ADDENDUM No. 1

TO: ALL PLAN HOLDERS

(VIA CIVCAST)

DATE: March 15, 2022

PROJECT: City of Nacogdoches
WTP Filter Rehabilitation
Bid No. 22-10-103
KSA Project No. NC.145

Acknowledged

*Quinn Collins Stoltz Mechanical, LLC
Vice President*

The Contract Documents are modified as described below. All bidders shall acknowledge receipt of this and all other Addenda on the Proposal Form. This addendum becomes a part of the Contract Documents. All provisions of the original Plans, Specifications, and Contract Documents shall remain in full force and effect, except as modified by this addendum.

TECHNICAL SPECIFICATIONS

SECTION 02669.2.1.D: Delete paragraphs 1, 3-5, and 9 and replace with the following:

1. Butterfly valves 3-20" shall meet or exceed the latest revision of AWWA Standard C504 for Class 150B butterfly valves and shall meet or exceed the requirements of this specification. Valves 12" and smaller shall have a working pressure of 200 psi. Valves shall meet NSF/ANSI 61/372.
3. Discs shall be 316 stainless steel ASTM A743. The disc seating edge shall be solid 316 stainless steel. Sprayed mating seating surfaces are not acceptable.
4. Valve shafts shall be ASTM A276, Type 316 stainless steel. Valve shaft seals shall be self-compensating V-type packing with a minimum of four sealing rings. One-piece molded shaft seals and O-ring shaft seals are not acceptable.
5. Seat shall be Acrylonitrile-Butadiene (NBR) or EPDM for water, EPDM for air, or as required for other services, and shall be molded in and vulcanized to the valve body. The seat shall contain an integral shaft seal protecting the valve bearings and packing from any line debris. Seats vulcanized to cartridge inserts in the valve body and seats on the disc are not acceptable.
9. Locking levers shall be available for 3-8" valves. Provision must be made for locking using a standard padlock.

SECTION 02669.2.1.E: Delete paragraphs 1, 3, and 5 and replace with the following:

1. Butterfly valves 24-72" shall meet or exceed the latest revision of ANSI/AWWA Standard C504 and ANSI/AWWA Standard C516 for 78-144". Valves shall meet the requirements of ANSI/AWWA Class 150B and valves shall meet NSF/ANSI 61/372.
3. Discs shall be 316 stainless steel ASTM A743. The disc seating edge shall be solid 316 stainless steel. Sprayed mating seating surfaces are not acceptable.
4. Seat shall be of Acrylonitrile-Butadiene (NBR) or EPDM for water, EPDM for air, or as required for other services, and shall be retained within a dovetail groove in the valve body and locked in place by an epoxy compound wedge. Compression between the seat and disc edge shall be adjustable from both the upstream and downstream side of the valve disc and the seat shall be field adjustable and replaceable without disassembly of the disc and shaft. Seats with unidirectional adjustment, seats retained in the valve body by the use of fasteners and/or retaining rings, and seats retained on the valve disc are not acceptable.

ADDENDUM No. 1 ISSUED BY:

KSA ENGINEERS, INC.


Jeremy R. Orr, P.E.
Municipal Team Leader



TBPE Firm Registration No. F-1356

CITY OF NACOGDOCHES, TEXAS
2021 SWTP FILTER REHABILITATION PROJECT

BID NO.	QTY	UNIT	DESCRIPTION (with unit price in words)	UNIT PRICE	TOTAL PRICE
BASE BID					
1.01	1	LS	Mobilization, Insurance, and Bonds (Reference Section 01200.1.2.A) at <u>forty thousand</u> Dollars and <u>zero</u> Cents per lump sum	\$ XXXXXXXX	\$ 40,000.00
1.02	1	LS	Filter Disinfection and Testing (Reference Section 01200.1.2.B) at <u>four thousand</u> Dollars and <u>zero</u> Cents per lump sum	\$ XXXXXXXX	\$ 4,000.00
1.03	1	LS	Plant Piping Disinfection and Testing (Reference Section 01200.1.2.C) at <u>twenty thousand</u> Dollars and <u>zero</u> Cents per lump sum	\$ XXXXXXXX	\$ 20,000.00
1.04	1	LS	Filter Underdrain and Media Improvements - Filter 7 (Reference Section 01200.1.2.D) at <u>Ninety thousand</u> Dollars and <u>zero</u> Cents per lump sum	\$ XXXXXXXX	\$ 90,000.00
1.05	1	AL	Filter Underdrain and Media Allowance - Filter 7 (Reference Section 01200.1.2.E) at <u>Ninety Three Thousand Five Hundred Fifty</u> Dollars and <u>Zero</u> Cents per allowance. Reference Appendix 1	\$ XXXXXXXX	\$93,550.00
1.06	1	AL	Electronic Valve Positioner/Controller Allowance - Filters 1 -10 (Reference Section 01200.1.2.F) at <u>Twenty Five Thousand One Hundred Eighty Two</u> Dollars and <u>Zero</u> Cents per allowance. Reference Appendix 1	\$ XXXXXXXX	\$25,182.00
1.07	4	EA	Filter Effluent Turbidimeters - Filters 6, 7, 9 and 10 (Reference Section 01200.1.2.G) at <u>nineteen thousand five hundred</u> Dollars and <u>zero</u> Cents per each	\$ 19,500.00	\$ 78,000.00
1.08	10	EA	Ultrasonic Level Transmitters - Filters 1- 10 (Reference Section 01200.1.2.H) at <u>three thousand</u> Dollars and <u>zero</u> Cents per each	\$ 3,000.00	\$ 30,000.00
1.09	3	EA	Remove Existing 24-in Butterfly Valve and Actuator (Reference Section 01200.1.2.I) at <u>fifteen hundred</u> Dollars and <u>zero</u> Cents per each	\$ 1,500.00	\$ 4,500.00
1.10	26	EA	Remove Existing 12-in Butterfly Valve and Actuator (Reference Section 01200.1.2.J) at <u>one thousand</u> Dollars and <u>zero</u> Cents per each	\$ 1,000.00	\$ 26,000.00
1.11	1	EA	Remove Existing 8-in Butterfly Valve and Actuator (Reference Section 01200.1.2.K) at <u>one thousand</u> Dollars and <u>zero</u> Cents per each	\$ 1,000.00	\$ 1,000.00
1.12	3	EA	Install 24-in Butterfly Valve and Actuator (Reference Section 01200.1.2.L) at <u>Fifty thousand</u> Dollars and <u>zero</u> Cents per each	\$ 50,000.00	\$ 150,000.00
1.13	26	EA	Install 12-in Butterfly Valve and Actuator (Reference Section 01200.1.2.M) at <u>Six thousand five hundred</u> Dollars and <u>zero</u> Cents per each	\$ 6500	\$ 169,000.00

CITY OF NACOGDOCHES, TEXAS
2021 SWTP FILTER REHABILITATION PROJECT

BID NO.	QTY	UNIT	DESCRIPTION (with unit price in words)	UNIT PRICE	TOTAL PRICE
1.14	1	EA	Install 8-in Butterfly Valve and Actuator (Reference Section 01200.1.2.N) at <u>Four thousand five hundred</u> Dollars and <u>zero</u> Cents per each	\$ <u>4500.00</u>	\$ <u>4500.00</u>
1.15	1	AL	Miscellaneous Allowance (Reference Section 01200.1.2.O) at <u>Fifty Thousand</u> Dollars and <u>Zero</u> Cents per allowance. Reference Section 01019.1.2	\$ XXXXXXXX	\$50,000.00
Additive Alternate 1					
2.01	1	LS	Recoat All Piping in Filter 1 -4 Pipe Gallery (Reference Section 01200.1.3.A) at <u>thirty five thousand</u> Dollars and <u>zero</u> Cents per lump sum	\$ XXXXXXXX	\$ <u>35,000.00</u>
Additive Alternate 2					
3.01	1	LS	Recoat All Piping in Filter 5 - 10 Pipe Gallery (Reference Section 01200.1.4.A) at <u>sixty five thousand</u> Dollars and <u>zero</u> Cents per lump sum	\$ XXXXXXXX	\$ <u>65,000.00</u>

BASE BID: 785,732.00

ADDITIVE ALTERNATE 1: 35,000.00

ADDITIVE ALTERNATE 2: 65,000.00

TOTAL BID AMOUNT (BASE BID AND ADDITIVE ALTERNATES 1 AND 2): 885,732.00

Notes:

1. The quantities shown above are estimates only. The bidder understands that this is a unit price bid and that payment will be made for those quantities of work constructed and accepted as meeting the Contract requirements.
2. Prices shall be provided for the base bid and all alternates listed. Bidders that fail to provide prices for each item or enter "no bid" for an item shall be considered non-responsive.
3. The Owner reserves the right to award alternates in the order that best serves their interest.
4. The Owner reserves the right to reject any and all bids.
5. Award will be made to a single contractor.
6. Refer to Section 01200 of the Specifications for descriptions of the bid items above.
7. In the event of discrepancies between written words and numbers in the bid form, written words shall govern.



BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we Stolz Mechanical Contractors, LLC of 15101 FM 1155 E Washington, TX 77880 as principal, hereinafter called the "Principal," and **SURETEC INSURANCE COMPANY**, 2103 CityWest Boulevard, Suite 1300 Houston, TX 77042, as surety, hereinafter called the "Surety," are held and firmly bound unto City of Nacogdoches of 202 Pilar St., Suite 239, Nacogdoches, TX 75961 as obligee, hereinafter called the Obligee, in the sum of Five Percent of Maximum Amount Bid (5 % of the Amount Bid) by Principal for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the principal has submitted a bid for City of Nacogdoches - Bid No. 22-10-103 - 2021 SWTP Filter 7 Rehabilitation Project; Project No. 22-10-103

NOW, THEREFORE, if the contract be timely awarded to the Principal and the Principal shall within such time as specified in the bid, enter into a contract in writing or, in the event of the failure of the Principal to enter into such Contract, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, neither Principal nor Surety shall be bound hereunder unless Obligee prior to execution of the final contract shall furnish evidence of financing in a manner and form acceptable to Principal and Surety that financing has been firmly committed to cover the entire cost of the project.

SIGNED, sealed and dated this 17th day of March, 2022.

Stolz Mechanical Contractors, LLC
(Principal)

BY: [Signature] Jeff Stolz
TITLE: President

SureTec Insurance Company

BY: [Signature]
Karen L. Baylor, Attorney-in-Fact

JOINT LIMITED POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That SureTec Insurance Company, a Corporation duly organized and existing under the laws of the State of Texas and having its principal office in the County of Harris, Texas and Markel Insurance Company (the "Company"), a corporation duly organized and existing under the laws of the state of Illinois, and having its principal administrative office in Glen Allen, Virginia, does by these presents make, constitute and appoint:

Stephen Smith, Douglas X. Brewka, Byron R. Dudley, Cory Brooke, Brannon Brooke, Ryan Kinlin, Karen L. Baylor

Their true and lawful agent(s) and attorney(s)-in-fact, each in their separate capacity if more than one is named above, to make, execute, seal and deliver for and on their own behalf, individually as a surety or jointly, as co-sureties, and as their act and deed any and all bonds and other undertaking in suretyship provided, however, that the penal sum of any one such instrument executed hereunder shall not exceed the sum of:

Twenty Five Million and 00/100 Dollars (\$25,000,000.00)

This Power of Attorney is granted and is signed and sealed under and by the authority of the following Resolutions adopted by the Board of Directors of SureTec Insurance Company and Markel Insurance Company:

"RESOLVED, That the President, Senior Vice President, Vice President, Assistant Vice President, Secretary, Treasurer and each of them hereby is authorized to execute powers of attorney, and such authority can be executed by use of facsimile signature, which may be attested or acknowledged by any officer or attorney, of the company, qualifying the attorney or attorneys named in the given power of attorney, to execute in behalf of, and acknowledge as the act and deed of the SureTec Insurance Company and Markel Insurance Company, as the case may be, all bond undertakings and contracts of suretyship, and to affix the corporate seal thereto."

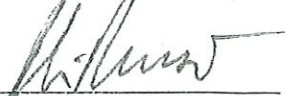
IN WITNESS WHEREOF, Markel Insurance Company and SureTec Insurance Company have caused their official seal to be hereunto affixed and these presents to be signed by their duly authorized officers on the 21st day of December, 2021.

SureTec Insurance Company

By: 
Michael C. Keimig, President



Markel Insurance Company

By: 
Robin Russo, Senior Vice President

Commonwealth of Virginia
County of Henrico SS:

On this 21st day of December, 2021 A. D., before me, a Notary Public of the Commonwealth of Virginia, in and for the County of Henrico, duly commissioned and qualified, came THE ABOVE OFFICERS OF THE COMPANIES, to me personally known to be the individuals and officers described in, who executed the preceding instrument, and they acknowledged the execution of same, and being by me duly sworn, disposed and said that they are the officers of the said companies aforesaid, and that the seals affixed to the proceeding instrument are the Corporate Seals of said Companies, and the said Corporate Seals and their signatures as officers were duly affixed and subscribed to the said instrument by the authority and direction of the said companies, and that Resolutions adopted by the Board of Directors of said Companies referred to in the preceding instrument is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand, and affixed my Official Seal at the County of Henrico, the day and year first above written.



By: 
Donna Donavant, Notary Public
My commission expires 1/31/2023

We, the undersigned Officers of SureTec Insurance Company and Markel Insurance Company, do hereby certify that the original POWER OF ATTORNEY of which the foregoing is a full, true and correct copy is still in full force and effect and has not been revoked.

IN WITNESS WHEREOF, we have hereunto set our hands, and affixed the Seals of said Companies, on the 17th day of March, 2022.

SureTec Insurance Company

By: 
M. Brent Beaty, Assistant Secretary



Markel Insurance Company

By: 
Richard R. Grinnan, Vice President and Secretary

SureTec Insurance Company

IMPORTANT NOTICE **Statutory Complaint Notice/Filing of Claims**

To obtain information or make a complaint: You may call the Surety's toll free telephone number for information or to make a complaint or file a claim at: 1-866-732-0099. You may also write to the Surety at:

SureTec Insurance Company
9737 Great Hills Trail, Suite 320
Austin, TX 78759

You may contact the Texas Department of Insurance to obtain information on companies, coverage, rights or complaints at 1-800-252- 3439. You may write the Texas Department of Insurance at:

PO Box 149104
Austin, TX 78714-9104
Fax#: 512-490-1007
Web: <http://www.tdi.texas.gov>
Email: ConsumerProtection@tdi.texas.gov

PREMIUM OR CLAIMS DISPUTES: Should you have a dispute concerning your premium or about a claim, you should contact the Surety first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

CONTRACTOR DATA SHEET

**GENERAL/SUB-CONTRACTOR'S EXPERIENCE
AND
DATA INFORMATION**

Name of Company: Stolz Mechanical Contractors, LLC

Company Years in Business: 9 years

List Municipal Projects
(Similar Projects in Size and Scope Completed in Last Five Years)

Project	Municipality	\$ Amount	Type	Date
Osage Filter Rehabilitation	City Of Amarillo	\$4,000,000.00	Rehabilitation/Upgrades	7/31/2021
SOMO MUD Aeration Basin and Walkway Improvements	City of Rockdale	\$405,000.00	Rehabilitation/Upgrades	6/1/2019
Rockdale Water Filter Rehabilitation Project	River Plantation MUD	\$650,000.00	Rehabilitation/Upgrades	12/15/2020
Mt. Carmel Pipe and Valve Replacement	City Of Waco	\$110,000.00	Rehabilitation/Upgrades	6/9/2020
Athens Water Treatment Filter Refurbishment	City of Athens	\$40,000.00	Rehabilitation/Upgrades	7/1/2018
Cameron Water Treatment Plant Filtration System Rehab	City of Cameron	\$850,000.00	Rehabilitation/Upgrades	2015

Superintendent & Project Manager Information

Include Superintendent proposed for the project, years of experience as superintendent,
project manager proposed for the project, and years experience as project manager

Superintendent	Years Experience	Projects
Quinn Collins	15 + years	Same as above

Project Manager	Years Experience	Projects
Jeff Stolz	20+ years	Same as above

References: Name 5 projects of similar work, giving owner's name, representative's name, project engineer's name, and telephone numbers for each

1. Osage Filter Rehabilitation

City Of Amarillo

Sean Beach (Plant General Manager)

(806) 444-3190

KSA Engineering

Clayton Scales

(806) 282-0303 or (806) 335-1600

2. SOMO MUD Aeration Basin and Walkway Improvements

Southern Montgomery County MUD

Tim Gordy (832) 771-6748

Cobb Fendley

Rachel Broom (713)485-8111

3. Rockdale Water Treatment Plant Filter Refurbishment

City of Rockdale

KSA Engineering

Bob Lane P.E.

512-789-4115

4. Mt. Carmel Pipe and Valve Replacement

City of Waco

Richel Simer Water Utility Services,

City of Waco (254)750-8496

5. Cameron Water Treatment Plant Filtration System Rehab

City of Cameron

Chirs Whittake- City Manager

(512) 342-2511

KSA Engineering

Bob Lane P.E. Engineer

(512) 789-4115

CERTIFICATION OF BID

The undersigned affirms that they are duly authorized to execute this Contract, that this bid has not been prepared in collusion with any other Bidder, and that the contents of this bid have not been communicated to any other Bidder prior to the official opening of this bid. To the extent this Contract is considered a Contract for goods or services subject to § 2270.002 Texas Government Code, Bidder certifies that it: i) does not boycott Israel; and ii) will not boycott Israel during the term of the Agreement. Additionally, the undersigned affirms that the firm is willing to sign the enclosed Standard Form of Agreement (if applicable).

Signed By:  Title: Vice President

Typed Name: Quinn Collins Company Name: Stolz Mechanical Contractors, LLC

Phone No: (979) 551-6494 Fax No: _____

Email: QuinnCollins@smc-tx.com

Bid Address: 15101 FM 1155 E. Washington TX 77880
P.O. Box or Street City State Zip

Remit Address: 15101 FM 1155 E. Washington, TX 77880
P.O. Box or Street City State Zip

Federal Tax ID No: EIN: 47-1643718

DUNS No: 07-591-6712

Date: 3/17/2022

**UNANIMOUS WRITTEN CONSENT OF MANAGERS OF
STOLZ MECHANICAL CONTRACTORS, LLC
A Texas Limited Liability Company**

Pursuant to the provisions of the Amended and Restated Company Operating Agreement of STOLZ MECHANICAL CONTRACTORS, LLC (the "Company") and the laws of the State of Texas, the undersigned, being the only Managers of the Company entitled to vote at a meeting of the Company Managers, authorize the following resolutions by the signature below:

RESOLVED, that all Managers entitled to vote at a meeting appeared by this Unanimous Written Consent and that a quorum was present; and

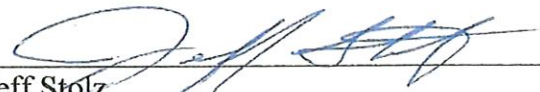
RESOLVED, that all Managers have reviewed and approved the form and content of the Amended and Restated Company Operating Agreement, dated January 1, 2020, which supersedes the original Company Operating Agreement, dated April 10, 2013, and direct that, when signed by all of the Company Members, the amended agreement shall be inserted into the Company record book; and

RESOLVED, that the reading of a report of the finances and activities of the Company was dispensed of without objection; and

RESOLVED, that all proceedings of the Manager since the last meeting of the Manager of the Company, and all acts taken by the Manager of the Company since that time, are ratified and approved.

The undersigned constitute the only Managers of the Company.

Signed effective January 1, 2020.



Jeff Stolz



Quenton Collins

Company's cash on hand exceeds its current and anticipated needs, including, without limitation, for operating expenses, debt service, repayment of advances and loans from Members, acquisitions, and a reasonable contingency reserve. If such an excess exists, the Managers shall cause the Company to distribute to the Members, in accordance with their respective Sharing Ratio, an amount in cash equal to that excess.

(b) The Managers will have no obligation to make any distributions to any of the Members so long as there is any unpaid balance of principal or interest on any loan or advance made by a Member to or on behalf of the Company, pursuant to Section 4.04.

ARTICLE 6

MANAGERS

6.01 Management by Member/Managers. (a) Except for situations in which the approval exclusively of the Members is required by this Agreement or by nonwaivable provisions of applicable law, and subject to the provisions of Section 6.02, (i) the powers of the Company shall be exercised by or under the authority of, and the business and affairs of the Company shall be managed under the direction of Managers; and (ii) the Managers may make all decisions and take all actions for the Company not otherwise provided for in this Agreement, including, without limitation, the following:

(A) entering into, making, and performing contracts, agreements, leases, and other undertakings binding the Company that may be necessary, appropriate, or advisable in furtherance of the purposes of the Company and making all decisions and waivers thereunder;

(B) opening and maintaining bank and investment accounts and arrangements, drawing checks and other orders for the payment of money, and designating individuals with authority to sign or give instructions with respect to those accounts and arrangements;

(C) maintaining the assets of the Company in good order;

(D) collecting sums due the Company;

(E) to the extent that funds of the Company are available therefor, paying debts and obligations of the Company;

(F) acquiring, utilizing for Company purposes, and Disposing of any asset of the Company;

(G) borrowing money or otherwise committing the credit of the Company for Company activities and voluntary prepayments or extensions of debt;

(H) selecting, removing, and changing the authority and responsibility of lawyers, accountants, and other advisers and consultants;

(I) obtaining insurance for the Company;

(J) determining distributions of Company cash and other property as provided in Section 5.02;

(K) establishing a seal for the Company;

(L) authorizing the actions of an agent for the Company under a power of attorney; and

(M) designating persons with authority to act on behalf of the Company.

(b) Notwithstanding the provisions of Section 6.01(a), the Managers may not cause the Company to do any of the following without complying with the applicable requirements set forth below:

(i) sell, lease, exchange or otherwise dispose of (other than by way of a pledge, mortgage, deed of trust or trust indenture) all or substantially all the Company's property and assets (with or without good will), other than in the usual and regular course of the Company's business, without complying with the applicable procedures set forth in the Act and the TBOC; or

(ii) be a party to (A) a merger, or (B) an exchange or acquisition of the type described in Article 10.06 of the Act, without complying with the applicable procedures set forth in the Act and the TBOC.

6.02 Actions by Managers, Committee, Delegation of Authority and Duties. (a) In managing the business and affairs of the Company and exercising its powers, the Managers shall act (i) collectively through meetings and written consents pursuant to Article VII; (ii) through committees pursuant to this Section 6.02(b); and (iii) through Managers to whom authority and duties have been delegated pursuant to this Section 6.02(c).

(b) The Managers may, from time to time, designate one or more committees, each of which shall be comprised of one or more Managers. Any such committee, to the extent provided in such resolution or in the Certificate or this Agreement, shall have and may exercise all of the authority of the Managers, subject to the limitations set forth in the Act and the TBOC. At every meeting of any such committee, the presence of a majority of all the members thereof shall constitute a quorum, and the affirmative vote of a majority of the members present shall be necessary for the adoption of any resolution. The Managers may dissolve any committee at any time, unless otherwise provided in the Certificate or this Agreement.

(c) The Managers may, from time to time, delegate to one or more Managers such authority and duties as the Managers may deem advisable. In addition, the Managers may assign titles (including, without limitation, president, vice president, secretary, assistant secretary, treasurer and assistant treasurer) to any such Manager. Unless the Managers decide otherwise, if the title is one commonly used for officers of a business corporation formed under the TBOC, the assignment of such title shall constitute the delegation to such Manager of the authority and duties that are normally associated with that office, subject to any specific delegation of authority and duties made pursuant to the first sentence of this Section 6.02(c). Any number of titles may be held by the same Manager. Any delegation pursuant to this Section 6.02(c) may be revoked at any time by the Managers.

(d) Any Person dealing with the Company, other than a Member, may rely on the authority of any Manager or officer in taking any action in the name of the Company without inquiry into the provisions of this Agreement or compliance herewith, regardless of whether that action actually is taken in accordance with the provision of this Agreement.

6.03 Number and Term of Office. The number of Managers of the Company shall be determined from time to time by resolution of the Managers; provided, however, that no decrease in the number of Managers that would have the effect of shortening the term of an incumbent Manager may be made by the Managers. If the Managers make no such determination, the number of Managers shall be the number set forth in the Certificate as the number of Managers constituting the initial Managers. Each Manager shall hold office for the term for which he is elected and thereafter until his successor shall have been elected and qualified, or until his earlier death, resignation or removal. Unless otherwise provided in the Certificate, Managers need not be Members or residents of the State of Texas.

6.04 Classification of Managers. The number of classes of Managers may be determined from time to time, each of which to be the number and term of each class to be determined at such time of their creation, at a meeting of Members. The whole number of Managers of the Company need not be elected annually or at any scheduled meeting of the Members. At each meeting at which the Managers are to be elected, the number of Managers equal to the number of classes whose term expires at the time of such meeting shall be elected to hold office until the next succeeding meeting at which the successors to be Managers are to be elected.

6.05 Vacancies; Removal; Resignation. Any Manager position to be filled by reason of an increase in the number of Managers or other reason may be filled by election at an annual or special meeting of Members called for that purpose. A Manager elected to fill a vacancy occurring other than by reason of an increase in the number of Managers shall be elected for the unexpired term of his predecessor in office. At any meeting of Members at which a quorum of Members is present called expressly for that purpose, or pursuant to a written consent adopted pursuant to this Agreement, any Manager may be removed, with or without cause, by a Required Interest. Any Manager may resign at any time. Such resignation shall be made in writing and shall take effect at the time specified therein, or if no time be

specified, at the time of its receipt by the remaining Managers. The acceptance of a resignation shall not be necessary to make it effective, unless expressly so provided in the resignation.

6.06 Meetings. (a) Unless otherwise required by law or provided in the Certificate or this Agreement, a majority of the total number of Managers fixed by, or in the manner provided in, the Certificate or this Agreement shall constitute a quorum for the transaction of business of the Managers, and the act of a majority of the Managers present at a meeting at which a quorum is present shall be the act of the Managers. A Manager who is present at a meeting of the Managers at which action on any Company matter is taken shall be presumed to have assented to the action unless his dissent shall be entered in the minutes of the meeting or unless he shall file his written dissent to such action with the Person acting as secretary of the meeting before the adjournment thereof or shall deliver such dissent to the Company immediately after the adjournment of the meeting. Such right to dissent shall not apply to a Manager who voted in favor of such action.

(b) Meetings of the Managers may be held at such place or places as shall be determined from time to time by resolution of the Managers. At all meetings of the Managers, business shall be transacted in such order as shall from time to time be determined by resolution of the Managers. Attendance of a Manager at a meeting shall constitute a waiver of notice of such meeting, except where a Manager attends a meeting for the purpose of objecting to the transaction of any business on the ground that the meeting is not lawfully called or convened.

(c) In connection with any annual meeting of Members at which Managers were elected, the Managers may, if a quorum is present, hold its first meeting for the transaction of business immediately after and at the same place as such annual meeting of the Members. Notice of such meeting at such time and place shall not be required.

(d) Regular meetings of the Managers shall be held at such times and places as shall be designated from time to time by resolution of the Managers. Notice of such regular meetings shall not be required.

(e) Special meetings of the Managers may be called by any Manager on at least 24 hours notice to each other Manager. Such notice need not state the purpose or purposes of, nor the business to be transacted at, such meeting, except as may otherwise be required by law or provided for by the Certificate or this Agreement.

6.07 Approval or Ratification of Acts or Contracts by Members. The Managers in their discretion may submit any act or contract for approval or ratification at any annual meeting of the Members, or at any special meeting of the Members called for the purpose of considering any such act or contract, and any act or contract that shall be approved or be ratified by a Required Interest shall be as valid and as binding upon the Company and upon all the Members as if it shall have been approved or ratified by every Member of the Company.

6.08 Action by Written Consent, Telephone Conference or Other Remote Communications Technology. Any action permitted or required by the Act, the TBOC, the

CONDITIONS OF AGREEMENT

CONDITIONS OF AGREEMENT

CONTRACT DOCUMENTS

STANDARD SPECIFICATIONS FOR CONSTRUCTION--CITY OF NACOGDOCHES

FACILITIES: All building construction and related installations shall conform to the City's latest adopted editions of the International Building Code, National Electric Code, and the Uniform Plumbing Code and the Nacogdoches Standards for the Design and Construction of Public Improvements. All other City of Nacogdoches codes and ordinances shall also apply.

CIVIL CONSTRUCTION: These specifications shall be used in conjunction with the City of Nacogdoches' Standard Specifications of Water and Sewer Construction and Street Construction and is hereby incorporated by reference. All City of Nacogdoches codes and ordinances shall apply.

Any discrepancies between the City standards and these specifications shall be clarified per the instructions in Paragraph 9.0, "INTERPRETATIONS AND ADDENDA" in the instructions to Bidders.

GENERAL CONDITIONS OF AGREEMENT

The Standard Form of Agreement between Owner and Contractor shall be governing conditions of this contract.

SPECIAL PROVISIONS OF AGREEMENT

- A. MEASUREMENTS: All work not specifically set forth as a pay item in the Proposal shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the various unit prices listed in the Proposal.
- B. QUANTITIES: Where unit quantities are shown on each bid item of the Proposal, they shall be construed to represent approximate quantities of Work to be completed. Final quantities will be determined by measurement on the site of the completed Work. Work performed outside of specified limits will not be included in final measurement. Bidders are hereby notified that no incidental items of the Work will be paid for unless it is listed in the Proposal form as a pay item.
- C. EXPLOSION, COLLAPSE AND UNDERGROUND HAZARDS (XCU): Contracts where trenching depths exceed twelve (12) feet shall require additional coverage for the following General Liability hazards:

<u>Explosion</u>	Applies to blasting operations
<u>Collapse</u>	Applies to excavation and grading work adjacent to structure
<u>Underground</u>	Applies to excavation, burrowing, trenching, tunneling, etc. For example, severing an electrical line during excavation operations.

An additional premium may be assessed by contractor's insurance provider. Successful contractor is responsible for assessing depth based on plans and specifications contained herein.

- D. **TRAFFIC CONTROL.** When work is performed in or immediately adjacent to a public street right-of-way, the Contractor shall submit to the City Engineer a traffic control plan for each public right-of-way he enters prior to the pre-construction meeting. This plan shall be in conformance to the Texas Manual on Uniform Traffic Control Devices. Once reviewed, the plans will be returned to the Contractor with comments.

Approved Traffic Control Plans shall be in the possession of the contractor on site during all work within the designated right of way.

- E. **MATERIAL STAGING.** Contractor is responsible for identifying and securing a suitable site for the storage of materials and other construction related items unless such a site is specifically identified in the plans.
- F. **PERMITS.** Contractor will be required to get permits pursuant to contract documents; however, the city will waive the fees.
- G. **STORMWATER PERMIT.** For construction areas disturbing more than one (1) acre of land, Contractor shall provide a Storm Water Pollution Prevention Plan and all related inspections, rain gages, signage, subsidiary to the contract.
- H. **SURVEY.** The Owner will provide a one-time survey staking of key construction points, bench marks, horizontal controls, building corners, or utility appurtenances as deemed necessary by the City Engineer. Additional construction staking, or replacement staking, will be at the contractor's expense.
- I. **CONTRACTOR PARKING and BATHROOMS.** Unless noted otherwise in the bid documents and plans, the installation of temporary bathroom facilities on the site will not be allowed. Parking for construction related vehicles, worker vehicles, and other equipment may be limited at the construction site. The Contractor should anticipate the need to provide an off-site parking subsidiary to the bid price in the contract.
- J. **FIELD OFFICES.** The Contractor will not be required to maintain a field office at the construction site. In the event that the Contractor wishes to have a temporary project office, approval will be required by the Owner. The cost for the installation of all utilities will be paid by the Contractor.
- K. **DRAINAGE AND EROSION CONTROLS.** The contractor will be responsible for designing, installing and maintaining interim drainage and erosion controls for the construction site. Surface drainage channels, culverts, or other features will be maintained by the contractor in such a way to minimize the impacts from storm water to offsite properties.

- L. CONTRACT FORMS, BONDS AND CERTIFICATES. The Standard Form of Agreement bond forms listed below will be made a part of the executed contract documents and are made a part of these specifications:

CITY OF NACOGDOCHES STANDARD FORM OF AGREEMENT BETWEEN THE
OWNER AND THE CONTRACTOR

PERFORMANCE BOND

PAYMENT BOND

These forms are not to be filled in by the bidder at the time of submitting his proposal.

STANDARD FORM OF AGREEMENT FOR CONSTRUCTION

CITY OF NACOGDOCHES CONSTRUCTION AGREEMENT

This Agreement is entered into by and between the **City of Nacogdoches**, a Texas home-rule municipal corporation (the "City") and **Stolz Mechanical Contractors, LLC**, a limited liability corporation (the "Contractor"), for **Construction Services for 2021 SWTP Filter 7 Rehabilitation Project** located in Nacogdoches, Texas (the "Project").

1. DEFINITIONS

1.01. Calendar Day. A "calendar day" is any day of the week or month, no days being excepted.

1.02. City. Whenever the word "City" is used, it shall mean and be understood as referring to the City of Nacogdoches, Texas.

1.03. City's Representative. Whenever the words "City's Representative" or "Representative" are used, it shall mean and be understood as referring to the City Manager or his delegate, who shall act as City's agent. The City's Representative may inspect and issue instructions but shall not directly supervise the Contractor.

1.04. Contract Amount. The term "Contract Amount" shall mean the amount of Contractor's lump sum base bid proposal, together with all alternates, as accepted by the City in accordance with the Contractor's Proposal. In the case of a unit price contract, Contract Amount shall mean the sum of the product of all unit prices times the respective estimated final quantities of work, for all base bid and alternates, as accepted by the City.

1.05. Contract Documents. The term "Contract Documents" shall mean those documents listed in Paragraph 2.01.

1.06. Contractor. Whenever the word "Contractor" is used, it shall mean the person(s), partnership, or corporation who has agreed to perform the work embraced in this Agreement and the other Contract Documents.

1.07. Extra Work. The term "Extra Work" shall mean and include work that is **not** covered or contemplated by the Contract Documents but that may be required by City's Representative and approved by the City in writing **prior** to the work being done by the Contractor.

1.08. Final Completion. The term "Final Completion" shall mean that all the work has been completed, all final punch list items have been inspected and satisfactorily completed, all payments to materialmen and subcontractors have been made, all documentation and warranties have been submitted, and all closeout documents have been executed and approved by the City.

1.09. Interpretation of Phrases. Whenever the words "directed", "permitted", "designated", "required", "considered necessary", "prescribed", or words of like import are used, it is understood that the direction, requirement, permission, order, designation, or prescription of City's Representative is intended. Similarly, the words "approved", "acceptable", "satisfactory", or words of like import shall mean approved by, accepted by, or satisfactory to City's Representative.

1.10. Nonconforming work. The term "nonconforming work" shall mean work or any part thereof that is rejected by City's Representative as not conforming with the Contract Documents.

1.11. Parties. The "parties" are the City and the Contractor.

1.12. Project. The term "Project" shall mean and include all that is required to obtain a final product that is acceptable to the City. The term "work" shall have like meaning.

1.13. Subcontractor. The term "subcontractor" shall mean and include only those hired by and having a direct contact with Contractor for performance of work on the Project. The City shall have no responsibility to any subcontractor employed by a Contractor for performance of work on the Project, and all subcontractors shall look exclusively to the Contractor for any payments due.

1.14. Substantially Completed. The term "Substantially Completed" means that in the opinion of the City's Representative the Project, including all systems and improvements, is in a condition to serve its intended purpose but still may require minor miscellaneous work and adjustment. Final payment of the Agreement Price, including retainage, however, shall be withheld until Final Completion and acceptance of the work by the City. Acceptance by the City shall not impair or waive any warranty obligation of Contractor.

1.15. Work. The term "work" as used in this Agreement shall mean and include all that is required herein to obtain a final product that is acceptable to the City. The term "Project" shall have like meaning. This Project includes the following: **Construction Services for 2021 SWTP Filter 7 Rehabilitation Project** located in Nacogdoches, Texas.

1.16. Working Day. A "working day" means any day not including Saturdays, Sundays, or legal holidays.

2. **CONTRACT DOCUMENTS**

2.01. The Contract Documents and their priority shall be as follows:

- 2.01.01. This signed Agreement
- 2.01.02. Addendum to this Agreement
- 2.01.03. General Conditions
- 2.01.04. Special Conditions
- 2.01.05. Technical specifications
- 2.01.06. Drawings
- 2.01.07. Instructions to Bidders and any other notices to Bidders or Contractor
- 2.01.08. Performance bond, Payment bonds, Bid bonds and Special bonds
- 2.01.09. Contractor's Proposal

2.02. Where applicable, the Contractor will be furnished three (3) sets of plans, drawings, specifications, and related Contract Documents for its use during construction. Plans and specifications provided for use during construction shall be furnished directly to the Contractor only.

2.03. The Contractor shall distribute copies of the plans and specifications to suppliers and subcontractors as necessary. The Contractor shall keep one (1) copy of the plans and specifications accessible at the work

site with the latest revisions noted thereon. For proper execution of the work contemplated by this Agreement, additional sets of drawings, plans and specifications may be purchased by the Contractor.

2.04. All drawings, specifications, and copies thereof furnished by the City shall not be re-used on other work, and with the exception of one (1) copy of the signed Contract Documents, all documents, including sets of the plans and specifications and “as built” drawings, are to be returned to the City on request at the completion of the work. All Contract Documents, models, mockups, or other representations are the property of the City. In the event of inconsistencies within or between parts of the Contract Documents, the Contractor shall (1) provide the better quality or greater quantity of Work, or (2) comply with the more stringent requirement, either or both in accordance with the City’s interpretation. The terms and conditions of this Clause 2.04, however, shall not relieve the Contractor of any of the obligations set forth in Paragraphs 8.01. and 8.02.

3. AWARD OF CONTRACT

3.01. Upon the award of the contract by the City Council, the parties shall execute this Agreement, and the Contractor shall deliver to City's Representative all documents, bonds, and certificates of insurance required herein.

3.02. **Time is of the essence in this Agreement.** Accordingly, the Contractor shall be prepared to perform the work in the most expedient and efficient possible manner in order to complete the work by the times specified in this Agreement for Substantial Completion and Final Completion. In addition, the Contractor's work on the Project shall be commenced on the date to be specified in the notice to proceed. The notice to proceed may be given by oral notification or set by City's Representative at the post-contract award conference. **The notice to proceed may not be given, nor may any work be commenced, until this Agreement is fully executed and complete, including all required exhibits and other attachments, particularly those required under Paragraphs 27 and 28 (Insurance & Bonds).**

3.03. **Contract Amount.** Except in the event of a duly authorized change order approved by the City as provided in this Contract, and in consideration of the Contractor’s final completion of all work in conformity with this Contract, the City shall pay the Contractor an amount not to exceed **Eight Hundred Eighty-Five Thousand Seven Hundred Thirty-Two and 00/100 Dollars (\$885,732.00).**

4. CITY'S REPRESENTATIVE

4.01. The Contractor shall forward all communications, written or oral, to the City through the City's Representative.

4.02. The City's Representative may periodically review and inspect the work of the Contractor.

4.03. The City's Representative shall appoint, from time to time, such subordinate supervisors or inspectors as City's Representative may deem proper to inspect the work performed under this Agreement and ensure that said work is performed in accordance with the plans and specifications.

4.04. The Contractor shall regard and obey the directions and instructions of City's Representative, any subordinate supervisors or inspectors appointed by the City provided such directions and instructions are consistent with the obligations of this Agreement.

4.05. Should the Contractor object to any orders by any subordinate supervisor or inspector, the Contractor may, within two (2) days from receipt of such order, make written appeal to City's Representative for his decision.

5. INDEPENDENT CONTRACTOR

5.01. In all activities or services performed hereunder, the Contractor is an independent contractor and not an agent or employee of the City. The Contractor, as an independent contractor, shall be responsible for the final product contemplated under this Agreement. Except for materials furnished by the City, the Contractor shall supply all materials, equipment and labor required for the execution of the work on the Project. The Contractor shall have ultimate control over the execution of the work under this Agreement. The Contractor shall have the sole obligation to employ, direct, control, supervise, manage, discharge, and compensate all of its employees and subcontractors, and the City shall have no control of or supervision over the employees of the Contractor or any of the Contractor's subcontractors except to the limited extent provided for in this Agreement.

5.02. The Contractor shall retain personal control and shall give its personal attention to the faithful prosecution and completion of the work and fulfillment of this Agreement. The subletting of any portion or feature of the work or materials required in the performance of this Agreement shall not relieve the Contractor from its obligations to the City under this Agreement. The Contractor shall appoint and keep on the Project during the progress of the work a competent Project Manager and any necessary assistants, all satisfactory to City's Representative, to act as the Contractor's representative and to supervise its employees and subcontractors. All directions given to the Project Manager shall be binding as if given to the Contractor. Adequate supervision by competent and reasonable representatives of the Contractor is essential to the proper performance of the work, and lack of such supervision shall be grounds for suspending the operations of the Contractor and is a breach of this Agreement.

5.03. Unless otherwise stipulated, the Contractor shall provide and pay for all labor, materials, tools, equipment, transportation, facilities, and drawings, including engineering, and any other services necessary or reasonably incidental to the performance of the work by the Contractor. It shall be the responsibility of the Contractor to furnish a completed work product that meets the requirements of the City. Any additional work, material, or equipment needed to meet the intent of this specification shall be supplied by the Contractor *without* claim for additional payment, even though not specifically mentioned herein.

5.04. Any injury or damage to the Contractor or the Project caused by an act of God, natural cause, a party or entity not privy to this Agreement, or other force majeure shall be assumed and borne by the Contractor.

6. DISORDERLY EMPLOYEES

The Contractor agrees to employ only orderly and competent employees skillful in the performance of the type of work required, and agrees that whenever City's Representative shall inform the Contractor in writing that any person or persons on the work are, in his opinion, incompetent, unfaithful, or disorderly, such person or person shall be discharged from the work and shall not again be re-employed on the site or the Project without City's Representative's written permission.

7. HOURS OF WORK

The Contractor may work Monday through Friday from 7 a.m. to 6 p.m., exclusive of Saturdays, Sundays, or legal holidays. The Contractor may work overtime, weekends, and holidays only when approved in advance by the City's Representative. The time for Substantial Completion shall not be affected in any way by inclusion of this section or by the City's consent or lack of consent to work outside of the times specified in this Agreement.

8. NATURE OF THE WORK

8.01. It is understood and agreed that the Contractor has, by careful examination, studied and compared the various Drawings and other Contract Documents, satisfied itself as to the nature and location of the work, the conditions of the ground and soil, the nature of any structures, the character, quality, and quantity of the material to be utilized, the character of equipment and facilities needed for and during the prosecution of the work, the time needed to complete the work, Contractor's ability to meet all deadlines and schedules required by this Agreement, the general and local conditions, including but not limited to weather, and all other matters that in any way affect the work under this Agreement. These obligations are for the purpose of facilitating construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, any errors, inconsistencies or omissions discovered, or which reasonably should have been discovered by the Contractor shall be reported promptly to the City as a request for information in such form as the City may require. However, the Contractor shall not perform any act or do any work on the Project that places the safety of persons at risk or potentially damages materials or equipment used in the Project, and the Contractor shall do nothing that would render any test or tests erroneous.

8.02. Any design errors or omissions noted by the Contractor during this review shall be reported promptly to the City, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents. The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations, but any nonconformity discovered by or which reasonably should have been discovered or made known to the Contractor shall be reported promptly to the City.

8.03. If the Contractor fails to perform the obligations of Paragraphs 8.01. and 8.02., the Contractor shall pay such costs and damages to the City as would have been avoided if the Contractor had performed such obligations. The Contractor shall not be liable to the City for damages resulting from errors, inconsistencies or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents unless the Contractor recognized or reasonably should have recognized such error, inconsistency, omission or difference and knowingly failed to report it to the City.

9. POST-AGREEMENT AWARD MEETINGS

9.01. Prior to the commencement of the work, the parties shall meet and attend a post-agreement award meeting at the time and place determined by City's Representative. At the post-agreement award meeting, the parties shall meet, discuss, and finalize all schedules, including commencement date, and/or specifications submitted for review. No later than ten (10) days prior to the post-agreement award meeting, the Contractor shall submit to City's Representative the following documents:

- (a) Schedules of work contemplated, including the starting and ending date, as well as an indication of the completion of stages of work hereunder.
- (b) The names and addresses of all proposed subcontractors in writing.
- (c) Schedules of the starting and ending dates of subcontractors and the scope of work contemplated for subcontractors.
- (d) Name, local office, phone number and addresses and, home phone numbers for the Contractor and its Project Superintendent/Manager.
- (e) For construction projects, four (4) copies of all shop and/or setting drawings or schedules for the submission thereof.
- (f) Where applicable, materials procurement schedules and material supplier names, addresses and phone numbers.

9.02. The City's Representative, within five (5) working days after the initial post-agreement award conference or any other meetings, may submit minutes of the meeting to the Contractor. The Contractor shall thereafter have five (5) working days to review the minutes and make its objections, changes, or reductions thereto in writing. The Contractor shall thereafter sign the minutes and promptly return them to City's Representative. Where there is disagreement, City's Representative will make the final determination.

10. PROGRESS OF WORK

10.01. Unless otherwise specifically provided, the Contractor shall prosecute its work at such time and sessions, in such order of precedence, and in such manner as shall be most conducive to the economy of the Project; provided, however, that the order and time of prosecution shall be such that the Project shall be Substantially Completed in accordance with this Agreement, the plans and specifications, and within the time of completion designated in the schedules agreed upon by the parties.

10.02. Further, the parties shall be subject to the following:

- (a) The Contractor shall submit a progress schedule and payment schedule of the work contemplated by this Agreement at the initial post-agreement award meeting and subsequent meetings.
- (b) City's Representative shall be entitled to make objections to the Contractor's schedule submitted herein. The Contractor shall promptly resubmit a revised schedule to City's Representative.
- (c) The Project Superintendent/Manager shall coordinate its activities with City's Representative. If required by the City, the Contractor shall provide a weekly schedule of planned activities, which may be reviewed on a daily basis.
- (d) The Contractor shall submit, at such time as may reasonably be requested by City's Representative, additional schedules that shall list 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 the estimated dates of completion of the several parts.

(e) The Contractor shall attend additional meetings called by City's Representative upon twenty-four (24) hours written notice unless otherwise agreed in writing by the parties.

(f) When the City is having other work done, either by agreement or by its own force, City's Representative may direct the time and manner of work done under this Agreement so that conflicts will be avoided and the various work being done by and for the City shall be coordinated.

(g) In the event that it is determined by the City that the progress of the work is not in accordance with the approved progress and payment schedule, the City may so inform the Contractor and require the Contractor to take such action as is necessary to insure completion of the Project within the time specified.

10.03. The process of approving Contractor's schedules and updates to Contractor's schedules shall not constitute a warranty by the City that any non-Contractor milestones or activities will occur as set out in the Contractor's schedules. Approval of a contractor's schedules does not constitute a commitment by the City to furnish any City-furnished information or material any earlier than the City would otherwise be obligated to furnish that information or material under the Contract Documents. Failure of the Work to proceed in the sequence scheduled by Contractor shall not alone serve as the basis for a Claim for additional compensation or time. In the event there is interference with the Work which is beyond its control, Contractor shall attempt to reschedule the Work in a manner that will hold the additional time and costs beyond its control to a minimum. The Contractor shall monitor the progress of the Work for conformance with the requirements of the construction schedules and shall promptly advise the City of any delays or potential delays. In the event any schedule indicates any delays, the Contractor shall propose an affirmative plan to correct the delay. In no event shall any schedule constitute an adjustment in the Contract Time, any Milestone Date or the Contract Sum unless any such adjustment is agreed to by the City and authorized pursuant to Change Order.

10.04. **Work Stoppage.** If in the judgment of either the City or City's Representative any of the work or materials furnished is not in strict accordance with this Agreement or any portion of the work is being performed so as to create a hazardous condition, they may, in their sole discretion, order the work of the Contractor or any sub contractor wholly or partially stopped until any objectionable person, work, or material is removed from the premises. Such stoppage or suspension shall neither invalidate any of the Contractor's performance obligations under this Agreement, including the time of performance and deadlines therefore, nor will any extra charge be allowed the Contractor by reason of such stoppage or suspension.

11. SITE CONDITIONS AND MANAGEMENT

11.01. Where the Contractor is working around or in existing structures, it shall verify conditions at the site, including but not limited to, door openings and passages. Any items constructed or manufactured off-site or outside of buildings shall be done so that they are not too bulky for existing facilities. The Contractor shall provide special apparatus as required to handle any such items. All special handling equipment charges shall be at the Contractor's expense. Further, Contractor shall include in its price for the Work, all labor, materials, equipment and/or engineering services required to protect the adjacent properties and/or structures from damage due to performance of the Work.

11.02. The Contractor shall be responsible for all power, light, and water required to perform the work.

11.03. Throughout the progress of the work, the Contractor shall keep the working area free from debris of all types, and remove from premises all rubbish, resulting from any work being done by him. At the completion of the work, the Contractor shall leave the premises in a clean and finished condition. Any failure to do so may be remedied and charged back to the Contractor.

11.04. **Layout of Work.** Except as specifically provided herein, the Contractor shall lay out all work in a manner acceptable to City's Representative in accordance with applicable City of Nacogdoches codes and ordinances. City's Representative will review the Contractor's layout of all structures and any other layout work done by the Contractor at the construction meeting, or at the Contractor's request, but this review does not relieve the Contractor of the responsibility of accurately locating all work in accordance with the plans and specifications.

11.05. **Lines and Grades.** All lines and grades shall be furnished by the Contractor. Benchmarks and control stakes have been provided by the City's Representative. All benchmarks and control stakes shall be carefully preserved by the Contractor. In case of destruction or removal of the same by the Contractor, its subcontractors, or employees, such stakes, marks, etc. shall be replaced by the Contractor at the Contractor's expense. If the Contractor fails to do so, the City may do so and charge back the Contractor. Additional construction staking as needed for the work, including lines and grades, shall be the sole responsibility of the Contractor, and the Contractor shall receive no extra time or compensation therefor.

11.06. **Contractor's Structures.** The building or locating of structures for housing men or the erection of tents or other forms of protection will be permitted only at such places as City's Representative shall permit. The Contractor shall not damage the property where such structures are allowed and shall at all times maintain sanitary conditions in and about such structures in a manner satisfactory to the City. The City may charge the Contractor for any damage or injury to the City, its property, or third persons as a result of the location or use of such structures.

11.07. The Contractor and any entity over whom the Contractor has control shall not erect any sign on the Project site without the prior written consent of the City.

11.08. City may have other work related to the Project performed at the Project site during the time the Work is performed. Contractor should schedule its Work to coordinate with the work of other contractors and utilities with the understanding that some of that work may be performed at times other than as set out in the Contract Documents or as otherwise anticipated. City will endeavor to have such other work performed so as not to unduly interfere with Contractor's performance when Contractor notifies City of specific reasonable needs well in advance of those needs and where it is possible to do so. Although Contractor should anticipate some delays and interference to its sequence of Work because of work by other contractors and utilities, and will not be entitled to either an extension of time or additional compensation because of them, in the event of substantial delay caused by another contractor or a utility, after advance notice of its needs by Contractor, Contractor will be entitled to make a claim for an extension of time as provided herein.

11.09. When two or more contractors, including Contractor, are employed on related or adjacent work or obtain materials from the same material source, or when work must be completed by one contractor before another can begin, each shall conduct his operations in such a manner as not to cause any unnecessary delay or hindrance to the other. Each contractor, including Contractor if applicable, shall be responsible to the

other for all damage to work, to persons, or to property caused to the other by his operations, and for loss caused the other due to unreasonable or unjustified delays or failure to finish the work or portions thereof, or furnish materials within the time requested. Should Contractor cause damage to the work or property of any separate contractor at the Project site, or should any claim arising out of Contractor's separate contractor at the Project site, or should any claim arising out of Contractor's performance of the Work at the Project site be made by any separate contractor against Contractor, City or other consultants, or any other person, Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute. **Contractor shall, to the fullest extent permitted by applicable laws, indemnify and hold City harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of architects, attorneys and other professionals and court costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any separate contractor against City to the extent based on a claim arising out of Contractor's negligence.**

12. MATERIALS

12.01. Materials or work described in words that when so applied have well-known technical or trade meaning shall be held to refer to such recognized standards. All work shall be done and all materials furnished in strict conformity with this Agreement, the other Contract Documents, and recognized industry standards. When specific products, systems or items of equipment are referred to in the Contract Documents, any ancillary devices necessary for connecting the products, systems or items of equipment shall also be provided. When standards, codes, manufacturer's instructions and guarantees are required by the Contract Documents, the current edition at the time of Contract execution shall apply, unless another edition is specified in the Contract Documents. References to standards, codes, manufacturer's instructions and guarantees shall apply in full, except (1) they do not supersede more stringent standards set out in the Contract Documents, and (2) any exclusions or waivers that are inconsistent with the Contract Documents do not apply.

12.02. All materials shall be approved by the City prior to purchase by the Contractor. Unless otherwise specified herein, the Contractor shall purchase all materials and equipment outright and shall not subject the materials and equipment utilized in the Project to any conditional sales agreement, bailment, lease, or other agreement reserving unto seller any right, title, or interest therein. Title to all materials, but not risk of loss, shall pass to the City upon delivery to the Project.

12.03. Where the City deems it necessary to supply materials, it may furnish to the Contractor the list of materials set forth in the attached "List of City Furnished Materials". Upon receipt of said materials, the Contractor shall immediately furnish to the City a written receipt. Moreover, the Contractor shall, on behalf of the City, accept delivery of the materials set forth in the attached "List of Materials Ordered by the City". Under such circumstances, the Contractor shall promptly forward to the City for payment the supplier's invoice together with the Contractor's receipt in writing for such materials.

(a) Upon acceptance of the materials furnished or ordered by the City, the Contractor warrants that it shall properly handle, transport, store and safeguard the materials.

(b) Further, the Contractor shall repair, repaint or replace any and all materials or any part thereof damaged or stolen while in its possession. Such materials are considered to be in the Contractor's possession from the moment the Contractor either accepts delivery of the materials or

signs a receipt accepting delivery of said materials until the Project is accepted by the City's Representative.

(c) Before transporting any of the materials furnished or ordered by the City, the Contractor shall establish to the City's satisfaction that it has obtained insurance against losses, theft, damage, equal to or greater than the amounts spent by the City in securing said materials. It shall be incumbent upon the Contractor to verify the cost of materials.

(d) The City shall not be obligated to furnish materials in excess of the quantities, size, kind, and type set forth in the attached List of City Furnished Materials and List of Materials Ordered by the City. If the City furnishes, and the Contractor accepts, materials in excess thereof, the values of such excess materials shall be their actual cost as stated by the City.

(e) Upon delivery, the Contractor shall promptly receive, unload, transport, and handle all materials and equipment on the List of Materials Ordered by the City at its expense and shall be responsible for all shipping costs.

12.04. Materials and supplies shall be new and of good quality. Upon request, the Contractor shall supply proof of quality and manufacturer. No refurbished, reconditioned, or other previously utilized materials or supplies will be used without the prior signed authorization of City's Representative. The Contractor may utilize substitutes of equal quality and function only upon the prior written authorization of the City's Representative. The City's Representative may require documentation as to quality and function, including manufacturer's specifications, to insure that the proposed substitute is equal to the required material or supply. The City's Representative shall have sole discretion over the use of substitute materials and supplies. Contractor shall bear the risk of any delay in performance caused by submitting substitutions.

12.05. Only materials and equipment which are to be used directly in the Work shall be brought to and stored on the Project site by the Contractor. After equipment is no longer required for the Work, it shall be promptly removed from the Project site. Protection of construction material and equipment stored at the Project site from weather, theft, damage and all other perils is solely the responsibility of the Contractor.

13. ENTRY, OBSERVATION, TESTING & POSSESSION

13.01. The City reserves the right to enter the Project site or sites by such employee(s) or agent(s) as it may elect for the purpose of inspecting the work. The City further reserves the right to enter the Project site or sites for the purpose of performing such collateral work as the City may desire.

13.02. The City's Representative shall have the right, at all reasonable times, to observe and test the work. The Contractor shall make necessary arrangements and provide proper facilities and access for such observation and testing at any location where the work or any part thereof is in preparation or progress. The Contractor shall ascertain the scope of any observation that may be contemplated by City's Representative and shall give ample notice as to the time each part of the work will be ready for observation.

13.03. The City's Representative may require Contractor to remove, dismantle, or uncover completed work. If the work is not in accordance with the plans, specifications, or other Contract Documents, the Contractor shall pay the costs of repair and restoration of the work required to be removed, dismantled, or uncovered. Unless Contractor is obligated to provide advance notice of inspection, prior to covering up the

work, and fails to do so, if the work is in accordance with the plans, specifications, and other Contract Documents, the City shall pay the costs of repair and restoration of the work.

13.04. City shall have the right to take possession of and use any completed or partially completed portions of the Project prior to the time for completing the entire Project or such portions which may not have expired. The parties agree and understand that possession and use shall not constitute an acceptance of any work not completed in accordance with this Agreement. Further, insurance changes required to keep Contractor's insurance in effect shall be the responsibility of Contractor.

14. REJECTED WORK

14.01. All work deemed not in conformity with this Agreement as determined by the City in its sole discretion, may be rejected by the City. City's Representative may reject any work found to be defective or not in accordance with the Contract Documents, regardless of the stage of the work's completion or the time or place of discovery of such defects or inconsistencies and regardless of whether City's Representative has previously accepted the work through oversight or otherwise. Neither observations nor inspections, tests, or approvals made by City's Representative, or other persons authorized under this Agreement to make such observations, inspections, tests, or approvals, shall relieve the Contractor from the obligation to perform the work in accordance with the requirements of this Agreement and the other Contract Documents.

14.02. If the work or any part thereof is rejected by the City, it shall be deemed by City's Representative as not in conformity with this Agreement. Any remedial action required, as set forth herein, shall be at the Contractor's expense, as follows:

(a) The Contractor may be required, at the City's option, after notice from City's Representative, to remedy such work so that it shall be in full compliance with this Agreement. All rejected work or materials shall be immediately replaced in order to conform with this Agreement.

(b) If the City deems it inexpedient to correct work damaged or not done in accordance with this Agreement, an equitable deduction from the agreed sum may be made by the City at the City's sole discretion.

15. SUBCONTRACTING & SUBCONTRACTORS

15.01. The Contractor agrees that it will retain personal control and will give its personal attention to the fulfillment of this Agreement. The Contractor further agrees that subletting of any portion or feature of the work or materials required in the performance of this Agreement shall not relieve the Contractor from its full obligation to the City as provided by this Agreement.

15.02. Subcontractors must be approved by City's Representative prior to hiring or beginning any work on the Project. If City's Representative judges any subcontractor to be failing to perform the work in strict accordance with the drawings and specifications, the Contractor, after due notice, shall discharge the same, but this shall in no way release the Contractor from its obligations and responsibility under this Agreement. Every subcontractor shall be bound by the terms and provisions of this Agreement and the Contract Documents as far as applicable to their work. The Contractor shall be fully responsible to the City for the acts and omissions of its subcontractors. Nothing contained herein shall create any contractual or employment relations between any subcontractor and the City.

16. PAYMENT

16.01. The City stipulates that it is an exempt organization as defined by the Limited Sales, Excise and Use Tax Act and, as such, is exempt from the payment of the sales tax on materials and supplies used in the performance of this Contract. The Contractor shall issue exemption certificates to its suppliers and Subcontractors in lieu of said sales tax for all such materials and supplies, and said exemption certificates must comply with the State Comptroller's Ruling No. 95-0.07 and shall be subject to the provision of the State Comptroller's Ruling No. 95-0.09, effective October 1, 1969.

16.02. **Progress Payment Applications.** The Contractor shall submit applications for payment as provided for herein. Applications for payment will be processed by the City's Representative. Before the first Application for Payment, the Contractor shall submit to the City a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the City may require. This schedule, unless objected to by the City, shall be used as a basis for reviewing the Contractor's Applications for Payment. On or before the 15th day of each month, the Contractor shall submit to City's Representative, for approval or modification, a statement showing as completely as practicable the total value of the actual work performed by the Contractor and accepted by the City up to and including the last day of the *preceding* month. The statement shall also include the value of all materials not previously submitted for payment which have been delivered to the site but have not yet been incorporated into the work.

16.03. **Progress Payments.** On or before the **30th** calendar day following the City's receipt of a progress payment application made in conformity with Paragraph 16.02, the City shall pay to the Contractor the approved amount of the progress payment based on the Contractor's applications for payment, and the recommendation and approval of City's Representative. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage of work completed by the Contractor and approved by the City, but in each case less the aggregate of payments previously made, less retainage, and less amounts as City's Representative shall determine and the City may withhold in accordance with this Agreement. Upon Final Completion, including the delivery of all close out documents, such as "as built" drawings, warranties, guarantees, required additional materials, releases, operation and maintenance manuals, and acceptance of the work in accordance with this Agreement, the City shall pay the remainder of the balance due under this Agreement, less any sums withheld under other terms of this Agreement and less the retainage, which shall be retained for a period of thirty (30) calendar days from the date of Final Completion. Acceptance of retainage by Contractor shall constitute a Waiver and Release of all claims by Contractor.

16.04. **Retainage.** From each approved statement, the City shall retain until final payment, ten percent (10%), where the full contract amount is less than \$400,000.00, and five percent (5%), where the full contract amount is \$400,000.00 or more. The City may also retain from each approved statement any other sums authorized under the terms of this Agreement.

16.05. If the actual amount of work to be done and the materials to be furnished differ from estimates and where the basis for payment is the unit price method, then payment shall be for the actual amount of accepted work done and materials furnished on the Project.

16.06. Reduction in the scope or quantity of work on unit price items shall merely reduce the number of units. In the event that materials have been delivered prior to notice of such reduction, the City will have

the option either to pay freight & transportation costs and any re-stocking charges actually incurred by the Contractor or to purchase the materials. The Contractor shall never be entitled to anticipated or lost profits on the deleted or reduced portion of a job, whether bid on a unit price or lump sum basis.

16.07. The Contractor shall have the sole obligation to pay any and all charges or fees and give all notices necessary to and incidental to the lawful prosecution of the work hereunder. The Contractor shall not and shall have no authority whatsoever to obligate the City to make any payments to another party nor make any promises or representation of any nature on behalf of the City, without the specific written approval of the City.

16.08. The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the City may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

16.09. Unless otherwise provided in the Contract Documents:

- (a) allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- (b) Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Amount but not in the allowances;
- (c) whenever costs are more than or less than allowances, the Contract Amount shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Paragraph 16.9(a) and (2) changes in the Contractor's costs under Paragraph 16.9(b).

16.10. **Suspension of Payments.** The City, at any time, may suspend monthly progress payments on the work if it determines that the projected liquidated damages may exceed retainage. The City, at any time, may suspend monthly progress payments if it believes that the Contractor will not complete the work due to actual default or that the Contractor has represented or done some act that indicates that it will not complete the work in accordance with this Agreement or within the time period submitted in its bid. Provided, however, City is in no way obligated to Contractor's surety to withhold payment pursuant to the provisions of this Paragraph.

16.11. **Withhold Funds.** Regardless of any bond, the City may, on account of subsequently discovered evidence and in addition to the retainage withheld under Paragraph 16.04, withhold funds or nullify all or part of any acceptance or certificate to such extent as may be necessary to protect itself from loss on account of any of the following, or as otherwise provided in this Agreement:

- (a) Defective work.
- (b) Claims made or reasonable evidence indicating probable filing of claims by unpaid vendors or other third parties.
- (c) Failure of the Contractor to make prompt payments to subcontractors for labor or material or materialmen.
- (d) Claims made or reasonable evidence indicating claims will be made for damage to another by the Contractor.
- (e) Claims made or reasonable evidence indicating claims will be made for damage to third parties, including adjacent property owners.

- (f) Claims made or reasonable evidence indicating claims will be made for unremedied damage to property owned by the City.
- (g) City's determination of an amount of liquidated damages.
- (h) Charges made for repairs to the Contractor's defective work or repairs made by the City to correct damage to other property.
- (i) Other amounts authorized under this Agreement or under any other agreement made between City and Contractor.

Provided, however, City is in no way obligated to Contractor's surety to withhold payment pursuant to the provisions of this Paragraph.

16.12. The Parties agree that the City or the state auditor, if state funds are used to fund this contract, may conduct an audit or investigation of any entity receiving funds from the City directly or indirectly through a subcontract under the contract. The acceptance of funds under the contract or subcontract acts as acceptance of the authority of the City or the state auditor to conduct an audit or investigation in connection with those funds. An entity that is the subject of an audit or investigation must provide the City or the state auditor with access to any information the City or the auditor considers relevant to the investigation.

17. EXTRA WORK CHARGES

17.01. No changes shall be made, nor will bills for changes, alterations, modifications, deviations, and extra orders be recognized or paid for except upon the written order from authorized personnel of the City.

17.02. For "Extra Work", as defined in Paragraph 1.07 and authorized through written change orders, and pursuant to Section 252.048(d) of the Texas Local Government Code, the original contract price may not be increased by more than ***twenty-five percent (25%)***. Written change orders that do not exceed ***twenty-five percent (25%)*** of the original contract amount may be made or approved by the City Manager or his delegate if the change order is less than ***Fifty Thousand Dollars (\$50,000.00)***. Changes in excess of ***Fifty Thousand Dollars (\$50,000.00)*** must be approved by the City Council prior to commencement of the services or work. **Any requests by the Contractor for a change to the Contract Amount shall be made prior to the beginning of the work covered by the proposed change or the right to payment for Extra Work shall be waived.** No course of conduct or dealings between the parties, nor implied acceptance of alterations or additions to the Work or changes to the Contract schedule shall be the basis for any claim for an increase in compensation or change in time. Any cost incurred by Contractor in connection with any Extra Work shall be included in Contractor's requested change order and Contractor's failure to include any such cost shall act to Waive and Release any claim for such non included cost.

17.03. The Contractor shall complete all work as specified or indicated in the Contract Documents. The Contractor shall complete all Extra Work in connection therewith. All work and materials shall be in strict conformity with the specifications. The Substantial Completion of the work shall not excuse the Contractor from performing all the work undertaken, whether of a minor or major nature, and thereby completing the Project in accordance with the Contract Documents. In the event that the Contractor fails to perform the work as required for Substantial Completion or Final Completion, the City may contract with a third party to complete the work and the Contractor shall assume and pay the costs of the performance of the work as contracted.

(a) It is agreed that the Contractor shall perform all Extra Work under the direction of City's Representative when presented with a written work order signed by City.

(b) **No claim for Extra Work of any kind will be allowed unless ordered in writing by the City.** In case any orders or instructions appear to the Contractor to involve Extra Work for which it should receive compensation or an adjustment in the construction time, it shall make written request to City's Representative for a written order from City authorizing such Extra Work.

(c) Should a difference of opinion arise as to what does or does not constitute Extra Work, or as to the payment therefor, and the City insists upon its performance, then the Contractor shall proceed with the work after making written requests for written orders in a change order and shall keep adequate and accurate account of the actual field costs therefor, as provided under Method C.

(d) It is also agreed that the compensation to be paid to the Contractor for performing Extra Work 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 is agreed upon before the Extra Work is commenced, then the Contractor shall be paid the actual field cost of the work.

(e) **Method A - Unit Prices.** The Contractor agrees to perform Extra Work for the unit prices in the Contractor's Proposal. The Contractor also agrees and warrants that when it is necessary to construct units not shown in the Contract Documents, it shall construct such units for a price arrived at as follows:

(1) The cost of materials shall be determined by the invoices;

(2) The cost of labor shall be the reasonable cost thereof, as determined by the City, but in no event shall it exceed an amount determined by calculating the ratio of the total labor costs to the total costs to the total material costs in the section of the Proposal involved, and multiplying the cost of materials for the unit in question by this ratio. Provided, however, that the ratio shall be calculated for only those units that are similar to the new unit for which a price is to be determined.

(f) **Method B - Lump Sum.** The lump sum shall be reasonably close to the amount for similar work previously done or combinations of similar units. Invoices for materials used shall be provided in support of the agreed lump sum.

(g) **Method C - Actual Field Costs.** The actual field cost is hereby defined to include the cost of all applicable workmen and laborers, as well as materials, supplies, teams, trucks, rentals on machinery and equipment, for the time actually employed or used for such Extra Work, plus actual transportation charges necessarily incurred, together with other costs reasonably incurred directly on account of such Extra Work, including social security, old age benefits, maintenance bonds, public liability, property damage, worker's compensation, and all other insurance as may be required by law or ordinances or required and agreed to by the City or City's Representative. City's Representative may direct the form in which accounts of the actual field costs shall be kept and records of these

accounts shall be made available to City's Representative. Unless otherwise agreed upon, the prices for the use of machinery and equipment shall be determined by using one hundred percent (100%), unless otherwise specified, of the latest schedule of equipment and ownership expenses adopted by the Associated General Contractors of America. Where practical, the terms and prices for the use of machinery and equipment shall be incorporated in the written Extra Work order. Actual field costs shall not exceed the prevailing market price therefor within reasonable tolerances as determined by City's Representative. The amount due to Contractor for costs other than actual field costs shall be calculated in accordance with the following standards:

- (1) No indirect or consequential damages will be allowed.
- (2) All costs must be directly and specifically shown to be caused by a proven wrong. No recovery shall be based on a comparison by planned expenditures to total actual expenditures or on estimated losses of labor efficiency, or on a comparison of planned manloading to actual manloading, or any other analysis that is used to show damages indirectly.
- (3) Damages are limited to extra costs specifically shown to have been directly caused by a proven wrong.
- (4) The maximum daily limit on any recovery for delay shall be the amount established by the Contractor for job overhead costs, defined in the pay applications, divided by the total number of days specified for completion called for in the original Contract. Absent an overhead amount in the Schedule of Values, the amount estimated by Contractor for job overhead cost shall be used.

18. TIME OF COMPLETION

18.01. The date of beginning, the time for Substantial Completion and Final Completion of work as specified in this Agreement are of the essence in this Agreement.

18.02. The work embraced by this Agreement shall be commenced on the date specified in the notice to proceed. Said notice to proceed will be given in written form or set by the City's Representative at the post-award conference.

18.03. The work shall be Substantially Completed within the time bid, which shall run from the date when the notice to proceed is given by City's Representative. The Contractor has bid **180 calendar days** for the time within which it shall reach Substantial Completion of the Project.

18.04. The work shall reach Final Completion and be ready for final payment within **thirty (30) calendar days** from the date of Substantial Completion.

19. SUBSTANTIAL COMPLETION

19.01. The Contractor shall notify City's Representative when, in the Contractor's opinion, the contract is Substantially Completed. Within ten (10) calendar days after the Contractor has given City's Representative written notice that the work has been Substantially Completed, City's Representative shall inspect the work for the preparation of a final punch list.

(a) If City's Representative and the City find that the work is not Substantially Completed, then they shall so notify the Contractor who shall then complete the work. City's Representative shall not be required to provide a list of unfinished work.

(b) If the City Representative and City find that the work is Substantially Completed, the City shall issue to the Contractor its certificate of Substantial Completion.

19.02. The Substantial Completion of the work shall not excuse the Contractor from performing all of the work undertaken, whether of a minor or major nature, and thereby completing the Project in accordance with the Contract Documents.

20. FINAL COMPLETION

20.01. Contractor shall notify the City's Representative when it believes that the work has reached Final Completion as defined in Paragraph 1.08. If the City's Representative and the City accept and deems such work Finally Complete, then Contractor shall be so notified and certificates of completion and acceptance, as provided herein, shall be issued. A complete itemized statement of this Agreement account, certified by the City's Representative as correct, shall then be prepared and delivered to Contractor. Contractor or City, as the case may be, shall pay the balance due as reflected by said statement within thirty (30) calendar days.

20.02. The Contractor shall procure all required certificates of acceptance or completions issued by state, municipal, or other authorities and submit the same to the City. The City may withhold any payments due under this Agreement until the necessary certificates are procured and delivered.

20.03. Neither the final payment nor any acceptance nor certificate nor any provision of this Agreement shall relieve the Contractor of any responsibility for faulty workmanship or materials. At the option of the City, the Contractor shall remedy any defects and pay for any damage to other work which may appear after final acceptance of the work.

21. DELAYS

21.01. The Contractor, in undertaking to complete the work within the times herein fixed, has taken into consideration and made allowance for all hindrances and delays incident to such work, whether growing out of delays in securing material or workmen or delays arising from inclement weather or otherwise.

21.02. The City may, in its sole discretion, delay the work during inclement weather in order to preserve the Project, insure safety of work forces, and the preservation of materials and equipment. In such event and upon a written request from the Contractor, the City may grant an extension of time pursuant to Paragraph 22 to offset for such stoppage of the work.

21.03. In the event of delays resulting from changes ordered in the work by the City or other delays caused by the City or for the City's convenience, the Contractor may apply to the City for recovery of incidental expenses resulting from increased storage costs or other costs necessary to protect the value of the work. In no event shall any consequential or other damages be allowed or any other charges or claims be made by the Contractor for hindrances or delays resulting from any other cause.

22. EXTENSIONS OF TIME

The Contractor has submitted its proposal in full recognition of the time required for the completion of this Project, taking into consideration all factors including, but not limited to the average climatic range and industrial conditions. The Contractor has considered the liquidated damage provision of this Agreement and understands and agrees that it shall not be entitled to, nor will it request, an extension of time for either Substantial Completion or Final Completion, except when the work has been delayed by one or more of the following:

- (1) an act or neglect of the City, the City's Representative, employees of the City, or other contractors employed by the City;
- (2) by changes ordered in the work, or reductions thereto approved in writing;
- (3) by "rain days" (days with rainfall in excess of one-tenth of an inch) during the term of this Agreement that exceed the average number of rain days for such term for this locality, both as determined by the Texas A&M University weather service; or
- (4) by other causes that the City and the Contractor agree may reasonably justify delay and that were beyond the Contractor's reasonable control and ability to estimate, predict, or avoid, such as delays caused by unforeseen labor disputes, fire, natural disasters, acts of war, and other rare and unpredictable events. This term does **not** include normal delays incident to the delivery of materials, tools, or labor that reasonably could have been predicted and/or accounted for in the Contractor's proposal or decision to bid.

If one or more of the foregoing conditions is present, the Contractor may apply in writing for an extension of time, within thirty (30) days of the occurrence of the event causing the delay, submitting therewith all written justification as may be required by the City's Representative. Within ten (10) calendar days after receipt of a written request for an extension of time, which is supported by all requested documentation, the City shall, in writing and in its sole discretion, grant or deny the request. Under no circumstances shall any extension of time by the City be valid and binding unless it is in writing and in conformity with the other terms of this Agreement.

23. LIQUIDATED DAMAGES

23.01. The time for the Substantial and Final Completion of the work described herein are reasonable times for the completion of each, taking into consideration all conditions, including but not limited to the average climatic conditions and usual industrial conditions prevailing in this locality. The amount of liquidated damages for the Contractor's failure to meet the deadlines for Substantial and/or Final Completion are fixed and agreed on by the Contractor because of the impracticability and extreme difficulty in fixing and ascertaining the actual damages that the City would in such an event sustain. The amounts to be charged are agreed to be damages the City would sustain and shall be retained by the City from current periodic estimates for payment or from final payment.

23.02. As a result of the difficulty in estimation, calculation and ascertainment of City's damages due to a failure of Contractor to achieve timely completion of the Work, if the Contractor should neglect, fail, or refuse to either Substantially Complete or Finally Complete the work within the time herein specified, or any proper extension thereof granted by the City's Representative pursuant to the terms of Paragraph 22 of this Agreement, then the Contractor does hereby agree as part of the consideration for the awarding of this Agreement that the City may permanently withhold from the Contractor's total compensation the sum of

Five Hundred and no/100 DOLLARS (\$500.00) for each and every calendar day that the Contractor shall be in default after the time stipulated for Substantial Completion and/or Final Completion, not as a penalty, but as liquidated damages for the breach of this Agreement. It being specifically understood that the assessment of liquidated damages may be made for any failure to meet either or both of the deadlines specified for Substantial Completion and/or Final Completion.

24. CHARGES FOR INJURY OR REPAIR

24.01. The Contractor shall be liable for any damages incurred or repairs made necessary by reason of its work and/or caused by it. Repairs of any kind required by the City will be made and charged to the Contractor by the City.

24.02. The Contractor shall take the necessary precautions to protect any areas adjacent to its work.

24.03. The work specified consists of all work, materials, and labor required by the City to repair any damage to the property of the City, including but not limited to structures, roadways, curbs, parking areas, and sidewalks.

25. WARRANTY

25.01. Upon issuance of a certificate of Final Completion, the Contractor warrants for a period of one (1) year as follows:

The Contractor warrants that all labor and materials provided to the City under this Agreement shall be new unless otherwise approved in advance by City's Representative and that all work will be of good quality, free from faults and defects, and in conformance with this Agreement, the other Contract Documents, and recognized industry standards.

25.02. All work not conforming to these requirements, including but not limited to unapproved substitutions, may be considered defective.

25.03. This warranty is in addition to any rights or warranties expressed or implied by law and in addition to any consumer protection claims arising from misrepresentations by the Contractor.

25.04. Where more than a one (1) year warranty is specified for individual products, work, or materials, the longer warranty shall govern.

25.05. This warranty obligation shall be covered by any performance or payment bonds tendered in compliance with this Agreement.

25.06. **Defective Work Discovered During Warranty Period.** If any of the work is found or determined to be either defective, including obvious defects, or otherwise not in accordance with this Agreement within one (1) year after the date of the issuance of a certificate of Final Completion of the Work or a designated portion of the Work, whichever is longer, or within one (1) year after acceptance by the City of designated equipment, or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by this Agreement, the Contractor shall promptly correct the defective work at no cost to the City.

25.07. After receipt of written notice from the City to begin corrective work, the Contractor shall promptly begin the corrective work. The obligation to correct any defective work shall survive the termination of this Agreement. The guarantee to correct the defective work shall not constitute the exclusive remedy of City, nor shall other remedies be limited to the terms of either the warranty or the guarantee.

25.08. If within ten (10) calendar days after the City has notified the Contractor of a defect, failure, or abnormality in the work, the Contractor has not started to make the necessary corrections or adjustments, the City is hereby authorized to make the corrections or adjustments, or to order the work to be done by a third party. The cost of the work shall be paid by the Contractor or its surety.

25.09. The cost of all materials, parts, labor, transportation, supervision, special instruments, and supplies required for the replacement or repair of parts and for correction of defects shall be paid by the Contractor or by the surety.

25.10. The guarantee shall be extended to cover all repairs and replacements furnished, and the term of the guarantee for each repair or replacement shall be one (1) year after the installation or completion. The one (1) year warranty shall cover all work, equipment, and materials that are part of this Project, whether or not a warranty is specified in the individual section of the Contract Documents that prescribe that particular aspect of the work.

26. PAYMENT OF EMPLOYEES, SUBCONTRACTORS & SUPPLIERS

26.01. **Wage Rates.** Pursuant to Section 2258.023(a) of the Texas Government Code, wage rates paid by the Contractor and any subcontractor on this Project shall be not less than the general prevailing rate of per diem wages for work of a similar character in this locality as specified in the schedule of general prevailing rates of per diem wages attached hereto as Exhibit A.

26.02. **Statutory Penalty.** Pursuant to Section 2258.023(b) of the Texas Government Code, if the Contractor or any subcontractor violates the requirements of Paragraph 26.01, the Contractor or subcontractor as the case may be shall pay the City **Sixty Dollars (\$60.00)** for each worker employed for each calendar day or part of the day that the worker is paid less than the stipulated wage rates.

26.03. The Contractor and each subcontractor shall pay all of their employees engaged in work on the Project in full (less mandatory legal deductions) in cash or by check readily cashable, without discount, no less than once each week.

26.04. No later than the seventh (7th) calendar day following the payment of wages, the Contractor must file with City's Representative a certified, sworn, legible copy of such payroll. This shall contain the name of each employee, their classification, the number of hours worked on each day, rate of pay, and net pay. The affidavit shall state that the copy is a true and correct copy of such payroll and that no rebates or deductions (except as shown) have been made or will be made in the future from the wages therein shown.

26.05. **Payment of Subcontractors.** The Contractor shall be solely and exclusively responsible for compensating any of the Contractor's employees, subcontractors, materialmen and/or suppliers of any type or nature whatsoever and for insuring that no claims or liens of any type arising out of or incidental to the performance of any services performed pursuant to this Agreement are filed against any property owned by the City. In the event a statutory lien notice is sent to the City, the Contractor shall, where no payment bond covers the work, upon written notice from the City, immediately obtain a bond at its expense and hold

the City harmless from any losses that may result from the filing or enforcement of any said lien notice. In the event that the Contractor defaults in the provision of the bond, the City may withhold such funds as are necessary to assure the payment of such claim until litigation determines to whom payment shall be made.

26.06. **Affidavit of Bills Paid.** Prior to Final Acceptance of the Project, the Contractor shall provide a notarized affidavit stating that all bills for labor, materials, and incidentals incurred have been paid in full, that any claims from manufacturers, materialmen, and subcontractors have been released, and that there are no claims pending of which the Contractor has been notified.

27. INSURANCE

27.01. The Contractor shall procure and maintain at its sole cost and expense for the duration of this Agreement insurance against claims for injuries to persons or damages to property that may arise from or in connection with the performance of the work hereunder by the Contractor, its agents, representatives, volunteers, employees or subcontractors. The policies, coverages, limits and endorsements required are as set forth in Exhibit B.

28. BOND PROVISIONS

28.01. Pursuant to Section 2253.021 of the Texas Government Code, for all public works contracts with governmental entities, a payment bond is required if the Contract Amount exceeds \$50,000, and a performance bond is required if the Contract Amount exceeds \$100,000. Below those amounts, the City *may* require payment and/or performance bonds. In the event a performance or payment bond or both is required either by law or in the City's discretion, such bonds shall be executed in accordance with all requirements of Article 7.19-1 of the Texas Insurance Code, all other applicable law, and the following:

- (a) The Contractor shall execute performance and payment bonds for the full Contract Amount.
- (b) The bond surety shall be authorized under the laws of the State of Texas to provide a performance and payment bond and shall have attached proof of authorization of the surety to act in the performance and payment of bonds.
- (c) The Contractor shall provide original, sealed, and complete counterparts of the executed bonds in the forms required by the Contract Documents, which are attached as Exhibit C, together with valid original powers of attorney, **at the time of execution of this Agreement and prior** to the commencement of work. Copies of the executed bonds shall be attached hereto as **Exhibit C**.
- (d) The performance and payment bonds shall remain in effect for a period of one (1) year after Final Completion of the work and shall be extended for any warranty work to cover the warranty period.
- (e) If at any time during the execution of this Agreement in the required period thereafter, the bond or bonds become invalid or ineffective for any reason, the Contractor shall promptly supply within ten (10) days such other bond or bonds, which bond or bonds shall assure performance or payment as required.

28.02. The Contractor may make such changes and alterations as the City may require in the work or any part thereof without affecting the validity of this Agreement and any accompanying bond. If such changes or alterations diminish the quantity of the work to be done, they shall not constitute the basis for any claim

for damages or anticipated profits. If the City makes changes or alterations that render useless any work already done or material already used in said work, then the City shall compensate the Contractor for any material or labor so used, and for any actual loss occasioned by such change due to actual expenses incurred in preparation for the work as originally planned, in accordance with the provisions of Article 17.

29. SURETY

29.01. If the Contractor has abandoned the Project or the City has terminated the contract for cause and the Contractor's Surety, after notice demanding completion is sent, fails to commence the completion of the work in compliance with this Agreement, then the City at its option may provide for completion of the work in either of the following manners:

29.01.01. The City may employ such force of men and use of instruments, machinery, equipment, tools, materials, and supplies as said the City may deem necessary to complete the work and charge the expense of such labor, machinery, equipment, tools, materials, and supplies to said the Contractor, and the expense so charged shall be deducted and paid by the City out of such monies as may be due or that may thereafter at any time become due to the Contractor and Surety.

29.01.02. The City may, after notice published as required by law, accept sealed bids and let this Agreement for the completion of the work under substantially the same terms and conditions that are provided in this Agreement. In case of any increase in cost to the City under the new agreement as compared to what would have been the cost under this Agreement, such increase together with all of the City's damages due to Contractor's abandonment and/or default, including liquidated damages, as provided pursuant to Paragraph 38, entitled "TERMINATION FOR CAUSE" shall be charged to the Contractor and the surety shall be and remain bound therefor. However, should the cost to complete such new agreement prove to be less than that which would have been the cost to complete the work under this Agreement, the Contractor shall be credited therewith after all deductions are made in accordance with this Agreement.

29.02. Should the cost to complete the work exceed the Contract Amount and the Contractor fails to pay the amount due to the City within the time designated and there remains any machinery, equipment, tools, materials, or supplies on the site of the work, notice thereof, together with an itemized list of such equipment and materials, shall be mailed to the Contractor at its respective address designated in this Agreement; provided, however, that actual written notice given in any manner shall satisfy this condition. After mailing, or otherwise giving such notice, such property shall be held at the risk of the Contractor subject only to the duty of City's Representative to exercise ordinary care to protect such property. After fifteen (15) calendar days from the date of said notice, City's Representative may sell such machinery, equipment, tools, materials, or supplies and apply the net sum derived from such sale to the credit of the Contractor. Such sale may be made at either public or private sale, with or without notice, as City's Representative may elect. City's Representative shall release any machinery, equipment, tools, materials, or supplies which remain on the job site and belong to persons other than the Contractor to their proper owners.

29.03. In the event the account shows that the cost to complete the work is less than that which would have been the cost to City had the work been completed by the Contractor under the terms of this Agreement, or when the Contractor shall pay the balance shown to be due by them to the City, then all machinery, equipment, tools, materials, or supplies left on the site of the work shall be turned over to the Contractor.

30. COMPLIANCE WITH LAW

30.01. The Contractor's work and materials shall comply with all state and federal laws, municipal ordinances, regulations, codes, and directions of inspectors appointed by proper authorities having jurisdiction.

30.02. The Contractor shall perform and require all subcontractors to perform the work in accordance with applicable laws, codes, ordinances, and regulations of the State of Texas and the United States and in compliance with OSHA and other laws as they apply to its employees. In the event any of the conditions of the specifications violate the code for any industry, then such code conditions shall prevail.

30.03. The Contractor shall follow all applicable state and federal laws, municipal ordinances, and guidelines concerning soil erosion and sediment control throughout the Project and warranty term.

30.04 The Immigration Reform and Control Act (IRCA). The Contractor may not knowingly obtain the labor or services of an undocumented worker. The Contractor, not the City, must verify eligibility for employment as required by IRCA;

30.05 In accordance with Section 2155.4441 of the Texas Government Code, Contractor agrees that during the performance of this contract it shall purchase products and materials produced in Texas when they are available at a price and time comparable to products and materials produced outside this state;

31. SAFETY PRECAUTIONS

31.01. All safety measures, policies and precautions at the site are a part of the construction techniques and processes for which the Contractor shall be solely responsible. The Contractor is solely responsible for handling and use of hazardous materials or waste, and informing employees of any such hazardous materials or waste. The Contractor shall provide copies of all hazardous materials and waste data sheets to the Nacogdoches Fire Department marked "Attn.: Assistant Chief".

31.02. The Contractor has the sole obligation to protect or warn any individual of potential hazards created by the performance of the work set forth herein. The Contractor shall, at its own expense, take such precautionary measures for the protection of persons, property, and the work as may be necessary.

31.03. The Contractor shall be held responsible for all damages to property, personal injuries and/or death due to failure of safety devices of any type or nature that may be required to protect or warn any individual of potential hazards created by the performance of the work set forth herein; and when any property damage is incurred, the damaged portion shall immediately be replaced or compensated for by the Contractor at its own cost and expense.

31.04. Contractor agrees that it shall not transport to, use, generate, dispose of, or install at the Project site any Hazardous Substance (as defined in Paragraph 31.07, except in accordance with applicable Environmental Laws. Further, in performing the Work, Contractor shall not cause any release of Hazardous Substances into, or contamination of, the environment, including the soil, the atmosphere, any water course or ground water, except in accordance with applicable Environmental Laws (as hereafter defined at Paragraph 31.07). **In the event Contractor engages in any of the activities prohibited in this Paragraph 31.04 to the fullest extent permitted by law, Contractor hereby indemnifies and holds**

City and all of its respective officials, agents and employees harmless from and against any and all claims, damages, losses, causes of action, suits and liabilities of every kind, including, but not limited to, expenses of litigation, court costs, punitive damages and attorneys' fees, arising out of, incidental to or resulting from the activities prohibited in this Paragraph 31.04.

31.05. In the event Contractor encounters on the Project site any Hazardous Substance, or what Contractor may reasonably believe to be a Hazardous Substance, and which is being introduced to the Work, or exists on the Project site, in a manner violative of any applicable Environmental Laws, Contractor shall immediately stop work in the area affected and report the condition to City in writing. The Work in the affected area shall not thereafter be resumed except by written authorization of City if in fact a Hazardous Substance has been encountered and has not been rendered harmless. In the event Contractor fails to stop the Work upon encountering a Hazardous Substance at the Project site, **to the fullest extent permitted by law, Contractor hereby indemnifies and holds City and all of its officials, agents and employees harmless from and against any and all claims, damages, losses, causes of action, suits and liabilities of every kind, including, but not limited to, expenses of litigation, court costs, punitive damages and attorneys' fees, arising out of, incidental to or resulting from Contractor's failure to stop the Work.**

31.06. City and Contractor may enter into a separate agreement and/or Change Order for Contractor to remediate and/or render harmless the Hazardous Substance, but Contractor shall not be required to remediate and/or render harmless the Hazardous Substance absent such agreement. Contractor shall not be required to resume work in any area affected by the Hazardous Substance until such time as the Hazardous Substance has been remediated and/or rendered harmless.

31.07. For purposes of this Agreement, the term "Hazardous Substance" shall mean and include any element, constituent, chemical, substance, compound, or mixture, which are defined as a hazardous substance by any local, state or federal law, rule, ordinance, by-law, or regulation pertaining to environmental regulation, contamination, clean-up or disclosure, including, without limitation, The Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), The Resource Conservation and Recovery Act ("RCRA"), The Toxic Substances Control Act ("TSCA"), The Clean Water Act ("CWA"), The Clean Air Act ("CAA"), and the Marine Protection Research and Sanctuaries Act ("MPRSA"), The Occupational Safety and Health Act ("OSHA"), The Superfund Amendments and Reauthorization Act of 1986 ("SARA"), or other state superlien or environmental clean-up or disclosure statutes including all state and local counterparts of such laws (all such laws, rules and regulations being referred to collectively as "Environmental Laws"). It is the Contractor's responsibility to comply with this Paragraph 31.07 based on the law in effect at the time its services are rendered and to comply with any amendments to those laws for all services rendered after the effective date of any such amendments.

32. TRENCH SAFETY

The Contractor must comply with Texas law regarding trench excavation exceeding five feet in depth and in accordance with the following items:

32.01 The Contractor must comply with the requirements of Tex. Health & Safety Code Ann. §756.022-023 (Vernon 1992), as amended, and the requirements of 29 C.F.R., Sections 1926.650 through 1926.653 inclusive, "Excavation, Trenching and Shoring," of the Occupational Safety and Health Administration Standards, as amended.

32.02 The Contractor must include a separate pay item for trench safety complying with trench safety requirements, stating a unit price per linear foot of trench safety systems, as measured along the centerline of trench including manholes and other line structures.

32.03 Before beginning work on this project, the Contractor must submit to the City a complete trench safety program that complies with state and federal regulations. It is the sole duty, responsibility and prerogative of the Contractor, not the City, to determine the specific applicability of the designed trench safety systems to each field condition encountered on the project.

32.04 The Contractor must provide the City the name of the “competent person” required by OSHA standards to perform the trench safety inspections. The Contractor must make daily inspections to ensure that the systems comply with all applicable laws and regulations, and must maintain a permanent record of daily inspections available for examination by the City or other government authority.

32.05 If evidence of possible cave-ins or slides is apparent, the Contractor must cease all work in the trench and surrounding area until the necessary precautions have been taken by the Contractor to safeguard personnel entering the trench.

33. INDEMNITY

33.01. CONTRACTOR SHALL PROTECT, DEFEND, HOLD HARMLESS AND INDEMNIFY THE CITY AND/OR ITS OFFICERS, AGENTS, EMPLOYEES, REPRESENTATIVES, CONTRACTORS, ASSIGNEES, AND OR/OR DESIGNEES FROM ANY AND ALL CLAIMS, DEMANDS, EXPENSES, LIABILITY, SUITS OR CAUSES OF ACTION, AND ALL RELATED COSTS, ATTORNEY FEES, AN EXPENSES FOR INJURY TO ANY PERSON, INCLUDING DEATH, AND FOR DAMAGE TO ANY PROPERTY, TANGIBLE OR INTANGIBLE, OR FOR ANY BREACH OF CONTRACT ARISING OUT OF OR IN ANY MANNER CONNECTED WITH THE WORK DONE BY ANY PERSON UNDER THIS CONTRACT. IT IS THE INTENT OF THE PARTIES THAT THIS PROVISION SHALL EXTEND TO, AND INCLUDE, ANY AND ALL CLAIMS, CAUSES OF ACTION OR LIABILITY CAUSED BY THE CONCURRENT, JOINT AND/OR CONTRIBUTORY NEGLIGENCE OF THE CITY, AN ALLEGED BREACH OF AN EXPRESS OR IMPLIED WARRANTY BY THE CITY OR WHICH ARISES OUT OF ANY THEORY OF STRICT OR PRODUCTS LIABILITY.

33.02 The defense of any claim shall be coordinated by Contractor with the City Attorney of the City of Nacogdoches, Texas when the City is named Defendant in any lawsuit and Contractor may not agree to any settlement without first obtaining the concurrence from the City Attorney. The Parties agree to furnish timely written notice to each other of any such claim.

33.03. The indemnifications contained in paragraphs 33.01 shall include but not be limited to the following specific instances:

- (a) In the event the City is damaged due to the act, omission, mistake, fault or default of the Contractor, then the Contractor shall indemnify and hold harmless and defend the City for such damage.

- (b) The Contractor shall indemnify and hold harmless and defend the City from any claims for payment for goods or services brought by any material suppliers, mechanics, laborers, or other subcontractors.
- (c) The Contractor shall indemnify and hold harmless and defend the City from any and all injuries to or claims of adjacent property owners caused by the Contractor, its agents, employees, and representatives.
- (d) The Contractor shall be responsible for any damage to the floor, walls, etc., caused by the Contractor's personnel or equipment during installation.
- (e) The Contractor shall also be responsible for the removal of all related debris.
- (f) The Contractor shall also be responsible for subcontractors hired by it.
- (g) The Contractor shall indemnify, hold harmless, and defend the City from any liability caused by the Contractor's failure to comply with applicable federal, state, or local regulations, that touch upon or concern the maintenance of a safe and protected working environment and the safe use and operation of machinery and equipment in that working environment, no matter where fault or responsibility lies.

33.04. The indemnification obligations of the Contractor under this section shall not extend to include the liability of any professional engineer, the architect, their consultants, and agents or employees of any of them arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the professional engineer, the architect, their consultants, and agents and employees of any of them, provided such giving or failure to give is the primary cause of the injury or damage.

33.05. It is agreed with respect to any legal limitations now or hereafter in effect and affecting the validity or enforceability of the indemnification obligation under Paragraph 33.01, such legal limitations are made a part of the indemnification obligation and shall operate to amend the indemnification obligation to the minimum extent necessary to bring the provision into conformity with the requirements of such limitations, and as so modified, the indemnification obligation shall continue in full force and effect.

34. RELEASE

The Contractor assumes full responsibility for the work to be performed hereunder, and hereby releases, relinquishes, and discharges the City, its officers, agents, and employees from all claims, demands, and causes of action of every kind and character, including the cost of defense thereof, for any injury to or death of any person (whether employees of either party or other third parties) and any loss of or damage to any property (whether property of either of the parties hereto, their employees, or of third parties) that is caused by or alleged to be caused by, arising out of, or in connection with the Contractor's work to be performed hereunder. This release shall apply regardless of whether said claims, demands, and causes of action are covered in whole or in part by insurance, and in the event of injury, death, property damage, or loss suffered by the Contractor, any subcontractor, or any person or organization directly or indirectly employed by any of them to

perform or furnish work on the Project, this release shall apply regardless of whether such injury, death, loss, or damage was caused in whole or in part by the negligence of the City.

35. PERMITS AND LICENSES

The Contractor shall secure and pay for all necessary permits and licenses, governmental fees, and inspections necessary for the proper execution and completion of the work. During this Agreement term and/or period during which the Contractor is working, it shall give all notices and comply with all laws, ordinances, rules, regulations, and lawful orders of any public authority bearing on the performance of the work.

36. ROYALTIES AND LICENSING FEES

The Contractor shall pay all royalties and licensing fees. The Contractor shall hold the City harmless and indemnify the City from the payment of any royalties, damages, losses or expenses including attorney's fees for suits, claims or otherwise, growing out of infringement or alleged infringement of patents, materials and methods used in the Project. It shall defend all suits or claims for infringement of any patent rights. Further, if the Contractor has reason to believe that the design, service, process, or product specified is an infringement of a patent, it shall promptly give such information to City's Representative.

37. BREACH OF CONTRACT & DAMAGES

37.01. The City shall have the right to declare the Contractor in breach of this Agreement for cause when the City determines that this Agreement is not being performed according to its understanding of the intent and meaning of this Agreement. Such breach shall not in any way invalidate, abrogate, or terminate the Contractor's obligations under this Agreement.

37.02. Without prejudice to any other legal or equitable right or remedy that the City would otherwise possess hereunder or as a matter of law, the City upon giving the Contractor five (5) calendar days prior written notice shall be entitled to damages for breach of contract, upon but not limited to the following occurrences:

- (a) If the Contractor shall fail to remedy any default after written notice thereof from City's Representative, as City's Representative shall direct; or
- (b) If the Contractor shall fail for any reason other than the failure by City's Representative to make payments called upon when due; or
- (c) If the Contractor commits a substantial default under any of the terms, provisions, conditions, or covenants contained in this Agreement.

38. TERMINATION FOR CAUSE

Without prejudice to any other legal or equitable right or remedy that the City would otherwise possess hereunder or as a matter of law, the City upon giving the Contractor five (5) calendar days prior written notice shall be entitled to terminate this Agreement in its entirety at any time for any of the following:

38.01. If the Contractor becomes insolvent, commits any act of bankruptcy, makes a general assignment for the benefit of creditors, or becomes the subject of any proceeding commenced under any statute or law for the relief of debtors and, after notice, fails to provide adequate assurance that it can remedy all of its defaults; or

38.02. If a receiver, trustee, or liquidator of any of the property or income of the Contractor shall be appointed; or

38.03. If the Contractor shall fail to prosecute the work or any part thereof with diligence necessary to insure its progress and completion as prescribed by the time schedules; or

38.04. If the Contractor shall fail to remedy any default within ten (10) calendar days after written notice thereof from City's Representative, as City's Representative shall direct; or

38.05. If the Contractor shall fail for any reason other than the failure by City's Representative to make payments called upon when due; or

38.06. If the Contractor abandons the Work.

38.07. If the Contractor commits a substantial default under any of the terms, provisions, conditions, or covenants contained in this Agreement.

39. TERMINATION FOR CONVENIENCE

39.01. The performance of the work may be terminated at any time in whole or, from time to time, in part, by the City for its convenience. Any such termination shall be effected by delivery to the Contractor of a written notice (notice of termination) specifying the extent to which performance of the work is terminated, and the date upon which termination becomes effective.

39.02 In the event of termination for convenience, the Contractor shall only be paid the reasonable value of the Work performed prior to the effective date of the termination notice and shall be further subject to any claim the City may have against the Contractor under other provisions of this Agreement or as a matter of law. In the event of termination for convenience, Contractor Waives and Releases any claim for lost profit, other than profit on Work performed prior to the effective date of such termination.

40. RIGHT TO COMPLETE

If this Agreement is terminated for cause, the City shall have the right but shall not be obligated to complete the work itself or by others; and to this end, the City shall be entitled to take possession of and use such equipment, without rental obligation therefor, and materials as may be on the job site, and to exercise all rights, options, and privileges of the Contractor under its subcontracts, purchase orders, or otherwise; and the Contractor shall promptly assign such rights, options, and privileges to City. If the City elects to complete the work itself or by others, pursuant to the foregoing, then the Contractor and/or Contractor's surety will reimburse City for all costs incurred by the City (including, without limitation, applicable, general, administrative expenses, field overhead, the cost of necessary equipment, materials, field labor, additional fees paid to architects, engineers, attorneys or others to assist the City in connection with the termination and liquidated damages) in completing and/or correcting work by the Contractor that fails to meet any requirement of this Agreement or the other Contract Documents.

41. CLOSE OUT

41.01. After receipt of a notice of termination, whether for cause or convenience, unless otherwise directed by City's Representative, the Contractor shall, in good faith and to the best of its ability, do all things necessary in the light of such notice to assure the efficient and proper closeout of the terminated work (including the protection of City's property). Among other things, the Contractor shall, except as otherwise directed or approved by City's Representative, do the following:

- (a) Stop the work on the date and to the extent specified in the notice of termination;
- (b) Place no further orders or subcontracts for services, equipment, or materials, except as may be necessary for completion of such portion of the work as is not terminated;
- (c) Terminate all orders and subcontracts to the extent that they relate to the performance of the work terminated by the notice of termination;
- (d) Assign to City's Representative, in the manner and to the extent directed by it, all of the right, title, and interest of the Contractor under the orders or subcontracts so terminated; in which case, City's Representative shall have the right to settle or pay any or all claims arising out of the termination of such orders and subcontracts;
- (e) With the approval of City's Representative, settle all outstanding liabilities and all claims arising out of such termination, orders, and subcontracts;
- (f) Deliver to City's Representative, when directed by City's Representative, all documents and all property, which if the work had been completed, Contractor would have been required to account for or deliver to City's Representative, and transfer title to such property to City's Representative to the extent not already transferred.

42. TERMINATION CONVERSION

Upon determination of Court of competent jurisdiction that termination of the Contractor pursuant to Paragraph 38 was wrongful and/or otherwise improper, such termination will be deemed converted to a termination for convenience pursuant to Paragraph 39 and Contractor's remedy for such termination shall be limited to the recovery of the payments permitted for termination for convenience as set forth in Paragraph 39.

43. HIRING

During the term of this Agreement and for a period of one (1) year thereafter, the Contractor agrees not to solicit for hire any employee or employees of the City that were associated with work specified under this Agreement. In the event that this provision is breached by the Contractor, the Contractor agrees to pay the City damages in the amount equal to twelve (12) months of the employee's total compensation plus any legal expenses associated with enforcement of this provision.

44. **ASSIGNMENT**

This Agreement and the rights and obligations contained herein may not be assigned by the Contractor without the prior written approval of the City.

45. **EFFECTIVE DATE**

The effective date of this contract shall be the date of award of the contract.

46. **OTHER TERMS**

46.01. **Invalidity.** If any provision of this Agreement shall be held to be invalid, illegal or unenforceable by a court or other tribunal of competent jurisdiction, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired thereby. The parties shall use their best efforts to replace the respective provision or provisions of this Agreement with legal terms and conditions approximating the original intent of the parties.

46.02. **Written Notice.** Unless otherwise specified, 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 any officer of the corporation for whom it is intended or if it is delivered or sent certified mail to the last business address as listed herein. Each party will have the right to change its business address by at least thirty (30) calendar days written notice to the other parties in writing of such change.

46.03. **Entire Agreement.** It is understood that this Agreement contains the entire agreement between the parties and supersedes any and all prior agreements, arrangements, or understandings between the parties relating to the subject matter. No oral understandings, statements, promises or inducements contrary to the terms of this Agreement exist. This Agreement cannot be changed or terminated orally. No verbal agreement or conversation with any officer, agent or employee of the City, either before or after the execution of this Agreement, shall affect or modify any of the terms or obligations hereunder.

46.04. **Amendment.** No amendment to this Agreement shall be effective and binding unless and until it is reduced to writing and signed by duly authorized representatives of both parties.

46.05. **Mediation.** After receipt of a Notice of Claim, the City may elect to refer the matter to the Architect, City's Representative or another party for review. Contractor will attend meetings called to review and discuss the Claims and mitigation of the problem, and shall furnish any reasonable factual backup for the Claim requested. The City may also elect to defer consideration of the Claim until the Work is completed, in which case the same review options shall be available to the City at the completion of the Work. At any stage, the City, at its sole discretion, is entitled to refer a Claim to mediation under the Construction Industry Mediation Rules of the American Arbitration Association, and, if this referral is made, Contractor will take part in the mediation process. The filing, mediation or rejection of a Claim does not entitle Contractor to stop performance of the Work. The Contractor shall proceed diligently with performance of the Contract during the pendency of any claim, excepting termination or under City's direction to stop the Work. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof. The parties shall share the Mediator's fee and any filing fees equally and the Mediation shall be held in Nacogdoches, Texas.

46.06. **Arbitration.** In the event of a dispute and upon the mutual written consent of both parties, the parties may agree to arbitration without waiving any of their other rights hereunder.

46.07. **Choice of Law and Place of Performance.** This Agreement has been made under and shall be governed by the laws of the State of Texas. Performance and all matters related thereto shall be in Nacogdoches County, Texas, United States of America.

46.08. **Authority to do business.** The Contractor represents that it has a certificate of authority, authorizing it to do business in the State of Texas, a registered agent and registered office during the duration of this contract.

46.09. **Authority to Contract.** Each party has the full power and authority to enter into and perform this Agreement, and the person signing this Agreement on behalf of each party has been properly authorized and empowered to enter into this Agreement. The persons executing this Agreement hereby represent that they have authorization to sign on behalf of their respective corporations.

46.10. Contractor Affirmations: If this contract is funded in whole or in part by money from the State of Texas, State law requires the following certifications, representations and/or warranties. Regardless of funding by the State, by signature hereon affixed, the Contractor hereby certifies that:

- (a) Contractor has not given, offered to give, nor intends to give at any time hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to a public servant in connection with this Contract
- (b) Contractor represents and warrants that it has no actual or potential conflicts of interest in the goods and or services described in the scope of work to this contract.
- (c) **Antitrust.** Pursuant to 15 U.S.C. §1, et seq. and Tex. Bus. & Comm. Code §15.01, et seq. neither the contractor nor the firm, corporation, partnership, or institution represented by the contractor, or anyone acting for such a firm, corporation or institution has violated the antitrust laws of this state, federal antitrust laws, nor communicated directly or indirectly the bid made to any competitor or any other person engaged in such line of business.
- (d) **Child Support.** Pursuant to §231.006(d), Texas Family Code, regarding child support, the Contractor certifies that the individual or business entity named in this Contract is not ineligible to receive the specified payment and acknowledges that the contract may be terminated, and payment may be withheld if this certification is inaccurate. Furthermore, any Contractor subject to §231.006, Gov't Code, must include names and Social Security numbers of each person with at least 25% ownership of the business entity submitting the bid. This information must be provided prior to award. Enter the Name & Social Security Numbers for each person below:

Name:	Social Security Number:
Name:	Social Security Number:
Name:	Social Security Number:

- (e) **Debarment.** Contractor certifies that Contractor and its principals are eligible to participate in this transaction and have not been subjected to suspension, debarment, or similar ineligibility determined by any federal, state or local governmental entity and that Contractor is in compliance with the State of Texas statutes and rules relating to procurement. Entities ineligible for state procurement are listed on the State of Texas Debarred Vendor List maintained by the Texas Comptroller of Public Accounts and the System for Award Management (SAM) maintained by the General Services Administration. Entities ineligible for federal procurement are listed at <http://www.sam.gov/content/exclusions>.
- (f) **Terrorism Watch List.** Contractor represents and warrants that it does not do business with Iran, Sudan or a foreign terrorist organization as prohibited by Texas Government Code 2252.152. Contractor certifies that it is not listed on the federal government's terrorism watch list as described in Executive Order 13224.
- (g) **Critical Infrastructure.** If Contractor will be granted direct or indirect access to a communication infrastructure system, cybersecurity system, electric grid, hazardous waste treatment system, or water treatment facility, Contractor certifies that neither it or its parent company, is (1) majority owned by citizens or governmental entities of China, North Korea, Russia or any other country designated by the Governor under Government Code 2274.0103, or (2) headquartered in any of those countries.
- (h) **Convictions.** Under Sections 2155.006, 23155.0061 and 2261.053 of the Texas Government Code, Contractor certifies that it is not ineligible to receive the specified contract and may be terminated and payment withheld if this certification is inaccurate. These sections prohibit contracts that include proposed financial participation by an individual or business entity who has been convicted in the past five years of (a) violating a federal law or assessed a penalty in connection with a contract involving relief for Hurricane Rita, Hurricane Katrina, or any other disaster, as defined by §418.004, Gov't Code, occurring after September 24, 2005; and (b) of any offense related to the direct support or promotion of human trafficking.
- (i) **COVID Vaccinations.** Contractor certifies that it does not require its customers to provide any documentation certifying the Customer's COVID-19 vaccination or post-transmission recovery on entry to, or to receive service from the Contractor's business.
- (j) **Boycotts.** (1) To the extent this Contract is considered a Contract for goods or services subject to § 2270.002 Texas Government Code, Contractor verifies that it: (i) does not boycott Israel; and (ii) will not boycott Israel during the term of this Contract. (2) To the extent this Contract has a value of \$100,000 or more and Contractor is an organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of those entities or business associations, that exists to make a profit that employs 10 or more full time employees, Contractor certifies that it: (i) does not and will not boycott energy companies during the term of the contract (*See Texas Government Code 2274.002, et seq.*); and (ii) does not and will not discriminate against a firearm entity or firearm trade association (*See Texas Government Code 2274.002, et seq.*).

46.11. **Waiver.** Failure of any party, at any time, to enforce a provision of this Agreement shall in no way constitute a waiver of that provision nor in any way affect the validity of this Agreement, any part hereof, or the right of the City thereafter to enforce each and every provision hereof. No term of this Agreement shall be deemed waived or breach excused unless the waiver shall be in writing and signed by the party claimed to

have waived. Furthermore, any consent to or waiver of a breach will not constitute consent to or waiver of or excuse of any other different or subsequent breach.

46.12. Headings, Gender, Number. The article headings are used in this Agreement for convenience and reference purposes only and are not intended to define, limit, or describe the scope or intent of any provision of this Agreement and shall have no meaning or effect upon its interpretation. Words of any gender used in this Agreement shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, and vice versa, unless the context requires otherwise.

46.13. Agreement Read. The parties acknowledge that they have had opportunity to consult with counsel of their choice, have read, understand and intend to be bound by the terms and conditions of this Agreement.

46.14. Multiple Originals. It is understood and agreed that this Agreement may be executed in a number of identical counterparts, each of which shall be deemed an original for all purposes.

46.15. Notice of Indemnification. City and Contractor hereby acknowledge and agree that this Agreement contains certain indemnification obligations and covenants.

STOLZ MECHANICAL CONTRACTORS, LLC

CITY OF NACOGDOCHES

By: 
Printed Name: Jeff Stolz
Title: President
Date: 3/20/2022

By: _____
City Manager
Date: _____

APPROVED AS TO FORM:

City Attorney
Date: _____

Exhibit A
DAVIS BACON WAGE RATES

General Decision Number: TX20220084 01/07/2022

Superseded General Decision Number: TX20210084

State: Texas

Construction Type: Heavy

Counties: Cass, Cherokee, Erath, Fannin, Franklin, Hood, Hopkins, Marion, Montague, Morris, Nacogdoches, Navarro, Palo Pinto, Panola, Rains, Red River, Somervell, Titus, Van Zandt and Wood Counties in Texas.

HEAVY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022, Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least \$15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022, Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least \$11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at

www.dol.gov/whd/govcontracts.

Modification Number Publication Date
0 01/07/2022

SUTX2009-129 04/21/2009

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 13.00	0.00
LABORER: Common or General.....	\$ 8.61	0.00
LABORER: Pipelayer.....	\$ 9.94	0.00
OPERATOR: Backhoe/Trackhoe.....	\$ 11.75	0.00
OPERATOR: Bulldozer.....	\$ 14.25	0.00
OPERATOR: Front End Loader.....	\$ 11.52	0.00
TRUCK DRIVER.....	\$ 10.80	0.26

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

=====

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union, which prevailed in the survey for this classification, which in this example would be Plumbers 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those

classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Division National Office Branch of Wage Surveys. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material,

etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====
END OF GENERAL DECISION

Exhibit B
INSURANCE REQUIREMENTS

During the term of this Agreement Contractor's insurance policies shall meet the following requirements:

I. Standard Insurance Policies Required:

- A. Commercial General Liability
- B. Business Automobile Liability
- C. Umbrella / Excess Liability – required for contract amounts exceeding \$1,000,000
- D. Workers' Compensation
- E. Builder's Risk – provides coverage for contractor's labor and materials for a project during construction that involves a structure such as a building or garage. builder's risk policy shall be written on "all risks" form.

II. General Requirements Applicable to All Policies:

- A. Only Insurance Carriers licensed and admitted to do business in the State of Texas will be accepted.
- B. Deductibles shall be listed on the Certificate of Insurance and are acceptable only on a per occurrence basis for property damage only.
- C. "Claims Made" policies are not accepted.
- D. Each insurance policy shall be endorsed to state that coverage shall not be suspended, voided, canceled, reduced in coverage or in limits except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the City of Nacogdoches.
- E. Upon request, certified copies of all insurance policies shall be furnished to the City of Nacogdoches.
- F. The City of Nacogdoches, its officials, employees and volunteers, are to be named as "Additional Insured" to the Commercial General, Umbrella and Business Automobile Liability policies. The coverage shall contain no special limitations on the scope of protection afforded to the City, its officials, employees or volunteers.
- G. Waiver of subrogation in a form at least as broad as ISO form 2404 shall be provided in favor of the City on all policies obtained by the Contractor in compliance with the terms of this Agreement.

III. Commercial General Liability

- A. General Liability insurance shall be written by a carrier with a "A:VIII" or better rating in accordance with the current Best Key Rating Guide.
- B. Limit of \$500,000.00 per occurrence for bodily injury and property damage with an annual

aggregate limit of \$1,000,000.00 which limits shall be endorsed to be per Project.

- C. Coverage shall be at least as broad as ISO form GC 00 01.
- D. No coverage shall be excluded from the standard policy without notification of individual exclusions being attached for review and acceptance.
- E. The coverage shall include but not be limited to the following: premises/operations with separate aggregate; independent contracts; products/completed operations; contractual liability (insuring the indemnity provided herein) Host Liquor Liability, Personal & Advertising Liability; and Explosion, Collapse, and Underground coverage.

IV. Business Automobile Liability

- A. Business Automobile Liability insurance shall be written by a carrier with a “A:VIII” or better rating in accordance with the current Best Key Rating Guide.
- B. Minimum Combined Single Limit of \$1,000,000.00 per occurrence for bodily injury and property damage.
- C. Coverage shall be at least as broad as Insurance Service’s Office Number CA 00 01.
- D. The Business Auto Policy must show Symbol 1 in the Covered Autos Portion of the liability section in Item 2 of the declarations page.
- E. The coverage shall include owned autos, leased or rented autos, non-owned autos, any autos and hired autos.
- F. Pollution Liability coverage shall be provided by endorsement MCS-90, with a limit of \$1,000,000.00.

V. Excess Liability

Umbrella form excess liability coverage following the form of the underlying coverage with a minimum limit of \$5,000,000.00 or the total value of the contract, whichever is greater, per occurrence/aggregate when combined with the lowest primary liability coverage, is required for contracts exceeding \$1,000,000 in total value.

- VI. Those policies set forth in Paragraphs III, IV, and V shall contain an endorsement naming the City as Additional Insured and further providing that the Contractor’s policies are primary to any self-insurance or insurance policies procured by the City. The additional insured endorsement shall be in a form at least as broad as ISO form GC 2026. Waiver of subrogation in a form at least as broad as ISO form 2404 shall be provided in favor of the City on all policies obtained by the Contractor in compliance with the terms of this Agreement. Contractor shall be responsible for all deductibles which may exist on any policies obtained in compliance with the terms of this Agreement. All coverage for subcontractors shall be subject to the requirements stated herein. All Certificates of Insurance and endorsements shall be

furnished to the City's Representative at the time of execution of this Agreement, attached hereto as Exhibit D, and approved by the City before work commences.

VII. Workers Compensation Insurance

- A. Pursuant to the requirements set forth in Title 28, Section 110.110 of the Texas Administrative Code, all employees of the Contractor, all employees of any and all subcontractors, and all other persons providing services on the Project must be covered by a workers compensation insurance policy: either directly through their employer's policy (the Contractor's or subcontractor's policy) or through an executed coverage agreement on an approved Texas Department of Insurance Division of Workers Compensation (DWC) form. Accordingly, if a subcontractor does not have his or her own policy and a coverage agreement is used, contractors and subcontractors must use that portion of the form whereby the hiring contractor agrees to provide coverage to the employees of the subcontractor. The portion of the form that would otherwise allow them not to provide coverage for the employees of an independent contractor may not be used.
- B. Workers compensation insurance shall include the following terms:
1. Employer's Liability minimum limits of \$1,000,000.00 for each accident/each disease/each employee are required.
 2. "Texas Waiver of Our Right to Recover From Others Endorsement, WC 42 03 04" shall be included in this policy.
 3. Texas must appear in Item 3A of the Workers Compensation coverage or Item 3C must contain the following: All States except those listed in Item 3A and the States of NV, ND, OH, WA, WV, and WY.
- C. Pursuant to the explicit terms of Title 28, Section 110.110(c) (7) of the Texas Administrative Code, the bid specifications, this Agreement, and all subcontracts on this Project must include the following terms and conditions in the following language, without any additional words or changes, except those required to accommodate the specific document in which they are contained or to impose stricter standards of documentation:

"A. Definitions:

Certificate of coverage ("certificate") – An original certificate of insurance, a certificate of authority to self-insure issued by the Division of Workers Compensation, or a coverage agreement (DWC-81, DWC-83, or DWC-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 ("subcontractors" in § 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.

- B. The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, that meets the statutory 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.*
- C. The Contractor must provide a certificate of coverage to the governmental entity prior to being awarded the contract.*
- D. If the coverage period shown on the Contractor's current certificate of coverage ends 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.*
- E. The Contractor shall obtain from each person providing services on a project, and provide to the governmental entity:
 - (1) a certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and*
 - (2) no later than seven calendar 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.**
- F. The Contractor shall retain all required certificates of coverage for the duration of the project and for one year thereafter.*
- G. The Contractor shall notify the governmental entity in writing by certified mail or personal delivery, within 10 calendar days after the Contractor knew or should have known, or any change that materially affects the provision of coverage of any person providing services on the project.*
- H. The Contractor shall post on each project site a notice, in the text, form and manner prescribed by the Division of Workers Compensation, 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.*

- I. *The Contractor shall contractually require each person with whom it contracts to provide services on a project, to:*
- (1) *provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, that 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;*
 - (2) *provide to the Contractor, prior to that 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;*
 - (3) *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;*
 - (4) *obtain from each other person with whom it contracts, and provide to the Contractor:*
 - (a) *A certificate of coverage, prior to the other person beginning work on the project; and*
 - (b) *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;*
 - (5) *retain all required certificates of coverage on file for the duration of the project and for one year thereafter;*
 - (6) *notify the governmental entity in writing by certified mail or personal delivery, within 10 calendar 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*
 - (7) *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.*
- J. *By signing this contract, or providing, or causing to be provided a certificate of coverage, the Contractor is 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.*
- K. *The Contractor's failure to comply with any of these provisions is a breach of contract by the*

Contractor that entitles the governmental entity to declare the contract void if the Contractor does not remedy the breach within ten calendar days after receipt of notice of breach from the governmental entity.”

- VIII. Certificates of Insurance shall be prepared and executed by the insurance company or its authorized agent, and shall contain the following provisions and warranties:
- A. The company is licensed and admitted to do business in the State of Texas.
 - B. The insurance policies provided by the insurance company are underwritten on forms that have been provided by the Texas State Board of Insurance or ISO.
 - C. All endorsements and insurance coverages according to requirements and instructions contained herein.
 - D. The form of the notice of cancellation, termination, or change in coverage provisions to the City of Nacogdoches.
 - E. Original endorsements affecting coverage required by this section shall be furnished with the certificates of insurance.

Exhibit C
PERFORMANCE AND PAYMENT BONDS

PERFORMANCE BOND

Project No. _____

THE STATE OF TEXAS

§
§

KNOW ALL MEN BY THESE PRESENTS:

THE COUNTY OF NACOGDOCHES

§

THAT WE, _____, as Principal, hereinafter called “Contractor” and the other subscriber hereto _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound to the City of Nacogdoches, a municipal corporation, in the sum of **Eight Hundred Eighty-Five Thousand Seven Hundred Thirty-Two and 00/100 Dollars (\$885,732.00)** for the payment of which sum, well and truly to be made to the City of Nacogdoches and its successors, the said Contractor and Surety do bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has on or about this day executed a Contract in writing with the City of Nacogdoches for **Construction Services for 2021 SWTP Filter 7 Rehabilitation Project** all of such work to be done as set out in full in said Contract Documents therein referred to and adopted by the City Council, all of which are made a part of this instrument as fully and completely as if set out in full herein.

NOW THEREFORE, if the said Contractor shall faithfully and strictly perform Contract in all its terms, provisions, and stipulations in accordance with its true meaning and effect, and in accordance with the Contract Documents referred to therein and shall comply strictly with each and every provision of the Contract, including all warranties and indemnities therein and with this bond, then this obligation shall become null and void and shall have no further force and effect; otherwise the same is to remain in full force and effect.

It is further understood and agreed that the Surety does hereby relieve the City of Nacogdoches or its representatives from the exercise of any diligence whatever in securing compliance on the part of the Contractor with the terms of the Contract, including the making of payments thereunder and, having fully considered its Principal’s competence to perform the Contract in the underwriting of this Performance Bond, the Surety hereby waives any notice to it of any default, or delay by the Contractor in the performance of his Contract and agrees that it, the Surety, shall be bound to take notice of and shall be held to have knowledge of all acts or omissions of the Contractor in all matters pertaining to the Contract. The Surety understands and agrees that the provision in the Contract that the City of Nacogdoches shall retain certain amounts due the Contractor until the expiration of thirty days from the acceptance of the Work is intended for the City’s benefit, and the City of Nacogdoches shall have the right to pay or withhold such retained amounts or any other amount owing under the Contract without changing or affecting the liability of the Surety hereon in any degree.

It is further expressly agreed by Surety that the City of Nacogdoches or its representatives are at liberty at any time, without notice to the Surety, to make any change in the Contract Documents and in the Work to be done thereunder, as provided in the Contract, and in the terms and conditions thereof, or to make any change in, addition to, or deduction from the work to be done thereunder; and that such changes, if made, shall not in any way vitiate the obligation in this bond and undertaking or release the Surety therefrom.

It is further expressly agreed and understood that the Contractor and Surety will fully indemnify and hold harmless the City of Nacogdoches from any liability, loss, cost, expense, or damage arising out of or in connection with the work done by the Contractor under the Contract. In the event that the City of Nacogdoches shall bring

any suit or other proceeding at law on the Contract or this bond or both, the Contractor and Surety agree to pay to the City the actual amounts of attorneys' fees incurred by the city in connection with such suit.

This bond and all obligations created hereunder shall be performable in NACOGDOCHES County, Texas. This bond is given in compliance with the provisions of Chapter 2253 of the Texas Government Code, as amended, which is incorporated herein by this reference. However, all of the express provisions hereof shall be applicable whether or not within the scope of said statute.

Notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually received or, if earlier, on the third day following deposit in a United State Postal Service post office or receptacle, with proper postage affixed (certified mail, return receipt requested), addressed to the respective other party at the address prescribed in the Contract Documents, or at such other address as the receiving party may hereafter prescribe by written notice to the sending party.

IN WITNESS THEREOF, the said Contractor and Surety have signed and sealed this instrument on the respective dates written below their signatures and have attached current Power of Attorney.

ATTEST and SEAL: (if a corporation) (SEAL)
WITNESS: (if not a corporation)

(Name of Contractor)

By: _____
Name:
Title:

By: _____
Name:
Title:
Date:

ATTEST/WITNESS (SEAL)

(Full Name of Surety)

By: _____
Name:
Title:
Date:

(Address of Surety for Notice)

By: _____
Name:
Title:
Date:

REVIEWED:

THE FOREGOING BOND IS ACCEPTED
ON BEHALF OF
THE CITY OF NACOGDOCHES, TEXAS:

City Attorney's Office

City Manager

NOTE: Date of bonds must be equal to or after the date of execution by City.

TEXAS STATUTORY PAYMENT BOND

Project No. _____

THE STATE OF TEXAS

§
§

KNOW ALL MEN BY THESE PRESENTS:

THE COUNTY OF NACOGDOCHES

§

THAT WE, _____, as Principal, hereinafter called "Principal" and the other subscriber hereto _____, a corporation organized and existing under the laws of the State of _____, licensed to business in the State of Texas and admitted to write bonds, as Surety, herein after called "Surety", do hereby acknowledge ourselves to be held and firmly bound to the City of Nacogdoches, a municipal corporation, in the sum of **Eight Hundred Eighty-Five Thousand Seven Hundred Thirty-Two and 00/100 Dollars (\$885,732.00)** for payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, Principal has entered into a certain contract with the City of Nacogdoches, dated the _____ day of _____, 20____, for **Construction Services for 2021 SWTP Filter 7 Rehabilitation Project** 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 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 null and 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 and all liabilities on this bond shall be determined in accordance with the provisions, conditions and limitations of said Code to the same extent as if it were copied at length herein.

IN WITNESS THEREOF, the said Principal and Surety have signed and sealed this instrument on the respective dates written below their signatures.

ATTEST and SEAL: (if a corporation) (SEAL)
WITNESS: (if not a corporation)

(Name of Contractor)

By: _____
Name:
Title:

By: _____
Name:
Title:
Date:

ATTEST/WITNESS (SEAL)

(Full Name of Surety)

By: _____
Name:
Title:
Date:

(Address of Surety for Notice)

By: _____
Name:
Title:
Date:

REVIEWED:

THE FOREGOING BOND IS ACCEPTED
ON BEHALF OF
THE CITY OF NACOGDOCHES, TEXAS:

City Attorney's Office

City Manager

NOTE: Date of bonds must be equal to or after the date of execution by City.

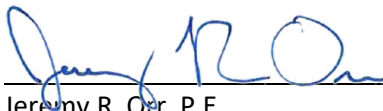
Exhibit D
CERTIFICATES OF INSURANCE AND ENDORSEMENTS

Exhibit E
PLANS, SPECIFICATIONS AND DRAWINGS

PROFESSIONAL SEALS AND CERTIFICATIONS

The Technical Specifications contained herein have been prepared by or under the direction of the following Design Professionals. Bidding and Contracting Documents and General Conditions have been prepared by KSA Engineers, Inc., in conjunction with the Technical Specifications contained herein and the Plans that are a part of the Contract Documents.

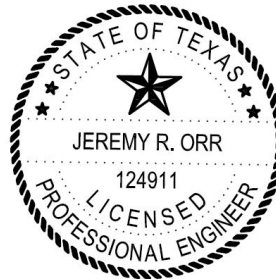
Rev	Description	Date
1	Issued for Construction	2-1-2022



Jeremy R. Orr, P.E.

KSA Engineers, Inc.

TBPE Firm Registration No. F-1356



2-1-2022

TECHNICAL SPECIFICATIONS TABLE OF CONTENTS

DIVISION 01 – GENERAL REQUIREMENTS

Section Number and Title

- 01010 Summary of Work
- 01019 Contract Considerations
- 01027 Applications for Payment
- 01039 Coordination and Meetings
- 01041 Project Coordination
- 01090 Reference Standards
- 01200 Bid Item Descriptions
- 01300 Submittals
- 01400 Quality Control
- 01410 Testing Services
- 01500 Construction Facilities and Temporary Controls
- 01600 Material and Equipment
- 01650 Starting of Systems
- 01700 Contract Closeout
- 01730 Operation and Maintenance Data

DIVISION 02 – EXISTING CONDITIONS

Section Number and Title

- 02160 Demolition
- 02205 Soil Materials
- 02660 Ductile Iron Piping
- 02669 Valves

02670 Pneumatic Rotary Vane Valve Actuator
02675 Disinfection of Water Systems
02923 Landscape Grading
02936 Seeding

DIVISION 03 – CONCRETE

Section Number and Title

03100 Concrete Formwork
03200 Concrete Reinforcement
03300 Cast-In-Place Concrete
03400 Construction Joints and Waterstops

DIVISION 09 - FINISHES

Section Number and Title

09800 Painting

DIVISION 11 – EQUIPMENT

Section Number and Title

11220 Filtration System

DIVISION 13 – SPECIAL CONSTRUCTION

Section Number and Title

13420 Ultrasonic Level Transmitters
13500 Turbidimeters

APPENDICES

Appendix 1 – Xylem /Leopold Scope of Supply Document

END OF TABLE OF CONTENTS

DIVISION 01
GENERAL REQUIREMENTS

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Contract Description
- B. Work Sequence
- C. Contractor Use of Site and Premises

1.2 CONTRACT DESCRIPTION

- A. Improvements and modifications to the City of Nacogdoches Surface Water Treatment Plant shall include the following:

- 1. Filters 1 – 4 Improvements:

- a) Filter pipe gallery butterfly valve and pneumatic actuator replacements on various Filters as shown in the plans and described in these specifications.
 - b) Removal and Replacement of the Electronic Valve Positioner/Controllers on Filters 1 – 4.
 - c) Removal and Replacement of the Ultrasonic Level Sensors on Filters 1 – 4.

- 2. Filters 5 – 10 Improvements:

- a) Filter rehabilitation including removal disposal of existing filter media and filter underdrains and installation of new filter media and underdrain system for Filter 7.
 - b) Removal and Replacement of Filter Effluent Turbidimeters for Filters 6, 7, 9, and 10.
 - c) Filter pipe gallery butterfly valve and pneumatic actuator replacements on various Filters as shown in the plans and described in these specifications.
 - d) Removal and Replacement of the Electronic Valve Positioner/Controllers on all Filters 5 – 10.
 - e) Removal and Replacement of Ultrasonic Level Sensors on Filters 5 – 10.

1.3 WORK SEQUENCE

- A. Construct Work in phases to accommodate Owner's operations and project integration requirements. During the construction period, coordinate construction schedule and operations with the Owner and Engineer.
- B. Contractor shall submit a construction schedule to the Engineer prior to commencing work on site.
 - 1. Phase 1 shall consist of all work associated with Filters 1 -4 including valve and actuator replacements, valve positioner/controllers replacements, turbidimeter replacements, and level sensor replacements. As well as recoating the filter pipe gallery piping if alternate is awarded. All improvements shall be completed, piping disinfected, successfully commissioned, and started up prior to putting Filters 1-4 back in service and before taking Filters 5-10 out of service.
The Contractor shall commence work related to the completion of Phase 1 within 10 days of the notice to proceed and shall be substantially complete with Phase 1 within **75 consecutive calendar days**.
 - 2. Phase 2 shall consist of all work associated with Filters 5 -10 including rehabilitation of Filter 7, valve and actuator replacements, valve positioner/controllers replacements, turbidimeter replacements, and level sensor replacements. As well as recoating the filter pipe gallery piping if alternate is awarded. All improvements shall be completed, piping disinfected, successfully commissioned, and started up prior to putting Filters 5-10 back in service.
Authorization to begin work on Phase 2 will not be issued until Phase 1 is substantially completed. Phase 2 shall be substantially complete within **105 consecutive calendar days**.
 - 3. Phase 1 and Phase 2 shall be completed and ready for final payment within **210 consecutive calendar days** after the date when the contract times commence to run. All retainage for Phase 1 and Phase 2 shall be withheld until final completion and Owner acceptance of the entire project.

1.4 CONTRACTOR USE OF SITE AND PREMISES

- A. Limit use of site and premises to allow:
 - 1. Owner occupancy and operation of the Water Treatment Plant.
 - 2. Work by others and work by Owner
- B. Owner will be operating the Water Treatment Plant continuously during the project. At no time shall Contractor's work prevent the Owner from operating and maintaining the plant facilities. Contractor shall make every effort practical to reduce impact of construction on Owner's operations. When significant impacts are expected Contractor shall closely coordinate with Engineer and Owner.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01019

CONTRACT CONSIDERATIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Miscellaneous Allowance
- B. Franchise Utility Coordination
- C. Schedule of Values
- D. Change Procedures
- E. Defect Assessment
- F. Measurement and Payment – Lump Sum Prices
- G. Measurement and Payment – Unit Prices
- H. Payment – Materials on Hand
- I. Alternatives

1.2 MISCELLANEOUS ALLOWANCE

- A. Included in the Contract is a Miscellaneous Allowance for use upon Owner's instruction.
- B. Contractor's costs for Products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in a written field order authorizing expenditure of funds from this Allowance.
- C. Funds will be drawn from the Miscellaneous Allowance only by written field work order or change order.
- D. At closeout of Contract, funds remaining in Miscellaneous Allowance will be retained by the Owner

1.3 FRANCHISE UTILITY COORDINATION

- A. Coordination With Existing Franchise Utility Companies
 - 1. The Contractor is hereby advised that known utility companies occupy the area in which the work is to be performed. The Contractor shall notify each of the utility companies at least 72 hours prior to the beginning of any construction within the vicinity of the existing utilities.
 - 2. The Engineer will provide the Contractor with all information in his possession as to the location of utilities, but it shall be the responsibility of the Contractor

to contact each utility for the exact marking and location of each utility. The Contractor shall locate, identify, and protect all existing utilities within the project limits (whether shown on the Plans or not) and shall repair any damage to the utilities at no cost to the Owner.

3. The Contractor shall notify the Engineer of any grade conflicts between proposed work and existing utilities. Should there be necessary relocations or adjustments, the Contractor shall coordinate the required relocation or adjustments with the existing utility companies and shall extend full cooperation to the said utility companies.

1.4 SCHEDULE OF VALUES

- A. Submit a printed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet. EJCDC 1910-8-E, Contractor's standard form or electronic media printout will be considered.
- B. Submit Schedule of Values in duplicate within 15 days after date established in Notice to Proceed.
- C. Format:
 1. Utilize the Table of Contents of this Project Manual.
 2. Identify each line item with number and title of the major specification Section.
 3. Identify site mobilization, bonds and insurance.
 4. For Lump sum items, provide logical subsections for each item, breaking down items for inspection, review, and partial payment.
- D. Revise schedule to list approved Work Orders and/or Change Orders with each Application for Payment.

1.5 CHANGE PROCEDURES

- A. The Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by issuing supplemental instructions.
- B. The Engineer may issue a Notice of Change which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, and a change in Contract Time for executing the change. Contractor will prepare and submit an estimate within ten (10) days.
- C. The Contractor may propose changes by submitting a request for change to the Engineer, describing the proposed change and its full effect on the Work.
 1. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other Contractors.

2. Document any requested substitutions in accordance with Section 01600.
- D. Stipulated Sum/Price Change Order: Based on Notice of Change and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Engineer.
- E. Construction Change Directive:
1. Engineer may issue a directive, on AIA Form G713 - Construction Change Directive, EJCDC 1910-8-F Work Directive Change or Engineer's standard form signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 2. Document will describe changes in the Work and designate method of determining any change in Contract Sum/Price or Contract Time.
 3. Promptly execute the change.
- F. Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- G. Change Order Forms: EJCDC No. C-941.
- H. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.6 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Engineer, it is not practical to remove and replace the Work, the Engineer will direct an appropriate remedy or adjust payment.

1.7 MEASUREMENT AND PAYMENT - LUMP SUM PRICES

- A. This section of the specifications covers the components considered to be a portion of each lump sum pay item as may or may not be listed in the Bid Schedule and is furnished to aid the Contractor in preparing his bid.
1. Of necessity, the items described as components of the various items are discussed in a general manner only, describing the major pieces of equipment and/or materials.
 2. Any items and/or appurtenances not specifically mentioned shall be considered a portion of the bid item to which, in the opinion of the Engineer, its function is most directly related.
 3. Failure to list all items and/or appurtenances does not relieve the Contractor from furnishing all apparatuses, devices, labor, or materials of whatever nature required for a complete and operating installation in accordance with the intent of the Plans, approved Shop Drawings, and these Specifications.

- B. The successful Contractor shall, as soon as possible after award of the Contract, submit a list itemizing the components of each Lump Sum Bid Item and their respective costs to be used as an aid in the preparation of partial payments.

1.8 MEASUREMENT AND PAYMENT - UNIT PRICES

- A. Authority: Measurement methods are delineated in the individual Specification sections.
- B. Take measurements and compute quantities. The Engineer will verify measurements and quantities.
- C. Unit Quantities: Quantities and measurements indicated in the Proposal are for Contract purposes only. Quantities and measurements supplied or placed in the Work shall determine payment. Actual quantities provided shall determine payment.
- D. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals, erection, application or installation of an item of the Work overhead and profit.

1.9 PAYMENT – MATERIALS ON HAND

- A. The Contractor is responsible for all equipment and materials ordered and/or delivered to the Project.
- B. No additional payments shall be made to the Contractor and/or suppliers for excess materials not incorporated into the Project.
- C. Any and all payments made by the Owner for equipment or materials as “materials on hand” not utilized in the Work shall be deducted from the retainage.
- D. All equipment and/or materials not incorporated into the Project shall be removed from the Project at the Contractor’s expense.

1.10 ALTERNATIVES

- A. Accepted Alternatives will be identified in Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work as required.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01027

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for payment.

1.2 RELATED SECTIONS

- A. Section 01019 - Contract Considerations: Change procedures.
- B. Section 01019 - Contract Considerations: Schedule of values.
- C. Section 01300 - Submittals: Submittal procedures.
- D. Section 01700 - Contract Closeout: Final payment.

1.3 FORMAT

- A. Application for Payment Form: EJCDC No. C-620.
- B. For each item, provide a column for listing each of the following:
 - 1. Item Number
 - 2. Description of work
 - 3. Scheduled Values
 - 4. Previous Applications
 - 5. Work in Place and Stored Materials under this Application
 - 6. Authorized Change Orders
 - 7. Total Completed and Stored to Date of Application
 - 8. Percentage of Completion
 - 9. Balance to Finish
 - 10. Retainage

1.4 PREPARATION OF APPLICATIONS

- A. Present required information in typewritten form or electronic media printout.
- B. Execute certification by signature of authorized officer.

- C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.
- D. List each authorized Change Order as an extension on AIA G703 - Continuation Sheet, listing Change Order number and dollar amount as for an original item of Work.
- E. Prepare Application for Final Payment as specified in Section 01700.

1.5 SUBMITTAL PROCEDURES

- A. Submit three (3) copies of each Application for Payment.
- B. Submit an updated construction schedule with each Application for Payment.
- C. Payment Period: Submit at intervals stipulated in the Agreement.
- D. Include the following with the application:
 - 1. Partial release of liens from major subcontractors and vendors.
 - 2. Affidavits attesting to off-site stored products.
 - 3. Construction progress schedules, revised and current.
- E. The Contractor and the Resident Project Representative (RPR) shall review the pay request in the field and shall agree to the quantities prior to submission to the Engineer. The Engineer's pay request shall be based on the recommendations of the RPR. Submission of a pay request to the Engineer without the review and approval by the Owner's RPR will be rejected.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01039

COORDINATION AND MEETINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Coordination and Project Conditions
- B. Field Engineering
- C. Preconstruction Meeting

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation.
- B. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.
- C. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents to minimize disruption of Owner's activities.

1.3 FIELD ENGINEERING

- A. Engineer will locate survey control and reference points. It is the Contractor's responsibility to protect control points during construction. Replacement of damaged control and reference points shall be at the Contractor's expense.
- B. Control datum for survey is that shown on Plans.

1.4 PRECONSTRUCTION MEETING

- A. Engineer will schedule a meeting after Notice of Award.
- B. Attendance Required: Owner, Engineer, Contractor and major Subcontractors.
- C. Agenda:
 - 1. Distribution of Contract Documents.
 - 2. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 - 3. Designation of personnel representing the parties in Contract and the Engineer.

4. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 5. Scheduling.
 6. Contractor's access to the site
 7. Use of premises by Owner and Contractor.
 8. Coordination of tie-ins.
 9. Owner's requirements.
 10. Application for Payment procedures.
 11. Procedures for testing.
 12. Procedures for maintaining record documents.
- D. Engineer to record minutes and distribute copies within five (5) days after meeting to participants.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 01041

PROJECT COORDINATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Construction Mobilization
- B. Schedules
- C. Submittals
- D. Closeout Procedures.

1.2 CONSTRUCTION MOBILIZATION

- A. Coordinate with the Resident Project Representative in allocation of mobilization areas of site; for field offices and sheds, for access, traffic, and parking facilities.
- B. During construction, coordinate use of site and facilities through the Resident Project Representative.
- C. Coordinate with Resident Project Representative's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- D. Coordinate with the Resident Project Representative for use of temporary utilities and construction facilities.
- E. Coordinate field engineering and layout work with the Resident Project Representative.

1.3 SCHEDULES

- A. Submit preliminary progress schedule in accordance with Section 01300 coordinated with Project construction schedule.
- B. After review, revise and resubmit schedule to comply with revised Project schedule.
- C. During progress of work revise and resubmit with Applications for Payment.

1.4 SUBMITTALS

- A. Provide submittals to Project Coordinator for review and transmittal to Engineer.
- B. Submit preliminary shop drawings, product data and samples in accordance with Section 01300 for review and compliance with Contract Documents, for field dimensions and clearances, for relation to available space, and for relation to work of separate contracts. Revise and resubmit as required.

- C. Submit applications for payment on EJCDC No. C-620.
- D. Submit requests for interpretation of Contract Documents, and obtain instructions through the Resident Project Representative.
- E. Process requests for substitutions, and change orders, through the Project Coordinator.
- F. Deliver closeout submittals for review and preliminary inspection reports, for transmittal to Engineer.

1.5 CLOSEOUT PROCEDURES

- A. Notify Resident Project Representative when Work is considered ready for Substantial Completion. Accompany Resident Project Representative on preliminary inspection to determine items to be listed for completion or correction in Contractor's Notice of Substantial Completion.
- B. Coordinate with Resident Project Representative's instructions to correct items of work listed in executed Certificates of Substantial Completion.
- C. Notify Resident Project Representative when Work is considered finally complete. Accompany Resident Project Representative on preliminary final inspection.
- D. Coordinate with Resident Project Representative's instructions for completion of items of Work determined by Engineer's final inspection.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01090

REFERENCE STANDARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality Assurance

1.2 QUALITY ASSURANCE

- A. For Products or workmanship specified by association, trade or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents.
- C. Maintain copy at project site during submittals, planning and progress of the specific work, until Substantial Completion.
- D. Should specified reference standards conflict with Contract Documents, request clarification from the Engineer before proceeding.
- E. Neither the contractual relationship, duties and responsibilities of the parties in Contract nor those of the Engineer shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01200

BID ITEM DESCRIPTIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This section of the Specifications covers the components considered to be a portion of each pay item as may or may not be listed in the Proposal and is furnished to aid the Contractor in preparing his bid.
 - 1. Of necessity, the items described as components of the various items are discussed in a general manner only, describing the major pieces of equipment and/or materials.
 - 2. Any items and/or appurtenances not specifically mentioned shall be considered a portion of the bid item to which, in the opinion of the Engineer, its function is related.
 - 3. Failure to list all items and/or appurtenances does not relieve the Contractor from furnishing all apparatuses, devices, labor, or materials of whatever nature required for a complete and operating installation in accordance with the intent of the Contract Documents.
- B. The Contractor's bid price for each item listed in the Proposal shall include all cost associated with the completion of the project including equipment, materials, tools, labor, insurance, goods, supplies, safety, fuel, rentals, maintenance, repairs, permits, legal fees, licenses, direct costs, indirect costs, overhead, and profit.
- C. The successful Contractor shall, as soon as possible after award of the Contract, submit a list itemizing the components of each Lump Sum Bid Item and their respective costs to be used as an aid in the preparation of partial payments.
- D. The work called for by the Contract Documents shall be paid for under a single contract on the bases set forth in the Proposal. The total price bid shall constitute full compensation for all work indicated in the Contract Documents.
- E. Partial payments shall be made to the Contractor based on monthly estimates submitted to the Engineer for approval in accordance with the General and Supplemental Conditions. All estimates for partial payment shall be based on completed work and corresponding dollar amounts as provided in the Proposal and in accordance with the approved schedule of values.
- F. Unique or sole sourced items - "Tying or packaging" of equipment for the purpose of thwarting competition shall be considered to be in non-compliance with these

Specifications. Manufacturers shall price items under each subsection or sections separately.

- G. The Contractor shall, as soon as possible, submit a list itemizing the components of each Lump Sum Bid Item and their respective costs to be used as an aid in the preparation of partial payments.

1.2 BASE BID

A. Mobilization, Insurance, and Bonds:

1. Item shall consist of all preparatory work and operations, including but not limited to insurance and bonds; those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; for the establishment of all temporary sanitation facilities, project signs, and other facilities necessary for work on the project; and for all work and operations which must be performed or costs incurred prior to beginning work on the various items on the project site as well as the cost to maintain insurance, bonds, personnel, equipment, supplies, and facilities for the duration of the Project.
2. All work covered by this section will be paid for at the contract lump sum price for Mobilization, Insurance, and Bonds.
3. Partial payments for this item will be made with the first and second partial pay estimates paid on the contract, and will be made at the rate of fifty percent (50%) of the lump sum price for "Mobilization, Insurance, and Bonds" on each of these partial pay estimates, PROVIDED THE AMOUNT BID FOR Mobilization, Insurance, and Bonds does not exceed five percent (5%) of the total amount bid for the contract.
4. Where the amount bid for Mobilization, Insurance, and Bonds exceeds five percent (5%) of the total amount bid for the contract, 2 ½ percent of the total amount bid will be paid on each of the first two partial pay estimates, and that portion exceeding five percent (5%) will be paid on the last partial pay estimate.

B. Filter Disinfection and Testing:

1. Item shall consist of furnishing all tools, equipment, materials, and labor necessary to disinfect a dual media filter in accordance with the latest version of AWWA C653, Section 4.4.3 prior to placing the filter back in service.
2. Disinfection is required for all portions of the facility that are either downstream from the filter influent or downstream from the first point of primary disinfectant in the treatment process as stated in AWWA C653.
3. Item shall include all cost associated with disinfection, sampling, lab analysis, and all laboratory fees in accordance with the Contract Documents.

4. Measurement and payment for this item shall be per each filter successfully disinfected as approved by the Engineer.

C. Plant Piping Disinfection and Testing:

1. Item shall consist of furnishing all tools, equipment, materials, and labor necessary to disinfect a plant piping in accordance with the latest version of AWWA C653, Section 4.4.1 and AWWA C651 prior to placing the plant piping back in service.
2. Disinfection is required for all portions of the facility that are either downstream from the filter influent or downstream from the first point of primary disinfectant in the treatment process as stated in AWWA C653.
3. Item shall include all cost associated with disinfection, sampling, lab analysis, and all laboratory fees in accordance with the Contract Documents.
4. Measurement and payment for this item shall be per each filter successfully disinfected as approved by the Engineer.

D. Filter Underdrain and Media Improvements - Filter 7:

1. Item shall consist of all Contractors cost associated with installation of new filter underdrain system and media for Filter No. 7 including but not limited to the following: removal and disposal of the existing filter media and underdrains, sawcutting, chipping, grouting, cleaning and preparation of existing filter floors for grouting, installation of the underdrain and media, anchor rods, unistrut, coordinating, unloading, storage, overhead, and profit.
2. The equipment and material cost for filter underdrains and media shall be paid for under the Filter Underdrain and Media Allowance. All items included in the specification and/or plans for the filter media and underdrain improvements not included in Leopold's scope of supply and services shall be included in the Contractor's bid price for this Bid Item.
3. Measurement and payment for this item shall be lump sum and paid based on the Engineer's estimated percent complete and the schedule of values as approved by the Engineer.

E. Filter Underdrain and Media Allowance – Filter 7:

1. The Allowance shall consist of Leopold furnishing equipment, materials, and start-up services for the new filter underdrain system and media for Filter No. 7 as shown in the plans and as stated in the attached scope of supply document in the Appendices.

2. The Contractor is responsible for all installation and items not listed in the scope of supply document. Any item not specifically addressed by the other bid items shall be considered subsidiary to the various bid items.
3. Measurement and payment for this item shall be based on reimbursement for paid receipts from the manufacturer paid and submitted by the Contractor with monthly pay request.
4. Upon completion of the project, any and all funds remaining in the Allowance shall be retained by the Owner.

F. Electronic Valve Positioner/Controllers Allowance – Filters 1 - 10:

1. The Allowance shall consist of Leopold furnishing and installing all equipment, materials, and start-up services to remove and replace the existing electronic valve positioners/controllers for each filter effluent control valve on Filters 1-10 as shown in the plans and as stated in the attached scope of supply document in the Appendices.
2. The Contractor is responsible for all items not listed in the scope of supply document. Any item not specifically addressed by the other bid items shall be considered subsidiary to the various bid items.
3. Measurement and payment for this item shall be based on reimbursement for paid receipts from the manufacturer paid and submitted by the Contractor with monthly pay request.
4. Upon completion of the project, any and all funds remaining in the Allowance shall be retained by the Owner.

G. Filter Effluent Turbidimeters – Filters 6, 7, 9 and 10:

1. Item shall consist of furnishing all tools, equipment, materials, and labor necessary to remove and replace the existing filter effluent turbidimeters for Filters 6, 7, 9 and 10 including all necessary wall supports, brackets, anchors, tubing, wiring, conduit, and appurtenances as required.
2. This item shall include startup, commissioning, operation and maintenance documentation, training, and necessary appurtenances for complete and operable filter effluent turbidimeters.
3. Measurement and payment for this item shall be per each filter effluent turbidimeter removed and replaced as approved by the Engineer.

H. Ultrasonic Level Transmitters – Filters 1-10:

1. Item shall consist of furnishing all tools, equipment, materials, and labor necessary to remove and replace the existing level transmitters for Filters 1-10 including all necessary wall supports, brackets, anchors, stilling well, wiring, conduit, and appurtenances as required.

2. This item shall include startup, commissioning, operation and maintenance documentation, training, and necessary appurtenances for complete and operable filter level transmitters.
3. Measurement and payment for this item shall be per each level transmitter removed and replaced as approved by the Engineer.

I. Remove Existing 24-in Butterfly Valve and Actuator:

1. Item shall consist of furnishing all tools, equipment, materials, and labor necessary to remove an existing 24-in butterfly valve and actuator. Existing valve and actuator shall be properly disposed of offsite by the Contractor. If the existing actuator is Rotork/K-tork actuator it shall be salvaged and returned to the Owner. Contractor shall provide temporary supports and blind flanges for piping as required.
2. Measurement and payment for this item shall be per each 24-in butterfly valve and actuator removed and properly disposed of offsite as approved by the Engineer.

J. Remove Existing 12-in Butterfly Valve and Actuator:

1. Item shall consist of furnishing all tools, equipment, materials, and labor necessary to remove an existing 12-in butterfly valve and actuator. Existing valve and actuator shall be properly disposed of offsite by the Contractor. If the existing actuator is Rotork/K-tork actuator it shall be salvaged and returned to the Owner. Contractor shall provide temporary supports and blind flanges for piping as required.
2. Measurement and payment for this item shall be per each 12-in butterfly valve and actuator removed and properly disposed of offsite as approved by the Engineer.

K. Remove Existing 8-in Butterfly Valve and Actuator:

1. Item shall consist of furnishing all tools, equipment, materials, and labor necessary to remove an existing 8-in butterfly valve and actuator. Existing valve and actuator shall be properly disposed of offsite by the Contractor. If the existing actuator is Rotork/K-tork actuator it shall be salvaged and returned to the Owner. Contractor shall provide temporary supports and blind flanges for piping as required.
2. Measurement and payment for this item shall be per each 8-in butterfly valve and actuator removed and properly disposed of offsite as approved by the Engineer.

L. Install 24-in Butterfly Valve and Actuator:

1. Item shall consist of furnishing all tools, equipment, materials, and labor for a complete 24-in butterfly valve and pneumatic actuator including but not limited

to joining of pipe, valve, actuator, tubing, fittings, gaskets, nuts and bolts, flange fillers, flange adapters, and appurtenances for a complete and operable valve assembly as shown and specified.

2. Contractor shall field verify the dimensions of the existing piping arrangements and make adjustments to as to accommodate the replacement valve and actuators as required at no additional cost to the Owner.
3. Measurement and payment of this item shall be per each for a complete and operable valve assembly as shown in the Plans and as approved by the Engineer.

M. Install 12-in Butterfly Valve and Actuator:

1. Item shall consist of furnishing all tools, equipment, materials, and labor for a complete 12-in butterfly valve and pneumatic actuator including but not limited to joining of pipe, valve, actuator, tubing, fittings, gaskets, nuts and bolts, flange fillers, flange adapters, and appurtenances for a complete and operable valve assembly as shown and specified.
2. Contractor shall field verify the dimensions of the existing piping arrangements and make adjustments to as to accommodate the replacement valve and actuators as required at no additional cost to the Owner.
3. Measurement and payment of this item shall be per each for a complete and operable valve assembly as shown in the Plans and as approved by the Engineer.

N. Install 8-in Butterfly Valve and Actuator:

1. Item shall consist of furnishing all tools, equipment, materials, and labor for a complete 8-in butterfly valve and pneumatic actuator including but not limited to joining of pipe, valve, actuator, tubing, fittings, gaskets, nuts and bolts, flange fillers, flange adapters, and appurtenances for a complete and operable valve assembly as shown and specified.
2. Contractor shall field verify the dimensions of the existing piping arrangements and make adjustments to as to accommodate the replacement valve and actuators as required at no additional cost to the Owner.
3. Measurement and payment of this item shall be per each for a complete and operable valve assembly as shown in the Plans and as approved by the Engineer.

O. Miscellaneous Allowance:

1. Item shall consist of miscellaneous extra work in accordance with the Contract Documents. No work shall be performed under this item without a prior written field order or change order executed by the Owner, Engineer, and Contractor.
2. Use of this allowance is at the sole discretion of the Owner. All or any unused portion shall be retained by Owner at the end of the project.

1.3 ADDITIVE ALTERNATE 1

A. Recoat Filter Pipe Gallery Piping – Filters 1 -4:

1. Item shall consist of furnishing all tools, equipment, materials, and labor necessary for surface preparation, cleaning, power washing, and coating all piping, fittings, valves, and pipe supports in the filter pipe gallery.
2. Pipe gallery piping shall confirm to TCEQ color coding and label requirements. Contractor shall provide and install new pipe labels and flow arrows. The identification of influent, effluent, waste backwash, and chemical feed lines shall be accomplished by the use of labels and colors of paint. Labels shall be placed along the pipe at no greater than five-foot intervals.
3. Measurement and payment for this item shall be lump sum and paid based on the Engineer's estimated percent complete and schedule of values as approved by the Engineer.

1.4 ADDITIVE ALTERNATE 2

A. Recoat Filter Pipe Gallery Piping – Filters 5 -10:

1. Item shall consist of furnishing all tools, equipment, materials, and labor necessary for surface preparation, cleaning, power washing, and coating all piping, fittings, valves, and pipe supports in the filter pipe gallery.
2. Pipe gallery piping shall confirm to TCEQ color coding and label requirements. Contractor shall provide and install new pipe labels and flow arrows. The identification of influent, effluent, waste backwash, and chemical feed lines shall be accomplished by the use of labels and colors of paint. Labels shall be placed along the pipe at no greater than five-foot intervals.
3. Measurement and payment for this item shall be lump sum and paid based on the Engineer's estimated percent complete and schedule of values as approved by the Engineer.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittal Procedures
- B. Construction Progress Schedules
- C. Product Data
- D. Shop Drawings
- E. Samples
- F. Design Data
- G. Test Reports
- H. Certificates
- I. Manufacturer's Instructions
- J. Manufacturer's Field Report
- K. Erection Drawings

1.2 RELATED SECTIONS

- A. Section 01400 - Quality Control: Manufacturer's field services and reports.
- B. Section 01700 - Contract Closeout: Contract warranties, manufacturer's certificates and closeout submittals.

1.3 SUBMITTAL PROCEDURES

- A. Transmit each submittal with AIA Form G810 or Engineer accepted form.
- B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.

- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite the Project, and deliver to Engineer at business address. Coordinate submission of related items.
- F. For each submittal for review, allow fifteen (15) working days, excluding delivery time to and from the Contractor.
- G. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- H. Provide space for Contractor and Engineer review stamps.
- I. When revised for resubmission, identify all changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- K. Clearly identify materials and equipment data pertinent to the project.

1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedule in duplicate within fifteen (15) days after date of Owner-Contractor Agreement. Schedule shall be submitted prior to the Pre-construction Conference.
- B. Revise and resubmit as required.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a computer generated horizontal bar chart with separate line for each major portion of Work or operation, identifying first work day of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- F. Indicate estimated percentage of completion for each item of Work at each submission.

1.5 PRODUCT DATA

- A. Product Data for Review:

1. Submitted to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.
 2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.
- B. Product Data for Information:
1. Submitted for the Engineer's knowledge as contract administrator or for the Owner.
- C. Product Data for Project Closeout:
1. Submitted for the Owner's benefit during and after project completion.
- D. Submit the number of copies which the Contractor requires, plus three (3) copies which will be retained by the Engineer. Email submission of submittals is acceptable.
- E. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- F. Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- G. After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01700 - CONTRACT CLOSEOUT.

1.6 SHOP DRAWINGS

- A. Shop Drawings for Review:
1. Submit shop drawings to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 2. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.
- B. Shop Drawings for Information:
1. Submitted for the Engineer's knowledge as contract administrator or for the Owner.

- C. Shop Drawings for Project Closeout:
 - 1. Submitted for the Owner's benefit during and after project completion.
- D. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

1.7 SAMPLES

- A. Samples for Review:
 - 1. Submit samples to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 - 2. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.
- B. Samples for Information:
 - 1. Submitted for the Engineer's knowledge as contract administrator or for the Owner.
- C. Samples for Selection:
 - 1. Submitted to Engineer for aesthetic, color, or finish selection.
 - 2. Submit samples of finishes from the full range of manufacturer's standard colors, in custom colors selected, textures, and patterns for Engineer selection.
 - 3. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.
- D. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- E. Include identification on each sample, with full Project information.
- F. Submit the number of samples specified in individual specification sections; one of which will be retained by Engineer.
- G. Reviewed samples which may be used in the Work are indicated in individual specification sections.

- H. Samples will not be used for testing purposes unless specifically stated in the specification section.

1.8 DESIGN DATA

- A. Submit for the Engineer's knowledge as contract administrator or for the Owner.
- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.9 TEST REPORTS

- A. Submit for the Engineer's knowledge as contract administrator or for the Owner.
- B. Submit test reports for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.10 CERTIFICATES

- A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the Contractor to Engineer, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to the Engineer.

1.11 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer for delivery to Owner in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- C. Refer to Section 01400 - QUALITY CONTROL, Manufacturer's Field Services article.

1.12 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for the Engineer's benefit as contract administrator or for the Owner.
- B. Submit report in duplicate within 30 days of observation to Engineer for information.

- C. Submit information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.13 ERECTION DRAWINGS

- A. Submit drawings for the Engineer's benefit as contract administrator or for the Owner.
- B. Submit information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by the Engineer or Owner.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality Assurance - Control of Installation
- B. Tolerances
- C. References and Standards
- D. Testing Services
- E. Manufacturers' Field Services

1.2 RELATED SERVICES

- A. Section 01090 - Reference Standards
- B. Section 01300 - Submittals: Submission of manufacturer's instructions and certificates.
- C. Section 01600 - Material and Equipment: Requirements for material and product quality.

1.3 QUALITY ASSURANCE - 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. Should 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 that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

- G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.4 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. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.5 REFERENCES AND STANDARDS

- A. For Products or workmanship specified by association, trade or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard which are current based upon the dates indicated in the Contract Documents.
- C. Maintain copies of all applicable reference standards on-site during submittal review, planning, and construction of the specific work, until Substantial Completion.
- D. Should specified reference standards conflict with Contract Documents, request clarification from the Engineer before proceeding.
- E. Neither the contractual relationship, duties and responsibilities of the parties in Contract, nor those of the Engineer shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

1.6 TESTING SERVICES

- A. The Contractor shall be responsible for all costs associated with performing tests on the prepared surfaces and coatings installed including but not limited to; measurement of dry film thickness, holiday and pinhole testing, and hold point inspections.
- B. The Contractor shall employ and pay for specified services of an independent firm to perform sampling and bacteriological testing associated with WTP improvements.
- C. Testing and source quality control may occur on or off the project site. Perform off-site testing as required by the Engineer or the Owner.
- D. Reports will be submitted by the independent firm to the Engineer and Contractor, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Engineer and independent firm 24 hours prior to expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- F. Testing does not relieve Contractor from performing Work to Contract requirements.
- G. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Engineer. Payment for re-testing will be the responsibility of the Contractor.

1.7 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual Specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Engineer thirty (30) days in advance of required observations. Observer subject to approval of Engineer.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

- A. The Engineer or Engineer's Representative shall be present for all testing performed on the Work installed. Test results will not be accepted if the Engineer or Engineer's Representative is not present at the time of the testing. Additional testing required for test results that were not accepted shall be performed at no additional cost to the Owner.
- B. Verify that existing site conditions and weather are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

- C. Verify that existing surfaces and coatings are prepared for new Work being applied or attached.
- D. Examine and verify specific conditions described in individual Specifications sections.

3.2 PREPARATION

- A. Clean surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION

SECTION 01410

TESTING SERVICES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Selection and Payment
- B. Quality Assurance
- C. Agency Responsibilities
- D. Agency Reports
- E. Limits on Testing Authority
- F. Contractor Responsibilities
- G. Schedule of Tests

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals: Manufacturer's certificates.
- B. Section 01700 - Contract Closeout: Project record documents.

1.3 REFERENCES

- A. ASTM C802 - Practice for Conducting an Interlaboratory Test Program to Determine the Precision of Test Methods for Construction.
- B. ASTM C1021 - Practice for Laboratories Engaged in the Testing of Building Sealants.
- C. ASTM C1077 - Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
- D. ASTM C1093 - Practice for Accreditation of Testing Agencies for Unit Masonry.
- E. ASTM D290 - Recommended Practice for Bituminous Mixing Plant Inspection.
- F. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- G. ASTM D4561 - Practice for Quality Control Systems for an Inspection and Testing Agency for Bituminous Paving Materials.

- H. ASTM E329 - Practice for Use in the Evaluation of Inspection and Testing Agencies as Used in Construction.
- I. ASTM E543 - Practice for Determining the Qualification of Nondestructive Testing Agencies.
- J. ASTM E548 - Practice for Preparation of Criteria for Use in the Evaluation of Testing Laboratories and Inspection Bodies.
- K. ASTM E699 - Practice for Criteria for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating Building Components in Accordance with Test Methods Promulgated by ASTM Committee E6.

1.4 SELECTION AND PAYMENT

- A. Costs associated with bacteriological sampling and testing for the WTP Improvements will be paid by the Contractor.
- B. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Engineer. Payment for re-testing will be the responsibility of the Contractor.

1.5 QUALITY ASSURANCE

- A. Laboratory: Authorized to operate in State in which Project is located.
- B. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
- C. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.6 AGENCY RESPONSIBILITIES

- A. Test samples of mixes submitted by Contractor.
- B. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
- C. Perform specified sampling and testing of Products in accordance with specified standards.
- D. Ascertain compliance of materials and mixes with requirements of Contract Documents.

- E. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or Products.
- F. Perform additional tests required by Engineer.
- G. Attend preconstruction meetings and progress meetings.

1.7 AGENCY REPORTS

- A. After each test, promptly submit two copies of report to Engineer and to Contractor.
- B. Include:
 - 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 the Project
 - 7. Type of Inspection or Test
 - 8. Date of Test
 - 9. Results of Tests
 - 10. Conformance with Contract Documents
- C. When requested by Engineer, provide interpretation of test results.

1.8 LIMITS ON TESTING AUTHORITY

- A. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Agency or laboratory may not approve or accept any portion of the Work.
- C. Agency or laboratory may not assume any duties of Contractor.
- D. Agency or laboratory has no authority to stop the Work.

1.9 CONTRACTOR RESPONSIBILITIES

- A. Deliver to agency or laboratory at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.
- B. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
- C. Provide incidental labor and facilities:
 - 1. To provide access to Work to be tested.
 - 2. To obtain and handle samples at the site or at source of Products to be tested.
 - 3. To facilitate tests.
 - 4. To provide storage and curing of test samples.
- D. Notify Engineer and laboratory 24 hours prior to expected time for operations requiring testing services.

1.10 SCHEDULE OF TESTS

- A. Individual Specification Sections: Tests required and standards for testing.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary Sanitary Utilities: Sanitary Facilities
- B. Temporary Controls: Barriers, enclosures and fencing, protection of the Work, and water control.
- C. Construction Facilities: Access roads, parking, progress cleaning, project signage, and temporary buildings.

1.2 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required sanitary facilities and enclosures at time of project mobilization.
- B. Contractor's employees shall not utilized Owner's restrooms during construction.

1.3 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.4 WATER CONTROL

- A. Grade site to drain. Maintain excavations and embankments free of water. Provide, operate, and maintain pumping equipment, or other devices, as necessary to remove groundwater or surface water from the trench at no additional expense to the owner.

1.5 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification sections.

- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.

1.6 SECURITY

- A. Provide security and facilities to protect Work from unauthorized entry, vandalism or theft.
- B. Coordinate with Owner's security program.

1.7 ACCESS ROADS

- A. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic flow.
- B. Provide means of removing mud from vehicle wheels before entering streets.

1.8 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Collect and remove waste materials, debris and rubbish from site periodically and dispose off-site.

1.9 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials prior to Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of two (2) feet where indicated on the drawings. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Transportation and Handling
- B. Storage and Protection
- C. Product Options
- D. Substitutions

1.2 TRANSPORTATION AND HANDLING

- A. Transport and handle Products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and that the Products are undamaged.
- C. Provide equipment and personnel to handle Products by recommended methods to prevent soiling, disfigurement, or damage.

1.3 STORAGE AND PROTECTION

- A. Store and protect Products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive Products in weather tight, climate controlled, enclosures in an environment favorable to Product if recommended by manufacturer.
- D. For exterior storage of fabricated Products, place on sloped supports to ensure drainage and 4-6" above natural ground.
- E. Provide off-site storage and protection when site does not permit on-site storage or protection. Engineer must have full access to off-site storage locations.
- F. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

- H. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.4 PRODUCT OPTIONS

- A. Supply products specified which meet reference standards or descriptions.
- B. No options or substitutions will be allowed for products of manufacturers names, unless otherwise allowed by the referenced section.
- C. If allowed by the referenced section, submit a request for substitution for any manufacturer not named in accordance with the following article.

1.5 SUBSTITUTIONS

- A. Engineer will consider requests for Substitutions only within fifteen (15) days after date established in Notice to Proceed.
- B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. A request constitutes a representation that the Contractor:
 - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - 2. Will provide the same warranty for the Substitution as for the specified Product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will reimburse Owner and Engineer for review or redesign services associated with re-approval by authorities.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals without separate written request or when acceptance will require revision to the Contract Documents.

F. Substitution Submittal Procedure:

1. Submit three (3) copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
2. Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on the Contractor.
3. The Engineer will notify Contractor in writing of decision to accept or reject request.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01650

STARTING OF SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Starting Systems
- B. Demonstration and Instructions
- C. Testing, Adjusting, and Balancing

1.2 RELATED SECTIONS

- A. Section 01400 - Quality Control: Manufacturers field reports.
- B. Section 01700 - Contract Closeout: System operation and maintenance data and extra materials.

1.3 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Engineer seven (7) days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable manufacturer's representative in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with Section 01300 that equipment or system has been properly installed and is functioning correctly.

1.4 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two (2) weeks prior to date of Substantial Completion.
- B. Demonstrate Project equipment and instruct in a classroom environment and instructed by a qualified manufacturers' representative who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six (6) months.
- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time at equipment location.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- G. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

1.5 TESTING, ADJUSTING, AND BALANCING

- A. Owner will appoint and employ services of an independent firm to perform testing, adjusting, and balancing. Contractor shall pay for services.
- B. Reports will be submitted by the independent firm to the Engineer indicating observations and results of tests and indicating compliance or non-compliance with the requirements of the Contract Documents.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Closeout Procedures
- B. Final Cleaning
- C. Project Record Documents
- D. Operation and Maintenance Data
- E. Spare Parts and Maintenance Products
- F. Warranties
- G. Maintenance Service

1.2 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's review.
- B. Provide submittals to Engineer that are required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- D. Submit a notarized copy of the Certificate of Final Completion as provided in the contract documents with the final pay request.

1.3 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Remove waste and surplus materials, rubbish, and construction facilities from the site.
- C. Remove all field offices and temporary structures.

1.4 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other modifications to the Contract
 - 5. Reviewed Shop Drawings, Product Data, and Samples
 - 6. Manufacturer's instructions for assembly, installation, and adjusting
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Legibly mark and record each Product section description of the specifications with actual Products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured horizontal and vertical locations of utilities and appurtenances.
 - 2. Field changes of dimension and detail.
 - 3. Details not on original Contract drawings.
- G. Submit documents to Engineer prior to final Application for Payment.

1.5 OPERATION AND MAINTENANCE DATA

- A. Submit data bound in 8½ x 11 inch text pages, three D side ring binders with durable plastic covers. Refer to Section 01730.

1.6 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra products in quantities specified in individual specification sections.
- B. Deliver to the project site and place in location as directed; obtain receipt prior to final payment.

1.7 WARRANTIES

- A. Provide duplicate notarized copies.
- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers and manufacturers.
- C. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.
- D. Submit prior to final Application for Payment.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as start of warranty period.
- F. The Contractor shall guarantee for one (1) year from the date of final acceptance that the work will be free from defects in materials and workmanship unless otherwise noted.

1.8 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in specification sections for one (1) year from date of Final Acceptance during the warranty period.
- B. Include systematic examination and adjustment of components. Repair or replace materials whenever required. Use materials produced by the manufacturer of the original component.
- C. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.
- D. Grade areas to ensure minimal settlement of pipe trench. Provide erosion control devices as specified.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01730

OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality Assurance
- B. Format
- C. Contents, Each Volume
- D. Manual for Equipment and Systems
- E. Instructions of Owner Personnel
- F. Submittals

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals: Submittals procedures. Shop drawings, product data, and samples.
- B. Section 01400 - Quality Control: Manufacturers' instructions.
- C. Section 01600 - Material and Equipment: Systems demonstration.
- D. Section 01700 - Contract Closeout: Contract closeout procedures, project record documents.
- E. Section 01700 - Warranties
- F. Individual Specifications Sections: Specific requirements for operation and maintenance data.

1.3 QUALITY ASSURANCE

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.4 FORMAT

- A. Prepare data in the form of an instructional manual.
- B. Binders: Commercial quality, 8½ x 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

- C. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- D. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
- E. Text: Manufacturer's printed data, or typewritten data on 24-pound paper.
- F. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- G. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by process flow and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Photocopies of warranties and bonds.

1.5 CONTENTS, EACH VOLUME

- A. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Engineer, Sub-consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

- B. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- C. Product Data:
 - 1. Mark each sheet to clearly identify specific products and component parts, and data applicable to installation.
 - 2. Delete inapplicable information.
- D. Drawings:
 - 1. Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
 - 2. Do not use Project Record Documents as maintenance drawings.
- E. Typed Text:
 - 1. As required to supplement product data.
 - 2. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01400.
- F. Warranties: Bind in copy of each.

1.6 MANUAL FOR MATERIALS AND FINISHES

- A. Building Products, Applied Materials, and Finishes:
 - 1. Include product data, with catalog number, size, composition, and color and texture designations.
 - 2. Provide information for re-ordering custom manufactured Products.
- B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products:
 - 1. Include product data listing applicable reference standards, chemical composition, and details of installation.
 - 2. Provide recommendations for inspections, maintenance, and repair.
- D. Additional Requirements: As specified in individual Product specification sections.
- E. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.7 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Each Item of Equipment and Each System:
 - 1. Include description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
- B. Panel board Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- C. Include color-coded wiring diagrams as installed.
- D. Operating Procedures:
 - 1. Include start-up, break-in, and routine normal operating instructions and sequences.
 - 2. Include regulation, control, stopping, shutdown, and emergency instructions.
 - 3. Include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and re-assembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Provide servicing and lubrication schedule, and list of lubricants required.
- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide control diagrams by controls manufacturer as installed.
- K. Provide Contractor's coordination drawings, with color-coded piping diagrams as installed.
- L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Include test and balancing reports as specified in Section 01400.

- O. Additional Requirements: As specified in individual Product specification sections.
- P. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

1.8 INSTRUCTIONS OF OWNER PERSONNEL

- A. Before final inspection, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.
- B. For equipment requiring seasonal operation, perform instructions for other seasons within six (6) months.
- C. Use operation and maintenance manuals as basis for instruction.
- D. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- E. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

1.9 SUBMITTALS

- A. Submit two (2) copies of preliminary draft or proposed formats and outlines of contents before start of Work. Engineer will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one (1) copy of completed volumes fifteen (15) days prior to final inspection.
 - 1. This copy will be reviewed and returned after final inspection, with Engineer comments.
 - 2. Revise content of all document sets as required prior to final submission.
- D. Submit two (2) sets of revised final volumes in final form within ten (10) days after final inspection.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

DIVISION 02
EXISTING CONDITIONS

SECTION 02160

DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Demolition of designated structures and removal of materials from site.
- B. Removal of pipes, fittings, valves, electrical, and controls.

1.2 RELATED SECTIONS

- A. Section 01019 - Contract Considerations
- B. Section 01039 - Coordination and Meetings
- C. Section 01700 - Contract Closeout
- D. Section 02205 - Soil Materials

1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Indicate demolition and removal sequence and location of salvageable items; location and construction of barricades and temporary work.
- C. Record Documents: Accurately record actual locations of capped utilities, or any other subsurface obstructions.
- D. The Contractor is required to submit the following:
 - 1. (Lead Safety Program in writing and schedule of regularly scheduled lead safety orientation meetings.
 - 2. Detailed work plan and schedule including the following items at a minimum:
 - a. Sketch showing location, size, and details of the controlled areas and control methods;
 - b. On-Site, Off-Site, and Employee Protection Plan indicating equipment to be used;
 - c. Air Sampling Plan;
 - d. Employee Training and Awareness Plan;

- e. Medical Protection and Removal Plan;
 - f. Expected hours of operations;
 - g. Tentative Work Schedule; and
- 3. Quality Control Program.
 - 4. Respiratory protection program.
 - 5. Results of Medical Testing.
 - 6. Methodology for protection of the ground surface adjacent to the tank.
 - 7. Record drawings showing exact location of water line plugs and any other construction features.

1.4 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition of structures, safety of adjacent structures, dust control, runoff control and disposal.
- B. Obtain required permits from authorities.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. USPA - 40 CFR Chapter 1 §261 - §261.6 Requirements for Recyclable Materials.
- E. OSHA – 29 CFR Part 1926 – Safety and Health Regulations for Construction

1.5 SCHEDULING

- A. Schedule work to facilitate the Owner's operation of the WTP.
- B. Describe demolition removal procedures and schedule.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Fill Material: Type S2 common fill, specified in Section 02205. Compacted to 90 percent of standard density within 4 percent of optimum moisture.
- B. Top Soil: Type S4 top soil as specified in Section 02205. Minimum six (6) inches tamped in place at all disturbed areas.

PART 3 EXECUTION

3.1 PREPARATION

- A. Provide, erect, and maintain temporary barriers and security devices as necessary.
- B. Protect existing landscaping materials, appurtenances, structures, and roadways which are not to be demolished.
- C. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.
- D. Mark location of utilities.

3.2 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent structures.
- B. Cease operations immediately if adjacent structures appear to be in danger. Notify Engineer. Do not resume operations until directed.
- C. Sprinkle work with water to minimize dust. Provide hoses and water connections for this purpose.

3.3 FILTER MEDIA AND UNDERDRAIN DEMOLITION

- A. The existing troughs are to remain. Protect from damage.
- B. Remove and properly dispose of the existing filter media (sand and anthracite) offsite.
- C. Remove and properly dispose of the existing underdrain system including underdrain blocks, grout, anchors, unistrut, and all appurtenances. All existing reinforcing steel, rods, or dowels exposed as a result of the underdrain removal shall be cut flush with the concrete surface and covered with fresh grout.
- D. Floors and wall shall be cleaned prior to grout placement. Remove existing grout, concrete splatter, dirt, debris, and laitances. Remove loose, chipped, and broken concrete and replace to as good or better condition as directed by the Engineer. Clean floors and walls to remove chemical and foreign matter that will inhibit adhesion of the grout. Floors and walls shall be inspected and approved by the Engineer and Filter Underdrain Manufacturer Representative prior to grout placement.

3.4 SCHEDULE

- A. Filter 7 media, underdrains, and turbidimeter.
- B. Existing valves, actuators, and positioners/controllers as identified in the plans.

- C. All existing items identified in the Plans to be demolished and not returned to the Owner shall be removed and properly disposed of offsite by the Contractor.

END OF SECTION

SECTION 02205

SOIL MATERIALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Subsoil materials.
- B. Topsoil materials.

1.2 RELATED SECTIONS

- A. Section 01400 – Quality Control: Testing soil fill materials.
- B. Section 02936 – Seeding.

1.3 REFERENCES

- A. ASTM D698 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures.
- B. ASTM D2487 – Classification of Soils for Engineering Purposes.
- C. ASTM D2922 – Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- D. ASTM D3017 – Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- E. Association of Official Agriculture Chemists

1.4 SUBMITTALS FOR REVIEW

- A. Section 01300 – Submittals: Procedures for submittals.
- B. Samples:
 - 1. Submit, in air-tight containers, 10 lb. sample of each type of fill to testing laboratory.
 - 2. All off-site materials must be approved by the Engineer prior to installation.

1.5 SUBMITTALS FOR INFORMATION

- A. Section 01300 – Submittals: Procedures for submittals.
- B. Materials Source: Submit name of imported materials source.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with plans and specification requirements and TxDOT standards.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Soil Type S1 – Subgrade material:

1. Material remaining in place after excavation.
2. Suitable for slab/foundation subgrade, undisturbed nor over excavated.
3. Where subgrade soils are soft, loose, or otherwise unsatisfactory, the soil shall be removed and replaced with select fill or soil cement as determined by the Engineer.

- B. Soil Type S2 – Common Fill:

1. Excavated and re-used material or from borrow approved by the Engineer.
2. Graded free of lumps larger than 3 inches, rocks larger than 2 inches, excessive silts and debris.
3. Do not use soil containing brush, roots, or similar organic matter.
4. Conforming to ASTM D2487 Class II or Class III soils with a liquid limit less than 40, and a plasticity index less than 20, but greater than 4.

- C. Soil Type S3 – Select Fill:

1. Excavated and re-used material or imported borrow material approved by the Engineer. Material shall be tested for compliance by the Contractor and test results submitted to the Engineer for approval.
2. Clayey sand soils free from organic matter with no lumps larger than 1 inch, no rocks larger than ½ inch, nor excessive silts.
3. Do not use soils containing brush, roots, sod or other organic materials.
4. Select fill shall conform to ASTM D2487 Class II or Class III and shall have a liquid limit less than 30 with a plasticity index less than 15 but greater than 4.

- D. Soil Type S4 – Top Soil:

1. Soil suitable for growth of surface cover. Material stripped and stockpiled from site or borrowed from off site.
2. Free from roots, brush, rocks, and other extraneous matter exceeding 1 inch in any direction. Free from weeds

3. Minimum 60% sand, Maximum 30% silts, Maximum 10% clay, no less than 6% and no more than 20% organic matter.
4. Liquid Limit range from 15 to 30 and Plasticity Index from 5 to 40.
5. Submit test data showing compliance with these specifications. Include percent weight of constituent material, material particle size, and pH.
 - a. Topsoil shall be reasonably free from subsoil and stumps, roots, brush, stones (2 inches or more in diameter), clay lumps or similar objects.
 - b. There shall be not less than twenty percent (20%) nor more than eighty percent (80%) of the material passing the 200-mesh sieve as determined by the wash test in accordance with ASTM C 117.
 - c. The topsoil or soil mixture, unless otherwise specified or approved, shall have a pH range of approximately 5.5 pH to 7.6 pH, when tested in accordance with the methods of testing of the Association of Official Agriculture Chemists in effect on the date of the invitation of bids.
 - d. The organic content shall be not less than three percent (3%) nor more than twenty percent (20%) as determined by the wet-combustion method (chromic acid reduction).

2.2 SOURCE QUALITY CONTROL

- A. Section 01400 – Quality Control: Testing and analysis of soil material.
- B. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D698.
- C. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D698.
- D. If tests indicate materials do not meet specified requirements, change material and retest.
- E. Provide materials of each type from same source throughout the Work. A change in source requires sampling, testing, and approval by the Engineer.

PART 3 EXECUTION

3.1 SOIL REMOVAL

- A. Excavate soils from areas designated.
- B. Remove lumped soil, boulders, and rock.
- C. Stockpile excavated material in area designated on site and remove excess material not being used, from site.

3.2 STOCKPILING

- A. Stockpile materials on site at locations designated by Engineer.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Prevent intermixing of soil types or contamination.
- E. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

3.3 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in a clean and neat condition
- B. If a borrow area is indicated, leave area in a clean and neat condition.
- C. Grade site surface to prevent free standing surface water.

END OF SECTION

SECTION 02660

DUCTILE IRON PIPING

PART 1 GENERAL

1.1 SCOPE

- A. Provide all labor, materials, equipment and incidentals necessary to construct and disinfect, if required, all ductile iron pipe and appurtenances and test as shown on the Drawings and as specified herein.

1.2 SUBMITTALS

- A. Complete shop drawings and product data on all piping and fittings shall be submitted to the Engineer.
- B. Shop drawings shall indicate piping layout in plan and/or elevations and shall include a complete schedule of all pipe, fittings, specials, hangers and supports. Special castings shall be detailed showing all pertinent dimensions. Special coatings shall be clearly identified.
- C. The Contractor shall furnish the Inspector with lists of all pieces of pipe and fittings in each shipment received. These lists shall give the serial or mark number, weight, class, size and description of each item received.
- D. The Contractor shall submit written evidence to the Engineer that the products furnished under this Section will conform to the material and mechanical requirements specified herein. Certified copies of independent laboratory test results or mill test results from the pipe supplier may be considered evidence of compliance provided such tests are performed in accordance with the appropriate testing standards by experienced, competent personnel. In case of doubt as to the accuracy or adequacy of mill tests, the Engineer may require that the Contractor furnish test reports from an independent testing laboratory on samples of pipe materials

PART 2 PRODUCTS

2.1 DUCTILE IRON PIPE (DIP)

- A. Ductile iron pipe shall be manufactured in accordance with AWWA/ANSI C111/A21.11, AWWA/ANSI C150/A21.15, and AWWA/ANSI C151/A21.
- B. All pipe, except specials, shall be furnished in nominal lengths of 18 to 20 feet. Sizes will be as shown on the Drawings.
- C. All pipe shall have a minimum pressure rating as indicated in the following table, and corresponding minimum wall thickness, unless otherwise specified or shown on the Drawings:

Diameter (inches)	Min Pressure Class (psi)
3 through 12	350
14 through 64	250

- D. Pre-approved Manufacturers are as follows: US Pipe and American Pipe.

2.2 FITTINGS AND ACCESSORIES

- A. Fittings, 48-inches and smaller, shall be ductile iron and shall conform to AWWA C110/ANSI A21.10 with a minimum rated working pressure of 250 psi. Fittings, 54 inches and larger, shall be ductile iron and shall conform to AWWA C153/ANSI A15.30 and shall have a minimum rated working pressure of 150 psi. AWWA C153 compact ductile fittings in sizes 4' though 36" are an acceptable substitute unless otherwise specified.
- B. Flanged elbow fittings shall be ANSI pattern using short radius elbows except where noted differently on the Drawings. Special fittings, ductile iron wall pipes and sleeves shall conform to the dimensions and details as shown on the Drawings.
- C. Thrust Collars: Thrust collars shall be welded-on ductile iron body type capable of withstanding a thrust due to 250 psi internal pressure on a dead end from either direction on that pipe size. The welded-on collars shall be continuously welded to the pipe by the pipe manufacturer.
- D. Solid sleeves shall permit the connection of plain end ductile iron pipe. Solid sleeves shall meet the requirements of ANSI/AWWA C110 for long pattern and have a minimum pressure rating of 250 psi. Solid sleeves shall have mechanical or restrained joints as specified in this Section and as shown on the Drawings. Solid sleeves shall be used in locations shown on the Drawings, for make-up spool pieces, or at the direction of the Engineer. Solid sleeves shall be manufactured by ACIPCO, U.S. Pipe or McWane (Clow).
- E. Tapping Saddles: Tapping saddles shall be ductile iron body type with O-ring gasket and alloy steel straps. Connection shall be flanged or mechanical joint as detailed on the Drawings. Tapping saddles shall be equal to ACIPCO A-10920 (mechanical joint) or ACIPCO A-30920 (flange joint).
- F. Flange Adapter Coupling: The flange adapter coupling shall permit the connection of unthreaded, ungrooved, open-ended ductile iron pipe to ANSI/ASME B16.1, Class 125 flanges. The flange adapter coupling shall meet the test requirements of ANSI/ASME B16.1 for Class 125 flanges. The adapter shall be a ductile iron casting incorporating gripping wedges and gasket. The gasket shall provide a compression seal between the adapter, the pipe and the adjacent flange. Flange adapter couplings are to be used in locations specifically shown on the Drawings, for connection with equipment and valves, and as directed by the Engineer. The flange adapter coupling shall be EBAA Iron Megaflange-Flange Adapter Series 2100.

2.3 JOINTS

A. General

1. Unless shown or specified otherwise, joints for buried service shall be push-on joint type for pipe and standard mechanical joint type for fittings. Joints for exposed service shall be flanged for pipe and fittings, unless shown otherwise.
2. Provide the necessary bolts for connections. All bolts and nuts shall be threaded in accordance with ANSI B1.1, Coarse Thread Series, Class 2A external and 2B internal fit. All bolts and nuts shall be made in the U.S.A.
3. In all cases, gaskets shall be made of material that will not be damaged by the fluid being transported nor by the environment in which the pipe is installed.

B. Mechanical Joints

1. Joints shall conform to AWWA C111/ANSI A21.11.
2. Bolts and nuts shall be Tee Head bolts and nuts of high strength low-alloy steel in accordance with ASTM A 242 to the dimension shown in AWWA C111/ANSI A21.11.
3. Gaskets shall be in accordance with AWWA C111/ANSI A21.11 and shall be constructed of neoprene unless otherwise shown on the Drawings.
4. Mechanical joint glands shall be ductile iron.
5. Retainer Glands: Retainer glands shall be Megalug Series 1100, as manufactured by EBAA Iron.

- C. Push-On Joints: Push-on joints and gaskets shall conform to AWWA C111/ANSI A21.11. Details of the joint design shall be in accordance with the manufacturer's standard practice such as ACIPCO "Fastite", McWane (Clow) "Bell-Tite", or U.S. Pipe "Tyton" joints.

D. Flanged Joints

1. Flanged joints shall conform to AWWA C115/ANSI A21.15. Flanges shall be ductile iron and shall be furnished by the pipe manufacturer.
2. Flanged joints shall be bolted with through stud or tap bolts of required size as directed. Bolt length and diameter shall conform to ANSI/AWWA C115 for Class 125 flanges shown in ANSI/ASME B16.1.
 - a. Bolts for exposed service shall be zinc plated, cold pressed, steel machine bolts conforming to ASTM A 307, Grade B. Nuts for exposed service shall be zinc plated, heavy hex conforming to ASTM A 563. Zinc plating shall conform to ASTM B 633, Type II.
 - b. Bolts for submerged service shall be stainless steel machine bolts

conforming to ASTM A 193, Grade B8. Nuts shall be heavy hex, stainless steel conforming to ASTM A 194, Grade 8.

3. Gaskets shall be made of 1/8-inch thick, Neoprene. Gaskets may be full face type.
4. Flanged ductile iron pipe shall have flanges cast solidly or threaded to the pipe barrel. Pipe threads shall be of such length that with flanges screwed home, the end of the pipe shall project beyond the face line of the flange. Flange and pipe shall then be machined to give a flush finish to the pipe and the flange and surface shall be normal to the axis of the pipe. Ductile iron flanges shall be of such design that the flange neck completely covers the threaded portion of the pipe to protect same against corrosion. All pipe with threaded type flanges shall be assembled, faced, and drilled at the point of manufacture, unless otherwise approved by the Engineer.
5. Flange filler shall conform to AWWA C110/ANSI A21.10. Joint bolt length shall be increased by the thickness of the flange filler.
6. Where tap or stud bolts are required, flanges shall be drilled and tapped accordingly.

E. Restrained Joints

1. Restrained joints shall be ACIPCO "FLEX-RING" or U.S. Pipe "TR-FLEX" for piping larger than 36-inches.
2. For piping 36-inches and less, restraining gaskets shall be ACIPCO "Fast-Grip" or U.S. Pipe "Field-Lok Gasket".
3. Bolts, nuts, and joint accessories shall be in accordance with manufacturer's recommendation.
4. Gaskets shall be in accordance with manufacturer's recommendation.

2.4 WALL SLEEVES AND WALL PIPES

A. Where piping passes through concrete structures, furnish and install wall sleeves unless wall pipes or other provisions are specifically shown on the Drawings.

B. Wall Sleeves

1. For pipe sizes smaller than 3-inches, wall sleeves shall be steel oversize sleeves furnished with a full circle, integral or continuously welded waterstop collar. The sleeve seal shall be the mechanically expanded, synthetic rubber type. Provide all associated bolts, seals and seal fittings, pressure clamps or plates necessary to achieve a watertight installation. Sleeves shall extend the full thickness of the concrete. All hardware shall be 316 stainless steel. Sleeves and seal shall be Link Seal.
2. For larger pipe sizes, wall sleeves shall be statically cast ductile iron mechanical joint wall sleeves. Unless specified or shown otherwise for a specific situation, wall

sleeves shall be mechanical joint bell-plain end type with waterstop/thrust collar. Sleeves shall be constructed with studs and mechanical joint retainer gland on the air side of the concrete structure.

3. Provide retainer gland where shown on the Drawings. Where the concrete structure is exposed to dirt on one side and is wet on the other side, construct with studs and glands on the dirt side. Wall sleeves shall be equal to ACIPCO A-10771.

C. Wall Pipes

1. Wall pipes shall be either statically cast ductile iron with integral waterstop/thrust collar or centrifugally cast ductile iron with a continuously welded waterstop/thrust collar. The welded-on collar shall be attached to the pipe by the manufacturer. The collar shall be capable of withstanding a thrust force caused by a 250 psi dead end load from either direction on that size pipe. Wall pipes shall be furnished uncoated on the outside and cement lined on the inside.
2. Where shown on the Drawings, provide wall pipes (flange by restrained joint) which shall bolt to a Type C wall thimble provided by the sluice gate manufacturer. Class 125 flanges shall be provided.
3. Wall pipes shall be cast and/or fabricated and lined in one manufacturer's facility and delivered to the job site ready for use.
4. Wall pipe flanges shall be located 9-inches from wall to face of flange unless otherwise noted on the Drawings.

2.5 COATINGS

- A. The exterior of pipe and fittings for buried service shall be factory coated with an asphaltic coating conforming to AWWA C151/ANSI 21.51 for ductile iron pipe, AWWA C115/ANSI 21.15 for flanged pipe and AWWA C110/ANSI 21.10 for fittings.
- B. Pipe and fittings which shall be above grade or submerged shall be factory coated with a general purpose rust inhibitive primer compatible with the type of paint which will be field applied in accordance with the requirements of Section 09800 of these Specifications.

2.6 PIPE LININGS

- A. Cement Linings: Unless shown or specified otherwise, ductile iron pipe and fittings shall be cement lined in accordance with AWWA C104/ ANSI A21.4, standard thickness.
- B. Interior Lining: Ductile iron piping and fittings shall be epoxy lined where shown on the drawings.
- C. Epoxy Lining:
 1. Linings shall cover all exposed surfaces of pipe and fittings. The lining of the pipe barrel shall extend from spigot end through the socket to the edge of the gasket

sealing area or recess for pipe using push-on gaskets, and to the edge of the gasket seat for mechanical joints. The lining shall also cover the exterior of the spigot end from the end of the pipe to beyond the gasket sealing area. The lining in fittings shall cover the interior surfaces including the socket areas as defined above. All linings shall be hermetically sealed at the ends.

2. Lining Material: The lining material shall be Protecto 401 Ceramic Epoxy, a two component, modified epoxy formulated for corrosion control with the following minimum requirements:
 - a. A permeability rating of 0.0 perms when measured by ASTM E 96, Procedure A. Duration of the test shall be six weeks.
 - b. A direct impact resistance of 125 inch-pounds with no cracking when measured by ASTM D 2794.
 - c. The ability to build at least 50 mils dry in one coat.
 - d. The material shall be recoatable with itself for at least seven days with no additional surface preparation when exposed to direct summer sun and a temperature of 90°F.
 - e. The material shall contain at least 20 percent by volume of ceramic quartz pigment.
 - f. A test and service history demonstrating the ability of the material to withstand the service expected.
 - g. Possess a minimum solids volume content of 88 percent, $\pm$ one percent.
 - h. Possess a maximum drying time to allow recoating as follows: 50°F - 72 hours; 75°F - 18 hours; 90° F - 8 hours. If recoating cannot be accomplished within seven days, a light brush blast shall be performed to improve intercoat adhesion.
3. Surface Preparation: The interior of the pipe exposed to liquids and gases shall be blasted and cleaned to remove all loose laitance, scale, or other loose material. No lining shall take place over grease, oil, etc., that would be detrimental to the adhesion of the compound to the substrate.
3. Application: The lining shall be applied using a centrifugal lance applicator by workers employed by Vulcan Painters, Inc. The workers shall be experienced and competent in the surface preparation, application and inspection of the lining to be applied. The compound shall not be applied when the substrate temperature is below 40°F or in adverse atmospheric conditions which will cause detrimental blistering, pinholing or porosity of the film.
4. Lining of pipe barrel and fittings shall be 40 mils nominal thickness; minimum lining thickness shall be 30 mils. Lining thickness for exterior of spigot and interior of

socket shall be 8 to 10 mils.

5. All pipe and fitting linings shall be tested for pinholes in accordance with ASTM G 62, Method B and shall be holiday free.
6. All pipe linings shall be checked for thickness using a magnetic film thickness gauge.
7. Each pipe joint and fitting shall be marked with the date of application of the lining system and with the numerical sequence of application of that date.

2.7 EXPANSION JOINTS

- A. The Expansion Joint shall have a rubber inner tube, a body constructed of multiple piles of fabric impregnated with synthetic rubber, and a protective outer cover of synthetic rubber to provide resistance to deterioration from weather and ozone. Special covers shall be applied when indicated on the drawings to resist weather, ozone, and corrosive fumes. Steel wire shall be imbedded in the body for additional strength.
- B. The elastomer and fabric materials shall be determined by the temperature and chemical compatibility requirements, as indicated on the drawings.
 1. Class I - to 108°F: PGR, Neoprene, Buna-N, or Hypalon, with Nylon or Polyester reinforcement.
 2. Class II - to 250°F: Chlorobutyl, EPDM, or Teflon® -lined, with Polyester reinforcement.
 3. Class III - to 400°F: Solid Viton®, with Kevlar® reinforcement.
- C. Flanges shall be constructed integrally with the body to resist stresses. Flanges shall be full-pattern so that gaskets are not necessary. Flanges shall be drilled to ANSI B16.5 Class 150#. Flanges shall be accompanied with Galvanized 3/8" split steel retaining rings and enough control rods installed to achieve a working pressure of 200 psi.
- D. The expansion joint shall be available with a single arch or multiple arches, in open or filled arch (s) construction, and with wide arch (es) as specified on the drawings. Joint dimensions, movement, and spring rates for all variations shall follow Fluid Sealing Association guidelines.
- E. The elastomer construction of the joint acts to absorb vibration, preventing it from being transmitted to the piping, as well as compensation for lateral deflection. The integral arch allows for axial compression and elongation of the joint, to compensate for expansion and contraction of the piping.
- F. All expansion joints shall be Redflex™ Type J-1 as manufactured by the Red alve Company, Inc. of Carnegie, PA 15105 or approved equal.

PART 3 EXECUTION

3.1 CUTTING

- A. When new or existing pipe is required to be cut, the pipe shall be cut in such a manner as to leave a smooth end normal to the axis of the pipe.
- B. All cutting of ductile iron pipe shall be performed with a cutting saw. All burrs shall be removed from the inside and outside edges of all cut pipe. All damaged linings and coatings shall be repaired.
- C. Lining Repair: Repair linings and recoat spigot ends of cut pipe with a product equal to Protecto 101 in accordance with the manufacturer's recommendations and as specified below:
 - 1. Remove all burrs and areas of loose lining materials by sanding or scraping to bare metal.
 - 2. Remove oil and lubricants used during field cutting.
 - 3. Lining shall be stripped back a minimum of 1-inch from the spigot end into well adhered lined areas.
 - 4. Roughen 1 to 2-inches of good lining with a rough grade (40 grit) emery paper, rasp or small chisel, to allow an overlap between new and existing lining.
 - 5. Apply lining repair material in the number of coats required to match the thickness requirements as specified in Part 2 of this Section and in accordance with the manufacturer's recommendations.

3.2 JOINT ASSEMBLY

- A. General: Ductile iron pipe shall be assembled in accordance with ANSI/AWWA C600.
- B. Push-On Joints: The inside of the bell and the outside of the pipe from the plain end to the guide stripe shall be wiped clean immediately before assembling the pipe joint. Then the rubber gasket shall be inserted into a groove or shaped recess in the bell. Both the bell and spigot ends to be joined shall be wiped again to ensure they are thoroughly clean. A liberal coating of special lubricant furnished by the pipe manufacturer shall be applied to the outside of the pipe. The plain end shall be centered in the bell and the spigot pushed home.
- C. Mechanical Joints
 - 1. The surfaces with which the rubber gasket comes in contact shall be brushed thoroughly with a wire brush just prior to assembly to remove all loose rust or foreign material which may be present and to provide clean surfaces which shall be brushed with a liberal amount of soapy water or other approved lubricant just prior to slipping the gasket over the spigot end and into the bell. Lubricant shall be brushed over the gasket prior to installation to remove loose dirt and lubricate the gasket as it is forced into its retaining space.

2. Joint bolts shall be tightened by the use of wrenches and to a tension recommended by the pipe manufacturer. When tightening bolts, the gland shall be brought up toward the pipe bell. If effective sealing is not attained at the maximum torque indicated above, the joint shall be disassembled and reassembled after thorough cleaning. Overstressing of bolts to compensate for poor installation shall not be permitted.
3. After installation, bolts and nuts in buried piping shall be given two heavy coats of a bituminous paint. Bolts and nuts for exposed or submerged service shall be coated in accordance with the requirements of Section 09800 of these Specifications.

D. Flanged Joints

1. All flanges shall be true and perpendicular to the axis of the pipe. Flanges shall be cleaned of all burrs, deformations, or other imperfections before joining. Flanged joints shall be installed so as to ensure uniform gasket compression. All bolting shall be pulled up to the specified torque by crossover sequence. Where screwed flanges are used, the finished pipe edge shall not extend beyond the face of the flange, and the flange neck shall completely cover the threaded portion of the pipe.
2. Connections to equipment shall be made in such a way that no torque is placed on the equipment flanges. Connecting flanges must be in proper position and alignment and no external force may be used to bring them together properly.
3. After installation, bolts and nuts for exposed or submerged service shall be coated in accordance with the requirements of Section 09800 of these Specifications.
4. Flanged filler shall be used only where shown on the Drawings or approved by the Engineer to make up minor differences in pipe length, less than 3-inches. Joint bolts shall be increased in length by the thickness of the flange filler.

- E. Joints of Dissimilar Metals: When a flanged joint consists of a ductile iron flange mated to a steel or alloy flange, the steel flanges shall be flat faced and furnished with full-faced gaskets, insulating bushings.

3.3 DRILLING AND TAPPING

- A. Wherever required ductile iron pipe and fittings shall be drilled and tapped to receive drainage or any other piping. All holes shall be drilled accurately at right angles to the axis of any pipe or fitting. Where plugs are drilled, holes shall be at right angles to the face of the plug.
- B. Unless shown otherwise, small diameter pipes, less than 2-inches, shall be connected to ductile iron pipe using one of the following methods:
 1. Direct tap.
 2. Direct tap with service saddle.

- 3. Direct tap boss.
- 4. Tapped plug or flange on tapping saddle.
- C. In no case shall the effective number of threads be less than 4.

3.4 CONSTRUCTING BENEATH AND BEYOND STRUCTURES

- A. All ductile iron pipes entering buildings or basins shall be adequately supported between the structure and undisturbed earth to prevent damage resulting from settlement of backfill around the structure.

3.5 CONSTRUCTING WITHIN STRUCTURES

- A. Proper and suitable tools and appliances for safe and convenient handling and laying of pipe and fittings shall be used. Care shall be taken to prevent the pipe coating from being damaged, particularly cement linings on the inside of the pipes and fittings. Any damage shall be remedied as directed by the Engineer.
- B. All pipe and fittings shall be carefully examined by the Contractor for defects just before installing and no pipe or fitting shall be installed if it is defective. If any defective pipe or fitting is discovered after having been installed, it shall be removed and replaced in a satisfactory manner with a sound pipe or fitting by the Contractor at Contractor's own expense.
- C. All pipes and fittings shall be thoroughly cleaned before they are installed and shall be kept clean until they are used in the completed work. Open ends of pipe shall be kept plugged with a bulkhead during construction.
- D. All elbows, tees, brackets, crosses, and reducers in pressure piping systems shall be adequately restrained against thrust.
- E. Wall pipe and wall sleeves shall be accurately located and securely fastened in place before concrete is poured. All wall pipe and sleeves shall have wall collars properly located to be in the center of the wall where the respective pipes are to be installed. Pipe passing through the sleeve shall extend no more than three feet beyond the structure without a piping joint.
- F. Wall pipe and wall sleeves shall be constructed when the wall or slab is constructed. Blocking out or breaking of the wall for later installation shall not be permitted.
- G. Cutting or weakening of structural members to facilitate pipe installation shall not be permitted. All piping shall be installed in place without springing or forcing.
- H. Exposed ductile iron piping shall be supported as shown on the Drawings and specified.
- I. Drilled and tapped bolt hole patterns that are encased in the concrete shall be fully sealed and protected before concrete pours to prevent fouling of the threads.

3.6 FIELD PAINTING

- A. Field painting of exposed and submerged pipe shall be in accordance with the requirements of Section 09800 of these Specifications.

3.7 INSPECTION AND TESTING

- A. All testing shall be in accordance with the requirements of Testing Section of these Specifications.

3.8 INSULATION AND HEAT TRACING

- A. Provide insulation and heat tracing in accordance with this Section of these Specifications.

3.9 DISINFECTION

- A. Following installation and testing, potable water lines shall be disinfected in accordance with the requirements of Water Pipe and Fittings Section of these Specifications.

3.10 CLEANING

- A. In accordance with this Section of these Specifications.

END OF SECTION

SECTION 02669

VALVES

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. This section includes all material, labor and other items necessary to furnish, install, and test valves as shown and specified, and the installation of in-line equipment and appurtenances furnished by others, for process piping systems, and plumbing piping systems.

1.2 RELATED SECTIONS

- A. Section 01300 – Submittals.
- B. Section 01400 – Quality Control.
- C. Section 01600 – Materials and Handling.
- D. Section 02660 – Ductile Iron Piping.
- E. Section 02670 – Pneumatic Rotary Vane Valve Actuators.

1.3 SUBMITTALS:

- A. Procedures for Submittals: Section 01300.
- B. The Contractor shall submit shop drawings of all fabricated piping and shall submit shop drawings and/or manufacturer's literature for all valves, gauges, and miscellaneous appurtenances for review prior to ordering or installing any item.
- C. Product Data: Manufacturer's product data sheets on all materials incorporated into work.

PART 2 PRODUCTS

2.1 VALVES

- A. General
 - 1. Valves shall be as shown on the Plans and as specified herein. A union or flagged connection shall be provided within 2 feet of each threaded end valve unless the valve can be otherwise easily removed from the piping. Unless otherwise indicated, the direction of rotation of the valve operating wheel, wrench nut, or lever shall be to the left (counterclockwise) to open the valve.
 - 2. All valves, except those, which are equipped with power/pneumatic operators, shall be provided with manual operators. Unless otherwise specified, each manual operator shall be equipped with an operating wheel.

3. Chain wheels and operating chains shall be provided on all valves 4" and larger with centerline more than 7'6" above the floor except where other operator types are specifically required. Each chain wheel operated valve shall be equipped with a chain guide which shall permit rapid handling of the operating chain without "gagging" of the wheel and will also permit reasonable side pull on the chain. Operating chains shall be heavily plated with zinc or cadmium and shall be looped to extend to within 4 feet of the floor below the valve. Where recommended by the manufacturer, the operator shall be provided with a hammer blow wheel.
4. Wrench nuts shall be provided on all buried valves, on all valves which are to be operated through floor boxes, and where shown. All wrench nuts shall comply with Section 20 of AWWA C-500. Not less than two operating keys shall be provided for operation of the wrench nut operated valves.
5. For all valves buried at a depth of greater than 3 feet, an extension stem shall be provided to bring the operating nut within 2 feet of the finished elevation.
6. Bolt patterns for the flange connections shall match the pipe either Class 125 or Class 250 as shown on the Plans.

B. Buried Valve Boxes and Extension Stems

1. Valves buried in the ground shall be provided with cast iron valve boxes of proper dimensions to fit over the valve bonnets and shall extend to such elevation at or slightly above the finished ground line as directed by the Engineer.
2. Tops shall be complete with covers and shall be adjustable.
3. Valve boxes shall be set vertical and concentric with the valve stem.
4. Any valve box, which has so moved from its original position as to prevent the application of the valve key, shall be satisfactorily reset by the Contractor at his own expense.
5. A concrete pad 1.5' x 1.5' x 4" thick shall be poured around all valve boxes which are not to be located within proposed or existing pavements.
6. Extension stems shall be provided and installed for all valves with 2" square nut operators so that operating nut is within 2' of the ground surface.
7. Valve boxes shall be the H-10346, 562-A, two-piece, sliding type, 5½" shaft, 24-36" extension, with drop cover marked water as manufactured by the Mueller Co. or Engineer approved equal.

C. Gate Valves

1. Except as may be otherwise approved by the Engineer, all gate valves required for this Contract shall be from one manufacturer, and similar types and sizes shall be identical and the parts interchangeable.
2. Gate valves, 2 inches through 12 inches shall be designed for a working pressure of not less than 200 psi.
3. Valves shall conform to AWWA C509 R/S "550 Coated Epoxy" with iron bonnet (bronze mounted), non-rising stem resilient seat, two O-ring stem seals and 2" x 2" square operating nut.
4. Valves shall open when the operating nut is turned to the left (counterclockwise).
5. Unless otherwise specified, valves 12 inches in diameter and larger shall be designed for horizontal installation with totally enclosed gear cases.
6. Valve ends shall be mechanical joint complete with accessories or as specified.
7. Tapping valves shall conform to above specification except that the connections shall be ANSI B16.1, Class 125 flange on one side (inlet) and mechanical joint on the other (outlet) or as specified.
8. Wedge shall be constructed of ductile iron, fully encapsulated in synthetic rubber except for guide and wedge nut areas.
9. Wedge rubber shall be molded in place and bonded to the ductile iron portion, and shall not be mechanically attached with screws, rivets, or similar fasteners.
10. Valve operator shall be capable of seating and unseating valves and operating through their full stroke against pressures and velocities as shown by conditions on the Plans.
11. Manual operators shall be the worm gear type having permanently greased lubricated totally enclosed gearing with operating nut and gear ratio design to require not more than 40 lbs. pull. Operator shall be provided with adjustable limit stops on the input shaft to the operator. Limit stops on output shaft of operator will not be permitted. Operator shall be designed for direct burial service and valve box shall be provided over operating nut. Extension stem shall be provided to bring operating nut within 2 feet of ground surface.
12. Pre-approved Acceptable Manufacturers
 - a. Mueller
 - b. American flow control / American Darling
 - c. M & H
 - d. Clow R/S

D. Butterfly Valves (3-in to 20-in)

1. Butterfly valves 3-20" shall meet or exceed the latest revision of AWWA Standard C504 for Class 150B butterfly valves and shall meet or exceed the requirements of this specification. Valves 12" and smaller shall have a working pressure of 200 psi. All valves shall be tested at and shall be capable of withstanding bi-directional line hydrostatic test pressures up to 225 psi without leaking. When customer specified, valves shall meet NSF/ANSI 61/372.
2. Valve bodies shall be of ductile iron ASTM A536 Grade 65-45-12. Flanged end valves shall be of the short body design with Class 125 flanged ends faced and drilled per ASME B16.1 standard for cast iron flanges. Mechanical Joint end valves shall meet the requirements of AWWA C111/ANSI 21.11.
3. Discs shall be offset to provide an uninterrupted 360 degree seating edge and shall be 316 stainless steel ASTM A743. The disc seating edge shall be solid 316 stainless steel. Sprayed mating seating surfaces are not acceptable. The disc shall be securely attached to the valve shaft utilizing a field removable/replaceable 316 stainless steel torque screw on sizes 3-12" or a tangential pin locked in place with a set screw on sizes 14-20".
4. Valve shaft shall be type 304 stainless steel. Valve shaft seals shall be self-compensating V-type packing with a minimum of four sealing rings. One-piece molded shaft seals and o-ring shaft seals are not acceptable.
5. Seat shall be of Acrylonitrile-Butadiene (NBR) for water, EPDM for air, or as required for other services, and shall be molded in and vulcanized to the valve body. The seat shall contain an integral shaft seal protecting the valve bearings and packing from any line debris. Seats vulcanized to cartridge inserts in the valve body and seats on the disc are not acceptable.
6. Valve shaft bearings shall be non-metallic and permanently lubricated.
7. Coatings, unless otherwise specified, exterior and interior metallic surfaces of each valve shall be painted per the latest revision of AWWA C504. The interior of the body shall have a full rubber lining vulcanized to the valve body. Mechanical Joint valves shall be fully rubber lined to point of pipe insertion. Rubber lining on the flange face and boot style seats are not acceptable.
8. Actuators shall be sized to customer specified operating conditions. If actual operating conditions are not provided within customer specification, per ANSI/AWWA C504, the valve actuator shall be sized to operate the valve at the rated working conditions of the valve. Each valve and valve actuator shall be assembled, adjusted, and tested as a unit per the latest revision of AWWA C504, by the valve manufacturer.
9. Ten position locking levers shall be available for 3-8" valves. Provision must be made for locking in any of the ten positions using a standard padlock.

10. Manually actuated valves 3-20" (80-500mm) shall be designed and tested per the requirements of AWWA C504. Actuators shall be available in both weatherproof and buriable constructions with handwheel, chainwheel, or 2" square AWWA nut inputs. All units shall have independently adjustable open and closed position stops that are adjustable under full line pressure and flow. Open and closed position stop adjustments shall not require the removal of any load or torque transmitting components.
11. Pneumatic actuators shall be double acting, stationary mounted, with all working parts totally protected within weatherproof enclosures. Actuators must be in total conformance to AWWA C540 and Section 02670.
12. A minimum two year warranty shall be provided for all valves and actuators
13. ANSI/AWWA C504 3" to 20" diameter butterfly valves shall be model BAW as manufactured by DeZURIK, Henry Pratt, or Engineer pre-approved equal.

E. Butterfly Valves (24-in to 144-in)

1. Butterfly valves 24-72" (shall meet or exceed the latest revision of ANSI/AWWA Standard C504 and ANSI/AWWA Standard C516 for 78-144". Valves shall meet or exceed the requirements of this specification. All valves shall comply with the requirements of the ANSI/AWWA class specified by customer or if the ANSI AWWA class is not specified, the valve shall meet the requirements of ANSI/AWWA Class 150B. When customer specified, valves shall meet NSF/ANSI 61/372.
2. Valve bodies shall be of ductile iron ASTM A536 Grade 65-45-12. Flanged end valves shall be of the short body design. Sizes 24-72" shall have Class 125 flanged ends faced and drilled per ASME B16.1 standard for cast iron flanges. Sizes 78-144" shall be drilled per ANSI/AWWA C507 Class D. Mechanical joint end valves shall meet the requirements of ANSI/AWWA C111/ANSI A21.11.
3. Discs shall be offset to provide an uninterrupted 360 degree seating edge and shall be 316 stainless steel ASTM A743. The disc seating edge shall be solid 316 stainless steel. Sprayed mating seating surfaces are not acceptable. The disc shall be securely attached to the valve shaft using 304 stainless steel taper pins. Discs structures containing hollow cavities are not acceptable.
4. Valve shaft shall be of type 304 stainless steel. Valve shaft seals shall be self-compensating V-type packing with a minimum of four sealing rings. One-piece molded shaft seals and o-ring shaft seals are not acceptable.
5. Seat shall be of Acrylonitrile-Butadiene (NBR) for water, EPDM for air, or as required for other services, and shall be retained within a dovetail groove in the valve body and locked in place by an epoxy compound wedge. Compression between the seat and disc edge shall be adjustable from both the upstream and downstream side of the valve disc and the seat shall be field adjustable and replaceable without disassembly of the disc and shaft. Seats with unidirectional

adjustment, seats retained in the valve body by the use of fasteners and/or retaining rings, and seats retained on the valve disc are not acceptable.

6. Valve shaft bearings shall be PTFE lined with a non-metallic fiberglass composite backing and shall be permanently lubricated.
7. Coatings - Unless otherwise specified by customer, exterior and interior metallic surfaces of each valve shall be painted per the latest revision of ANSI/AWWA C504 or C516.
8. Pneumatic actuators shall be double acting, stationary mounted, with all working parts totally protected within weatherproof enclosures. Actuators must be in total conformance to AWWA C540 and Section 02670.
9. Actuators shall be sized to customer specified operating conditions. If actual operating conditions are not provided within customer specification, per ANSI/AWWA C504, the valve actuator shall be sized to operate the valve at the rated working conditions of the valve. Each valve and valve actuator shall be assembled, adjusted, and tested as a unit per the latest revision of AWWA C504, by the valve manufacturer.
10. Actuators with handwheel, chainwheel, and buried service nut input shall conform in all respects to ANSI/AWWA C504.
11. A minimum two year warranty shall be provided for all valves and actuators
12. ANSI/AWWA C504 24" to 114" diameter butterfly valves shall be model BAW as manufactured by DeZURIK, Henry Pratt, or Engineer pre-approved equal.

F. Tapping Sleeves and Valves

1. Tapping sleeves shall be designed for a working pressure of at least 150 psi and furnished with a brass or stainless steel test plug through the body for hydrostatic pressure testing.
2. The outlet shall conform to ANSI B16.1, Class 125 flanges designed to accept tapping valves.
3. Tapping sleeves shall be designed to properly fit the type and class of pipe on which they will be used. Sleeves may be cast iron, ductile iron, or welded steel.
4. Tapping sleeves, unless otherwise specified, shall be epoxy coated, with stainless steel nuts and bolts; or all stainless steel.
5. Taping sleeves which are designed in such a manner that the watertight seal around the outlet is achieved by a gasket placed between the sleeve body and the pipe barrel shall be provided with a recess in the sleeve body to accommodate the gasket.

6. Tapping valves, 2 inches through 12 inches shall be designed for a working pressure 200 psi.
7. Tapping valves shall conform to AWWA C509 R/S "550 Coated Epoxy" with iron bonnet (bronze mounted), non-rising stem resilient seat, two O-ring stem seals and 2" x 2" square operating nut.
8. Tapping valves shall open when the operating nut is turned to the left (counterclockwise).
9. Unless otherwise specified, tapping valves 12 inches in diameter and larger shall be design for horizontal installation with totally enclosed gear cases.
10. Tapping valves ends shall be mechanical joint complete with accessories or as specified.
11. Tapping valves shall conform to above specification except that the connections shall be ANSI B16.1, Class 125 flange on one side (inlet) and mechanical joint on the other (outlet) or as specified.
12. Wedge shall be constructed of ductile iron, fully encapsulated in synthetic rubber except for guide and wedge nut areas.
13. Wedge rubber shall be molded in place and bonded to the ductile iron portion, and shall not be mechanically attached with screws, rivets, or similar fasteners.
14. Tapping valves operators shall be capable of seating and unseating valves and operating through their full stroke against pressures and velocities as shown by conditions on the Plans.
15. Manual operators shall be the worm gear type having permanently greased lubricated totally enclosed gearing with operating nut and gear ratio design to require not more than 40 lbs. pull. Operator shall be provided with adjustable limit stops on the input shaft to the operator. Limit stops on output shaft of operator will not be permitted. Operator shall be designed for direct burial service and valve box shall be provided over operating nut. Extension stem shall be provided to bring operating nut within 3 feet of ground surface.
16. Pre-approved Acceptable Manufacturers for Tapping Valves
 - a. Mueller
 - b. American flow control / American Darling
 - c. M & H
 - d. Clow R/S
17. Pre-approved Acceptable Manufacturers for Tapping Sleeves
 - a. Smith Blair

- b. JCM
- c. Ford

G. Ball Valves

1. Ball valves may be used in piping systems 2" in diameter and smaller. Valves shall be steel for line pressure up to 100 psi and steel for line pressures over 100 psi.
2. Steel ball valves shall be of 2-piece construction with internally seated stem. Provide precision machined mating surfaces, stem stop integral with body, and multi-seal seats. Ball shall be plated and polished. Provide each valve with lever operator. Steel ball valves designed for general service applications up to 1000 pounds working pressure shall be as manufactured by Balon Corporation, or equal.

H. Coatings and Linings

1. General: Coatings and linings shall be as specified or shown on the Plans.
2. Galvanizing: Galvanizing shall be in accordance with ASTM A-153.

I. Pipe Supports

1. All exposed piping shall be supported in conformance with the pipe support and structural attachment details in the Plans.

J. Joint Restraint

1. Where thrust rod anchors are shown or specified the Star Joint Restraint System as manufactured by Star National Products of Columbus, Ohio or Engineer approved equal shall be utilized.
2. This system consists of the use of Super Star Tiebolts, Tienuts, Tierods ($\frac{3}{4}$ ") and Tiecouplings or Engineer approved equal.
3. The number of tie rods required is listed as follows:

<u>Pipe Size (in.)</u>	<u>Number of $\frac{3}{4}$" Rods Required</u>
6	2
8	2
10	2
12	4
14	4
16	6
18	6
20	8
24	10
30	12

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify building and trench backfilling have been inspected.
- B. Verify substrate base has been contoured and compacted.

3.2 SUBSTRATE PREPARATION

- A. Eliminate uneven areas and low spots.
- B. Remove debris, roots, branches, stones, in excess of 1 inch in size. Remove subsoil contaminated with petroleum products.
- C. Scarify surface to depth of 4 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.3 PLACING TOPSOIL

- A. Place topsoil in areas where seeding, sodding, and planting is required, to thickness as scheduled. Place topsoil during dry weather.
- B. Place fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.
- C. Remove roots, weeds, rocks, and foreign material while spreading.
- D. Manually spread topsoil close to plant life, buildings, and structures to prevent damage.
- E. Lightly compact placed topsoil.
- F. Remove surplus subsoil and topsoil from site.
- G. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.4 TOLERANCES

- A. Top of Topsoil: Plus or minus ½ inch.

3.5 PROTECTION

- A. Protect landscaping and other features remaining as final work.
- B. Protect existing structures, fences, sidewalks, utilities, paving, and curbs.

END OF SECTION

SECTION 02670

PNEUMATIC ROTARY VANE VALVE ACTUATORS

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Furnish, install, startup, and test pneumatic rotary vane AWWA C541-08 compliant valve actuators and associated valves with required accessories as shown on the Plans and as specified herein. A single supplier shall provide the vane type pneumatic valve actuators and valves as one complete system. The butterfly valves shall be in accordance with Section 02669.
- B. The Contractor shall furnish and install all necessary smaller diameter valves, piping, and fittings required to connect the proposed pneumatic valve actuators to the existing/proposed air piping in the filter pipe gallery(s).
- C. The Contractor shall furnish and install the required air tubing with fittings, connections, taps, pressure switches, electrical devices, wiring, and terminations necessary for a complete system and shall also install the valves with valve actuators. Each actuator shall have an isolation safety exhaust valve with locking handle provided at each branch airline to the actuator.
- D. The Contractor shall coordinate between the pneumatic valve actuator/control valve supplier and the control system supplier to provide complete and fully operational system. It will be the valve/actuator supplier's responsibility to provide actuators that are capable of sending and accepting the necessary signals from the control system. The valve/actuator supplier shall provide any limit switches, positioners or other devices necessary to enable the status of the valves (OPEN/CLOSE or position for modulating valves) to be monitored and controlled by the control system.

1.2 QUALITY ASSURANCE

- A. All equipment of each type specified in this section shall be supplied by a single supplier.
- B. The equipment supplier shall furnish a qualified field representative for a minimum of 20 working days total on 10 separate occasions (one trip per filter) to provide guidance with installation, inspect all equipment described herein after installation, to assist in troubleshooting, to advise the Owner during startup and testing, and to train Owner's personnel in routine maintenance and troubleshooting procedures. This time period shall consist of a minimum of 8-hour days, and travel to and from the project site shall not be included. Contractor shall coordinate the scheduling of such training and startup assistance with Owner's personnel. Travel to and from the project site shall be the responsibility of and at the cost of the equipment supplier. Owner may videotape training session.

- C. Supplier's installation report is required prior to final acceptance.
- D. Supplier shall maintain a complete stock of spare parts commonly needed for the equipment specified at a location, or shall furnish spare parts within 48 hours of request.
- E. All automated valve assemblies shall have an engraved Type 316 stainless steel manufacturer's nameplate securely affixed in a conspicuous place on the equipment showing the ratings, serial number, model number, manufacturer and other pertinent nameplate data.

1.3 SUBMITTALS

- A. Submittals shall be prepared and submitted in accordance with Section 01300.
- B. The following submittals are required at a minimum in addition to the applicable requirements of Section 01300:
 - 1. Shop drawings and applicable product data specific to this project shall be supplied in electronic format or bound neatly in a single package per Engineer's requirements. The following information shall be included as a minimum:
 - a. Part numbers of all equipment within this specification and a schedule showing all operators and valves furnished for this project.
 - b. Design performance characteristics, capacities, sizes, ratings, and other appropriate information.
 - c. Layout drawings including all proposed system components with dimensions, clearances required and sizes indicated, and arrangement and size of connections.
 - d. Listing of materials of construction for all components.
 - e. Complete information on all electric and instrumentation equipment and electric power requirements.
 - f. Complete wiring diagrams and data on controls to be furnished.
 - g. Manufacturer's instructions regarding delivery, storage and handling of equipment.
 - h. Adjustable settings with range provided for valve opening, closing, and emergency closing speeds.

2. Location of nearest stocking distributor of spare parts
 3. Complete operation and maintenance data for all major equipment and ancillary items in accordance with specifications.
 4. Startup and test schedule.
 5. Equipment installation report with field test data and test records.
 6. Warranties and service agreements.
- C. All deviations from Contract Documents shall be clearly identified and submitted to the Engineer through the Contractor as a Contract Modification Request.
- D. Any other information necessary for Engineer to determine compliance with the specifications.
- E. Engineer will not review Partial or incomplete submittals.

1.4 EXPERIENCE REQUIREMENTS

- A. All equipment shall be furnished by a supplier or manufacturer having at least twenty (20) U.S. installations of the type being proposed, including coordination and assembly responsibility for the valve, actuator and associated devices for a complete package, each with a minimum of 5 years of satisfactory service.
- B. A list of similar installations shall be furnished with the shop drawing submittal, including names and telephone numbers of contacts.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery, storage and handling shall be in full accordance with manufacturer's instructions.

1.6 WARRANTY

- A. All actuator assemblies shall be warranted for a period of three (3) years from date of shipment. A certificate listing actuator serial numbers shall be provided prior to shipment in order to validate the warranty. Valve carries valve manufacturer's standard warranty.

PART 2 - PRODUCTS

2.1 PNEUMATIC ROTARY VANE C541-08 VALVE ACTUATOR DESIGN

- A. The actuator is essentially an integral part of the valve assembly.
- B. Actuator Design: Pneumatic actuators are to be of the vane type design with only one (1) moving part. Actuator shall have a vane position indicator milled into the output shaft. One side of the actuator shall be manufactured to ISO/NAMUR mounting standards for attachment of accessories (limit switches, indicators, positioners). Seals shall be double opposed lip seals with stainless steel expanders. Seal backing plates shall be steel. O-ring seals on vane will not be acceptable.
- C. Actuator Materials of Construction:
 - 1. Housing: Pressure die cast ADC1 or A356 aluminum casting with all surfaces coated with thermosetting polyester powder coat with Ultraviolet Inhibitor. Zinc housing will not be permitted. Actuator housing to include industry-standard NAMUR accessory mount interfaces as an integral part of the housing. The NAMUR VDINDE 3845 to be included on top of the actuators and on the solenoid manifold to allow for the easy installation of standard actuator control accessories.
 - a. For highly corrosive installations and where specified in the Valve Actuator Schedule, the actuator manufacturer shall provide a Fluoropolymer final finish on both the actuator interior and exterior and on the complete vane and output shafts. Exterior-only coating will not be acceptable and manufacturer must have at least 5 years of successful installation history with the Fluoropolymer finish.
 - b. The Fluoropolymer coating shall have documented testing to chemical resistance to salt spray, ammonium hydroxide, hydrochloric acid, calcium hypochloride, sodium hypochloride, ferric chloride, among other chemicals for a period of six (6) months with no deterioration.
 - c. Vane actuator case halves will have Fluoropolymer coating prior to assembly. The case halves shall be Fluoropolymer coated on all surfaces including all tapped holes, untapped holes, flat face flange, and any other opening or ports.
 - d. Actuator vane shall be electroless nickel-plated finish prior to application of the Fluoropolymer coating on vane.
 - e. All threaded fittings shall have a locking and sealing compound designed for metal tapered threads and fittings. All actuators shall be tested after assembly. Actuators shall not require more than three

(4) psig to be cycled a complete stroke in each direction before they are connected to the valve. Test report documenting zero (0) cross vane leakage shall be submitted prior to shipment.

2. Vane / Output Shaft: Steel ASTM A148 per AWWA C541-2, Grade 115-95, heat treated with electro less nickel plated finish. Ductile Iron vane / output shafts will not be acceptable.
3. Vane Seals: HBNR highly-saturated Buna Nitrile, rated -5 to +300 degrees F., no exception.
4. Shaft Seals: Buna N.
5. Vane Seal Expanders: Stainless spring steel.
6. Side Plates: Steel with all surfaces coated with thermosetting epoxy powder coat.

D. Actuator Position-Control Capability:

1. Open/Close Valves: Actuators shall be solenoid operated. Solenoids for smaller size actuators shall be standard ISO/NAMUR VDINDE 3845 direct mounted with the option to be remote mounting for increased accessibility. Solenoid coils shall be 120 VAC / 60 Hz, NEMA 4 rated. Speed control devices shall allow independent adjustment of OPEN and CLOSE cycling speed. Each solenoid valve to include detented pushbutton manual override to lock-and-hold valve in either the OPEN or CLOSE position in the event of a power outage. Exhaust air mufflers shall be standard. Provide 80 to 150 PSI clean, dry air to solenoid valve. Solenoid valves shall be K-TORK 'SIDEWINDER' Series.
 - a. Each Open/Close actuator shall include valve position feedback limit switches for remote OPEN and CLOSE indication. Two SPOT switches shall be housed in a NEMA 4/4X aluminum enclosure with polycarbonate lid and include a 3D Dome- style visual valve position indicator that can be seen from above and from the side. Green=Open and Red=Close. The switch box output shaft and fasteners to be stainless steel and shall mount to the actuator per NAMUR VDIN DE 3845 with a stainless steel bracket. The two electromechanical switch contacts shall be rated 5A@250 VAC, 0.5A@24 VDC, resistive/inductive. Limit switches shall be adjustable by press, turn and release motion requiring the use of no tools. The limit switch assembly to be UL and CUL Listed and approved and shall be manufactured by Rotork / K-TORK 'SOLDO' Series.

- b. The solenoid coil must be pre-wired to spare terminals labeled 'Solenoid Valve' inside the limit switch enclosure and all field connections for both the limit switches and solenoid valves shall be terminated inside the limit switch box.
- 2. Modulating Valves: The actuator shall be designed to control the valve in all positions from fully open to fully closed, and from fully closed to fully open with control in any intermediate position corresponding to the variable controls system input. Positioner shall consume a MAXIMUM of .070 SCFM while in the resting state. Positioners consuming greater than .070 SCFM will not be acceptable. Modulating actuators shall be supplied with intelligent SMART diagnostics. Positioners shall have ISO/NAMUR VDI 3845 standard output shaft to allow direct mounting to actuator without need for adaptors. The positioner will receive a 4-20 mA positioning signal from the control system for precision positioning control of the valve in all positions from closed to open. As standard, the positioner shall include an Auto / Manual switch to allow for local actuator control without removing the positioner cover. Additionally, the positioner will have four pushbuttons for local control located inside the enclosure. The positioner shall have auto-stroke / auto-calibration capability as standard for easy commissioning. LCD 0-100% visual indication of valve position will be located in the positioner cover. Where specified in the Valve Actuator Schedule, provide optically-isolated analog 4-20 mA position transmitter, (2) mechanical limit switches or both, mounted inside the positioner housing. Positioner construction shall be of Aluminum or Stainless Steel (optional), with NEMA 4/4X, IP66 rating and be suitable for -22° F. to +185°. Fasteners to be stainless steel. Provide 80-100 psi clean dry supply air to the positioner. Positioner shall be manufactured and supplied by the actuator manufacturer and shall be intended for use with the actuator provided for modulating application. Positioner shall be as manufactured by Rotork / YTC #3300R.
- 3. Mechanical Manual Override: Where specified in the Valve Actuator Schedule, actuator shall include a mechanical worm gear manual override de-clutch gearbox and hand wheel to be mounted between the valve and the actuator. The manual override shall be able move and hold the valve in any position between full OPEN and full CLOSE. When the actuator is in 'AUTO' operation, the gear shall be declutched and will 'free wheel'. To use the override, isolate the incoming air supply and bleed all pressure from the actuator, then engage the worm to the segment. The engagement lever shall include a stainless steel legend plate clearly identifying the lever position with "AUTO" and "MANUAL". The manual override shall be capable of remaining on the valve and fully operational with the actuator removed and include two mechanical valve position stops. The manual override shall have a cast iron housing and stainless steel input shaft and fasteners, rated for IP68 / NEMA 4/4X environments. The manual override shall have an EPOXY NZ PRIMER and Polyurethane finish paint, both 40 - 60 microns. Hand

wheel diameter to be selected to limit rim pull to a maximum of 80#. Include 3-way actuator vent valve(s) as required to bleed the actuator and isolate the supply air during manual operation. The 3-way vent valve(s) shall include "Auto" and "Manual" legend plate and the hand wheel shall include OPEN and CLOSE designations and directional arrows. The de-clutch manual override shall be manufactured by Rotork / K-TORK, the actuator supplier without exception.

- E. Accessories such as limit switches, positioners, solenoid valves, speed controls, piping and tubing, as required by the specification, shall be mounted and tested by the actuator manufacturer to the actuators prior to shipment to the jobsite.
- F. Torque Capability: The rated torque capability of each actuator shall be sufficient to seat, unseat, and rigidly hold, in any intermediate position, the valve disc it controls under the operating conditions specified herein. Torque safety factors shall conform to AWWA Standards and in no case be less than 1.25 times the valve manufactures specified torques based on operating conditions.
- G. Safety Factor: Actuator housings, supports, and connections to the valve shall be designed with a minimum safety factor of 5, based on the ultimate strength, or a minimum safety factor of 3, based on the yield strength of materials used.
- H. Stop-Limiting Devices: Valve actuators shall be equipped with adjustable mechanical stop-limiting devices to prevent over-travel of the valve disc in the open and closed positions. Position stops shall provide, at minimum, 80 to 100 degrees of adjustable travel.
- I. The pneumatic actuators shall have a working pressure of 150 psig per AWWA C541-08 standards with an overload pressure of 220 psig. Actuators with a published 100 psig maximum operating pressure rated will not be acceptable.
- J. Actuators shall be equipped with adjustable flow-control devices controlling the operating air exhausting from the actuator. The devices shall be located at or near the actuator or on the solenoid valve. The opening and closing speeds shall be nominally set for a range of 30 to 90 seconds, variable with valve sizes. Final adjustments shall be made by the purchaser to minimize line surges during normal operation.
- K. Actuators shall not require more than three (4) psig to be cycled a complete stroke in each direction before they are connected to the valve.
- L. Actuator Testing:
 - 1. Performance Tests: Each actuator and valve assembly shall be cycled a minimum of three (3) times prior to assembly to the valve and in the field using the start and stop controls from the fully closed to the fully open

position to demonstrate that the complete assembly, including controls, operates properly.

2. Test Certification: Certification of tests and copies of test or certificate of conformity reports shall be provided on request if the request is made prior to the time of testing.

M. Bracket and Couplings:

1. Custom fabricated bracket to adapt the actuator to the new or existing (retrofit) valves shall be heavy wall rectangular carbon steel tube and shall retain the valve stem packing or provide for use of the original draw-down packing gland as required.
2. All brackets and couplings shall have electro statically applied fusion bonded polyester powder coated finish.
3. Couplings shall be made of bar stock carbon steel with keyway and stainless steel setscrew.

N. Acceptable Manufacturers:

1. K-TORK Actuators & Controls, a Rotork company, 10410 Vista Park Road, Dallas, Texas 75238 Telephone number (214) 343-9980 or Engineer pre-approved equal when so stated in an addendum 14 days prior to the bid opening.

2.2 SMALL DIAMETER AIR PIPING AND VALVES

- A. The Contractor shall furnish and install all necessary smaller diameter valves, piping, and fittings required to connect the proposed pneumatic valve actuators to the existing/proposed air piping in the filter pipe gallery(s).
- B. Copper pipe shall conform to ASTM B88. Type K copper piping shall be used to the air supply lines which are to be located outdoors or underground. The piping to be installed shall be 1/4 inch pipe with fittings. All connections in the copper pipe shall be made with soldered fittings and shall be air tight.
- C. The Contractor shall install the copper piping in a neat and orderly manner with all pipe runs being parallel to the floor or wall. The Contractor shall support the piping at intervals not to exceed 5'-0" centers along the length of pipe run using Unistrut support brackets and holders. The Contractor shall furnish and install all required fittings and tubing to connect the new air piping to the existing/proposed piping, to transition from copper pipe to tubing and to connect the tubing to the valve actuator body.

- D. All small diameter fittings shall be bronze and shall be compression type fittings. The fitting to be used to transition from copper pipe to tubing shall be of the compression type as manufactured by Swagelok or accepted equivalent. The fitting to be installed at the valve actuator shall be compatible with the fitting on the valve.
- E. Small diameter tubing shall be translucent flexible plastic tubing 1/4 inch in diameter. The length of the plastic tubing shall be the length required to extend from the terminus of the copper pipe adjacent to each of the exterior valves to the valve actuator. The Contractor shall install the tubing in a workmanlike manner so it is neat and will not interfere with normal operation and maintenance. The tubing shall be rated for a minimum working air pressure of 250 psi. Tubing shall connect to the valve actuators with quick connection type fittings.
- F. All air delivery piping to be installed from the air compressors to the filter pipe gallery(s) and through the filter pipe gallery(s) shall be 1 inch schedule 40 threaded galvanized piping. This galvanized piping shall be mounted as described previously for the copper piping extending to the individuation valve actuators. The piping shall be installed in a horizontal run along the filter pipe gallery wall at a point 6 inches above the top of the grating. At a point adjacent to each of the proposed actuators, the Contractor shall furnish and install a 1 inch galvanized tee with a 1 inch to 1/4 inch bushing and 1/4 inch ball valve to isolate air flow to any valve. From this point to the actuator, the piping shall be installed as described previously. A 1 inch gate valve shall be installed at the end of the 1 inch pipe which shall be open to the atmosphere to blow any accumulated water from the line.

2.3 VALVE ACTUATOR SCHEDULE

Valve Service	Valve IDs	Valve Type	Size	Qty.	Actuator Type	Actuator Finish	Manual O-ride	Fail Position	Limit Switch	Position Transmitter
Filter to Clearwell	V102, V202, V302, V402, V502, V602, V702, V802, V902, V1002	BFV	12"	10	O/C	FP	N	C	Y	N
Filter to Waste	V131, V231, V331, V431, V531, V631, V731, V831, V931, V1031	BFV	12"	10	O/C	FP	N	C	Y	N
Backwash Supply	V721	BFV	24"	1	O/C	FP	N	C	Y	N
Air Scour Supply	V751	BFV	8"	1	O/C	FP	N	C	Y	N
Backwash Waste	V541, V741	BFV	24"	2	O/C	FP	N	C	Y	N
Filter Effluent	V501, V601, V701, V801, V901, V1001	BFV	12"	6	MOD	FP	N	C	Y	Y

Abbreviations:

- | | |
|--------------------------|--|
| 1. Valve Type: | BFV=butterfly valve. EPV=eccentric plug valve, BV=ball valve |
| 2. Actuator Type: | O/C=Open-Close, MOD=Modulating |
| 3. Actuator Finish: | PC=Powder Coat, FP=Fluoropolymer |
| 4. Manual O-ride: | Indicates mechanical manual override declutch gearbox, Y=Yes, N=No |
| 5. Fail Position: | Based on loss of power or control signal. C=Close, O=Open |
| 6. Limit Switch: | Suitable for O/C or MOD actuators. Y=Yes, N=No |
| 7. Position Transmitter: | 4-20 mA output, used on MOD actuators only. Y=Yes, N=No |

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Complete equipment installation with controls, safety devices and auxiliary support systems necessary to start the equipment and verify that the equipment functions correctly under no load conditions. Turn rotating equipment by hand to check. Complete cleaning and testing of piping systems. Inspect and clean equipment, devices, piping, and structures of debris and foreign material.
- B. Remove temporary bracing supports and other construction debris that may damage equipment.
- C. Remove protective coatings and oils used for protection during shipment and installation.
- D. Flush, fill, and grease lubricated systems in accordance with Manufacturer's instructions.
- E. Install temporary connections and devices required to fill, operate, checkout and drain the system. Provide temporary valves, gauges, piping, test equipment, and other materials and equipment necessary to conduct testing and startup.
- F. Check equipment for correct direction of rotation and freedom of moving parts.
- G. Align equipment to Manufacturer's tolerances. Adjust clearances and torques.
- H. Check installation prior to start-up for conformance to Manufacturer's instructions.
- I. Adjust or modify equipment to ensure proper operation.
- J. Correct any deficiencies or problems noted in Manufacturer's representative's installation reports.

3.2 FIELD QUALITY CONTROL

- A. Verify that structures, equipment, pipes, valves, fittings, and other appurtenances are compatible. Coordinate field devices, voltages, signal types, power needed, and programming with valve operator to provide proper functioning system.

3.3 MANUFACTURER'S REPRESENTATIVE

- A. The services of the manufacturer's technical representative shall be provided for pre-startup installation checks, startup assistance, training of Owner's personnel, troubleshooting, acceptance testing, and other services as required within these Contract Documents.
- B. Manufacturer's representative shall:
 - 1. Approve installation in writing to Engineer before operation.
 - 2. Verify conformance to all specified requirements.
 - 3. Fully instruct all designated personnel for the plant on proper care, maintenance, and operation of all equipment and appurtenances.
 - 4. Perform specified acceptance tests and operate system to verify satisfactory operation of all equipment in presence of Owner's personnel and Engineer.
 - 5. Check all equipment for excessive noise or vibration, proper alignment, general operation, etc.
 - 6. Operate the equipment through the design performance range consistent with available flows. Adjust, balance, and calibrate and verify that the equipment, safety devices, controls, and process system operate within the design conditions. Each safety device shall be tested for proper setting and signal. Response shall be checked for each equipment item and alarm. Simulation signals may be used to check equipment and alarm responses.
 - 7. Place each piece of equipment in the system in operation until the entire system is functioning. All components shall continue to operate without alarms or shutdowns, except as intended, for 8 consecutive hours to be considered started up.
 - 8. Submit certified written field reports.
 - 9. Provide a certificate by the valve actuator supplier indicating proper installation and start-up procedures have been followed. This certificate shall be required and included as part of the final operation and maintenance manuals in order to validate the specified three (3) year warranty.
 - 10. Revisit job sites as often as necessary beyond minimum services specified to correct deficiencies to satisfaction of Engineer.

3.4 ACCEPTANCE TEST

- A. Upon completion of the installation of each valve actuator, an acceptance test will be conducted to verify the satisfactory operation and performance of each actuator. Each valve shall be opened and closed using the plant control system as applicable (AUTO) and manually. The control valves shall also be tested under power loss to verify proper closure.
- B. The test shall be conducted in a manner approved by and in the presence of the Engineer. The equipment and piping will be completely checked for leakage, general operation, etc.
- C. Each valve actuator must perform in a manner acceptable to the Engineer before the Owner will make final acceptance.

END OF SECTION

SECTION 02675

DISINFECTION OF WATER SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Disinfection of potable water distribution and transmission system.
- B. Disinfection of Water Plants and Water Storage Facilities.
- C. Testing and reporting results.

1.2 RELATED SECTIONS

- A. Section 01410 – Testing Services

1.3 REFERENCES

- A. AWWA B300 - Standard for Hypochlorites.
- B. AWWA C651 - Disinfecting Water Mains.
- C. AWWA C652 – Disinfection of Water Storage Facilities.
- D. AWWA C653 – Disinfection of Water Treatment Plants.

1.4 SUBMITTALS FOR INFORMATION

- A. Section 01300 - Submittals: Procedures for submittals.
- B. Test Reports: Submit all test reports and indicate results comparative to specified requirements.
- C. Certificate: Certify that cleanliness of water distribution system meets or exceeds Texas Department of Health requirements.

1.5 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01700.
- B. Disinfection report:
 - 1. Type and form of disinfectant used.
 - 2. Date and time of disinfectant injection start and time of completion.

3. Test locations.
 4. Initial and 24 hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
 5. Date and time of flushing start and completion.
 6. Disinfectant residual after flushing in ppm for each outlet tested.
- C. Bacteriological report:
1. Date issued, project name, and testing laboratory name, address, and telephone number.
 2. Time and date of water sample collection.
 3. Name of person collecting samples.
 4. Test locations.
 5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
 6. Coliform bacteria test results for each outlet tested.
 7. Certification that water conforms, or fails to conform, to bacterial standards of Texas Department of Health.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with AWWA C651, C652, and C653.
- B. Water Treatment Firm: Company specializing in disinfecting potable water systems specified in this Section with minimum three (3) years documented experience.
- C. Testing Firm: Company specializing in testing potable water systems, certified by the State of Texas.
- D. Submit bacteriologist's signature and authority associated with testing.

1.7 REGULATORY REQUIREMENTS

- A. Conform to requirements of AWWA C651, C652, and C653 for performing the work of this Section.
- B. Provide certificate of compliance from Texas Department of Health indicating approval of water system.

PART 2 PRODUCTS

2.1 DISINFECTION CHEMICALS

- A. Chemicals: AWWA B300, Hypochlorite.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that piping system has been cleaned, inspected, and pressure tested.
- B. Perform scheduling and disinfecting activity with start-up, testing, adjusting and balancing, demonstration procedures, including coordination with related systems.

3.2 EXECUTION

- A. Provide and attach required equipment to perform the work of this Section.
- B. Introduce treatment into piping system.
- C. Maintain disinfectant in system for 24 hours.
- D. Flush, circulate, and clean until required cleanliness is achieved; use municipal domestic water.
- E. Replace permanent system devices removed for disinfection.
- F. Pressure test system to 150 psi. Repair leaks and re-test.

3.3 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Assurance: Field inspection and testing.
- B. Test samples in accordance with AWWA C651, C652, and C653.

END OF SECTION

SECTION 02923
LANDSCAPE GRADING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Final grade topsoil for finish landscaping.

1.2 RELATED SECTIONS

- A. Section 01400 - Quality Control
- B. Section 01410 - Testing Laboratory Services: Testing fill compaction.
- C. Section 02205 - Soil Materials.
- D. Section 02936 – Seeding

PART 2 PRODUCTS

2.1 MATERIAL

- A. Topsoil: Fill Type S4 as specified in Section 02205.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify building and trench backfilling have been inspected.
- B. Verify substrate base has been contoured and compacted.

3.2 SUBSTRATE PREPARATION

- A. Eliminate uneven areas and low spots.
- B. Remove debris, roots, branches, stones, in excess of 1 inch in size. Remove subsoil contaminated with petroleum products.
- C. Scarify surface to depth of 4 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.3 PLACING TOPSOIL

- A. Place topsoil in areas where seeding, sodding, and planting is required, to thickness as scheduled. Place topsoil during dry weather.
- B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.

- C. Remove roots, weeds, rocks, and foreign material while spreading.
- D. Manually spread topsoil close to plant life, buildings, and structures to prevent damage.
- E. Lightly compact placed topsoil.
- F. Remove surplus subsoil and topsoil from site.
- G. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.4 TOLERANCES

- A. Top of Topsoil: Plus or minus ½ inch.

3.5 PROTECTION

- A. Protect landscaping and other features remaining as final work.
- B. Protect existing structures, fences, utilities, paving, and curbs.

END OF SECTION

SECTION 02936

SEEDING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Placing topsoil.
- C. Temporary Cool Weather Seed Mixture (For Installation if Requested By Engineer).
- D. Seeding, Hydroseeding, mulching, and fertilizer.
- E. Maintenance.

1.2 RELATED SECTIONS

- A. Section 02205 - Soil Materials: Topsoil material.
- B. Section 02923 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this Section.

1.3 REFERENCES

- A. FS O-F-241 - Fertilizers, Mixed, Commercial.
- B. Texas Seed Law.

1.4 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.5 MAINTENANCE DATA

- A. Submit under provisions of Section 01700.
- B. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.6 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

- B. All seed shall be labeled in accordance with the current rules and regulations of the Texas Seed Law and shall be free of noxious weeds as listed by the Board.
- C. All legumes must be inoculated with an approved culture as per the manufacturer's recommendations.

1.7 REGULATORY REQUIREMENTS

- A. Comply with all regulatory agencies for fertilizer and herbicide composition.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01600.
- B. Deliver grass seed mixture in sealed containers unless otherwise authorized by the Engineer in writing. Seed in damaged packaging is not acceptable.
- C. Seed, which has become wet, moldy, or otherwise damaged in transit or storage will not be acceptable.
- D. Deliver fertilized in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.9 COORDINATION

- A. Coordinate work under provisions of Section 01039.

1.10 MAINTENANCE SERVICE

- A. Furnish maintenance of seeded areas for one year from Date of Substantial Completion.

PART 2 PRODUCTS

2.1 SEED MIXTURE

- A. Normal Application Seed Mixture (For Installation Between 5:1 and 6:1 inclusive, unless otherwise approved by the Engineer)

<u>Seed</u>	<u>Minimum Seed Purity (Percent)</u>	<u>Minimum Germination (Percent)</u>	<u>Rate of Application (lb./acre)</u>
Common Bermuda, hulled	95.0%	85.0%	90

- B. Flower Seed Mixture

<u>Seed</u>	<u>Minimum Seed Purity (Percent)</u>	<u>Minimum Germination (Percent)</u>	<u>Rate of Application (lb./acre)</u>
Common Bermuda, hulled	95.0%	85.0%	20

Elbon rye	95.0%	85.0%	20
Crimson Clover	95.0%	85.0%	18

C. Temporary Cool Weather Seeding

<u>Seed</u>	<u>Minimum Seed Purity (Percent)</u>	<u>Minimum Germination (Percent)</u>	<u>Rate of Application (lb./acre)</u>
Elbon rye	95.0%	85.0%	80

1. If required, temporary seeding shall be installed using a drill seeder without fertilizer.
2. If temporary seeding is required, the contractor will be required to disc and drag the topsoil to remove the temporary vegetation prior to the installation of the normal seed mixture.
3. The price for disking, dragging, and removing the temporary vegetation shall be subsidiary to seeding Bid Item.

D. Hydromulch, Seed, Lime, and Fertilizer (Slopes 0% to 5%)

1. All disturbed areas, apply the normal seed mixture using a hydroseeder along with the following components:
 - a. Seed, as noted above for normal seed mixture.
 - b. Fertilizer, as described below
 - c. Liquid Lime, as described below
 - d. Enviro-Tak fiber mulch binder, as distributed by Southwest Environment Services, Inc. (Tyler, Texas) at a rate of 60 lbs. Per acre.
 - e. Fiber mulch at a rate of 2,000 lbs. Per acre.
2. The contractor shall install a micronutrient such as Turfblend, or equal, at the rate suggested by the supplier.
3. In addition to slopes between 0% and 5%, this mixture shall be applied to all areas receiving erosion control matting.

E. Plaster/cellulose fiber much, Seed, Lime, and Fertilizer (Slopes >5%)

1. All disturbed areas shown on the plans, apply the normal seed mixture using a hydroseeder along with the following components:
 - a. Seed, as noted above for normal seed mixture.
 - b. Fertilizer, as described below.

- c. Liquid Lime, as described below.
 - d. Plaster/cellulose fiber mulch, as described below.
 - 2. The contractor shall install a micronutrient such as Turfblend, or equal, at the rate suggested by the supplier.
 - F. Creeping Red Fescue or perennial rye: 50 percent.
- 2.2 SOIL MATERIALS
- A. Topsoil: As specified in Section 02205.
- 2.3 ACCESSORIES
- A. Liquid Lime:
 - 1. Liming will be required for all area when the normal seed mixture is applied.
 - 2. The lime to be used shall be liquid lime and shall be applied at a rate of 5 gallons per acre.
 - 3. The liquid lime shall be flowable dolomitic limestone ground to a fineness whereby 100% will pass through a 300-mesh screen.
 - 4. The liquid lime shall be as distributed by Southwest Environment Services, Inc. of Tyler, Texas or approved equal.
 - 5. The liquid lime shall be applied at the same time as the seed and fertilizer with the use of a hydroseeder.
 - B. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are acceptable.
 - C. Plaster/cellulose Fiber Mulch:
 - 1. Plaster/cellulose fiber mulch shall be a mixture of plaster and natural cellulose fiber mulch.
 - 2. The plaster shall consist of naturally-occurring high purity processed gypsum and necessary additives, such as retarders and accelerators and water to form a cementitious binder that will produce a protective crust-like barrier within 4 to 8 hours after application.
 - 3. The gypsum shall be produced from a quarried or mined source.
 - 4. In addition, the gypsum shall be processed to be composed of a crushed, dry calcium sulfate hemihydrate ($CA SO_4 \cdot 1/2 H_2O$) having a purity of not less than 88%.

5. The processed gypsum plus the necessary additives shall be furnished in bags or bulk and be accompanied by bills of landing and shipping invoices stating the gypsum purity content, dry weight, and source of manufacture.
 6. Processed gypsum, which has become partially air set, lumpy, or caked prior to use will be rejected.
 7. The cellulose fiber mulch shall be produced from grinding clean, whole wood chips, or fiber produced from ground newsprint with a labeled ash content not to exceed 7%.
- D. Fertilizer:
1. FS O-F-241, Type I, Grade A; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil to the following proportions:
 2. The contractor shall have a turf analysis performed for the topsoil (4 maximum).
 3. Based upon the results of the turf analysis, the following fertilizer requirement may be adjusted to suit the existing topsoil.
 - a. Fertilizer shall be thirty percent (30%) nitrogen, thirty percent (30%) phosphorous, and thirty percent (30%) potash commercial fertilizer and shall be spread at the minimum rate of 650 lbs. per acre.
 - b. In addition, trace elements such a K-Mag may be required if the need is shown by the turn analysis.
- E. Water:
1. Clean, fresh and free of substances or matter, which could inhibit vigorous growth of grass.
 2. The Contractor shall water the seed and fertilizer as he deems necessary to establish the grass, at no expense to the Owner.
- F. Prevent contamination.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this Section.

3.2 PREPARATION OF SUBSOIL

- A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

- B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated sub-soil.
- C. Scarify subsoil to a depth of 4 inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

3.3 PLACING TOPSOIL

- A. Spread topsoil to a minimum depth of 4 inches over area to be seeded. Rake until smooth.
- B. Place topsoil during dry weather and on dry unfrozen subgrade.
- C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.
- D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.
- E. Install edging at periphery of seeded areas in straight lines to consistent depth.

3.4 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. For dry placing do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Lightly water to aid the dissipation of fertilizer.

3.5 SEEDING (Cool Weather Only)

- A. Apply seed at a rate of 5 pounds per 1000 square foot evenly in two intersecting directions. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Planting Season: September through March, fescue/rye only.
- D. Do not sow immediately following rain, when ground is too dry, or during windy periods.
- E. Roll seeded area with roller not exceeding 112 pounds.
- F. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.
- G. Apply water with a fine spray immediately after each area has been mulched. Saturate to 3 inches of soil.

3.6 HYDROSEEDING

- A. Apply seeded slurry with a hydraulic seeder at a rate of 5 pounds per 1000 square feet evenly in two intersecting directions.
- B. Do not hydroseed area in excess of that which can be mulched on same day.
- C. Immediately following seeding, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.
- D. Apply water with a fine spray immediately after each area has been mulched. Saturate to 3 inches of soil.

3.7 MAINTENANCE

- A. Mow grass at regular intervals to maintain at a maximum height of 2½ inches. Do not cut more than 1/3 of grass blade at any one mowing.
- B. Neatly trim edges and hand clip where necessary.
- C. Immediately remove clippings after mowing and trimming.
- D. Water to prevent grass and soil from drying out.
- E. Immediately reseed areas which show bare spots.

3.8 SCHEDULE

- A. All disturbed areas shall be hydromulched with the Normal Application Seed Mixture as specified.

END OF SECTION

DIVISION 03
CONCRETE

SECTION 03100
CONCRETE FORMWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Openings for other work.
- C. Form accessories.
- D. Form stripping.

1.2 RELATED SECTIONS

- A. Section 03200 - Concrete Reinforcement.
- B. Section 03300 - Cast-in-Place Concrete.

1.3 REFERENCES

- A. ACI 117 – Tolerances for Construction and Materials
- B. ACI 301 - Structural Concrete for Buildings.
- C. ACI 318 - Building Code Requirements for Reinforced Concrete.
- D. ACI 347 - Recommended Practice For Concrete Formwork.
- E. PS 1 - Construction and Industrial Plywood.

1.4 DESIGN REQUIREMENTS

- A. Design, engineer and construct formwork, shoring and bracing to conform to design and code requirements; resultant concrete to conform to required shape, line and dimension.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.
- C. Product Data: Provide data on void form materials and installation requirements.

1.6 QUALITY ASSURANCE:

- A. Perform Work in accordance with ACI 347, 301, 318.

1.7 QUALIFICATIONS:

- A. Design formwork under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of Texas.

1.8 REGULATORY REQUIREMENTS:

- A. Conform to applicable code for design, fabrication, erection and removal of formwork.

1.9 FIELD SAMPLES:

- A. Provide under provisions of Section 01400.
- B. Coordinate with requirements stated in Section 03100 and 03300.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01600.
- B. Deliver void forms and installation instructions in manufacturer's packaging.
- C. Store off ground in ventilated and protected manner to prevent deterioration from moisture.

1.11 COORDINATION

- A. Coordinate work under provisions of Section 01039.
- B. Coordinate this Section with other Sections of work, which require attachment of components to formwork.
- C. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Engineer.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Forms
 - 1. Forms shall be of wood, metal, highly water resistant plywood, or other material approved by the Engineer.
 - 2. Forms for sections greater than 18" thick shall be of wood.
 - 3. Form surfaces shall be smooth and free from irregularities, dents, sags, or holes when used for permanently exposed surfaces.
 - 4. Bolts and rods used for internal ties shall be so arranged that, when the forms are removed, all metal will not be less than 2" from any concrete surface.

5. Wire ties will not be permitted where concrete surface will be exposed to weathering, and discoloration would be objectionable.
 6. Exposed concrete shall have approved form liners of masonite or plywood, or shall be constructed of smooth surfaced plywood.
 7. Forms offsets for exposed concrete shall meet Class A requirements. All other form offsets shall meet Class C requirements.
- B. Corner Forms
1. Corner forms forming 3/4" chamfers or as otherwise specified on plans, shall be used on all outside corners that are to be exposed in the finished structure.
 2. Chamfer forms shall be molded plastic or polyvinyl chloride radius or chamfer strips. Use one style of form throughout the project.
- C. Rustication and Score Line Strips
1. Rustication and score line strips shall be a non-absorbent material such as extruded polyvinyl chloride, plastic, fiberglass or metal or they may be milled from good quality lumber and well sealed to prevent moisture absorption.
 2. Wood strips may not have protruding splinters, which may become embedded in the concrete.
 3. Sealing wood shall be accomplished by immersion or brushing on two coats of form coating.
- D. Form Ties
1. Form ties for concrete shall have an approved waterstop barrier to prevent seepage of moisture along the ties.
 2. The ends of the tie metal after breaking off shall be minimum of 1½" from the finished wall face.
 3. Submit samples to the Engineer for review.

PART 3 EXECUTION

3.1 EXAMINATION:

- A. Verify lines, levels and centers before proceeding with formwork.
- B. Ensure that dimensions agree with drawings.

3.2 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to over stressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Obtain approval before framing openings in structural members, which are not indicated on Drawings.
- F. Provide fillet and chamfer strips on external corners of beams, joists, and columns.
- G. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.

3.3 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings, which are effected by agent.
- D. Soak inside surfaces of untreated forms with clean water.
- E. Keep surfaces coated prior to placement of concrete.

3.4 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items, which will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.
- D. Install accessories in accordance with manufacturer's instructions, straight, level, and plumb.
- E. Ensure items are not disturbed during concrete placement.
- F. Install waterstops continuous without displacing reinforcement.
- G. Heat seal joints watertight.
- H. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection.

- I. Locate openings at bottom of forms to allow flushing water to drain.
- J. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.5 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
- C. Flush with water or use compressed air to remove remaining foreign matter.
- D. Ensure that water and debris drain to exterior through clean-out ports.
- E. During cold weather, remove ice and snow from within forms.
- F. Do not use de-icing salts.
- G. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure.
- H. Use compressed air or other means to remove foreign matter.

3.6 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 301.
- B. Camber slabs and beams 1/4 inch per 10 feet in accordance with ACI 301.

3.7 FIELD QUALITY CONTROL

- A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.
- B. Do not reuse forms that are worn or damaged beyond repair. Do not patch formwork.

3.8 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.
- D. Forms or shores for supported slabs and beams shall not be removed until the concrete, so supported, has acquired 70 percent of its design strength; except where loads other than the dead weight of the concrete are added, the shores shall not be removed until 24 hours after the concrete has obtained 90 percent of its design strength.

- E. Forms shall be removed immediately after expiration of the lapsed time specified above or sooner, if required by the Engineer, where concrete is to receive a rubbed finish.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Reinforcing steel bars, wire fabric and accessories for cast-in-place concrete.

1.2 RELATED SECTIONS

- A. Section 03100 - Concrete Formwork.
- B. Section 03300 - Cast-in-Place Concrete.

1.3 REFERENCES

- A. ACI 117 – Tolerances for Concrete Construction and Materials.
- B. ACI 301 - Structural Concrete for Buildings.
- C. ACI 318 - Building Code Requirements For Reinforced Concrete.
- D. ACI SP-66 - American Concrete Institute - Detailing Manual.
- E. ANSI/ASTM A82 - Cold Drawn Steel Wire for Concrete Reinforcement.
- F. ANSI/ASTM A184 - Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
- G. ANSI/ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- H. ANSI/ASTM A496 - Deformed Steel Wire Fabric for Concrete Reinforcement.
- I. ANSI/ASTM A497 - Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
- J. ANSI/AWS D1.4 - Structural Welding Code for Reinforcing Steel.
- K. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
- L. ASTM A767 - Zinc-Coated (Galvanized) Bars for Concrete Reinforcement.
- M. ASTM A775 - Epoxy-Coated Reinforcing Steel Bars.
- N. ASTM D3963 - Epoxy-Coated Reinforcing Steel.
- O. AWS D12.1 - Welding Reinforcement Steel, Metal Inserts and Connections in Reinforced Concrete Construction.
- P. CRSI - Concrete Reinforcing Steel Institute - Manual of Practice.
- Q. CRSI - Placing Reinforcing Bars.

- R. ASTM A884 - Epoxy-Coated Steel Wire and Welded Wire Fabric for Reinforcement.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings:
 - 1. Indicate bar sizes, spacings, locations, and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices.
- C. Manufacturer's Certificate:
 - 1. Certify that products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with CRSI - Manual of Standard Practice, ACI 301, ACI SP-66, ACI 318.
- B. Submit certified copies of mill test report of reinforcement materials analysis.
- C. Provide Engineer with access to fabrication plant to facilitate inspection of reinforcement.
- D. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection
- E. Store steel reinforcement above ground on platforms, skids or other supports.

1.6 QUALIFICATIONS

- A. Design reinforcement under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of Texas.
- B. Welders' Certificates:
 - 1. Submit under provisions of Section 01400 Manufacturer's Certificates, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.7 COORDINATION

- A. Coordinate work under provisions of Section 01039.
- B. Coordinate with placement of formwork, formed openings and other Work.

PART 2 PRODUCTS

2.1 REINFORCEMENT

A. Reinforcing Steel:

1. ASTM A615, 60 yield grade; deformed billet steel bars.

B. Welded Steel Wire Fabric:

1. ASTM A185 or ASTM A497 Deformed Type.

2.2 ACCESSORY MATERIALS

A. Tie Wire:

1. Minimum 16 gage annealed steel.

B. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces: Plastic coated steel, Stainless steel type; size and shape as required.

2.3 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI Manual of Practice, ACI SP-66, ACI 318, ANSI/ASTM A184.

B. Reinforcement bars shall be bent cold to the shapes indicated on the Plans.

C. Fabrication tolerances, fabrication, and detailing of steel reinforcement shall conform to ACI – 315.

D. Steel reinforcement shall be of the type and size, cut to lengths and bent to shapes as indicated on the Plans.

E. Unless otherwise indicated, hooks, laps, splices, embedment lengths, and other details of reinforcement shall be provided as set forth in the ACI Building Code (ACI – 318) to develop the full tensile strength of the bar.

F. Welding may not be used except with the specific approval of the Engineer. Welding, when approved, shall conform to ANSI/AWS D12.1.

G. No splices of bars, except when shown on the Plans, will be permitted without the approval of the Engineer.

H. Welded wire fabric shall be lap spliced a minimum of 2" plus the bar spacing.

I. Splices in reinforcing bars shall conform to the general requirements of the ACI Code, except rung tension reinforcement splices, which should be a minimum of 40 bar diameters.

J. Splices should be staggered where possible or increase by 30 percent.

PART 3 EXECUTION

3.1 PLACEMENT

- A. Place, support and secure reinforcement against displacement by ties of annealed wire, or suitable clips at intersections.
 - 1. Do not deviate from required position.
 - 2. Placing tolerances shall conform to ACI – 318.
- B. Nails shall not be driven into the wall forms to support reinforcement nor shall any other device used for this purpose come in contact with the form on the waterside of any water containing structure.
- C. Metal devices used to provide the required clear distances from reinforcing steel to waterside of concrete surfaces shall be galvanized, or shall be as approved by the Engineer.
- D. The main reinforcement of slabs in contact with the ground shall be supported in its proper position, as indicated on Plans, by means of precast cement mortar blocks (composed of one part cement to two parts sand), of approved dimensions, resting on the slabs' sub-base.
- E. The slab reinforcement shall not be used to support planking or runways used in placing concrete.
- F. Bending of bars embedded in hardened concrete will not be permitted except when specifically approved by the Engineer for the field condition encountered.
- G. Floor slabs, galleries, deck slabs, beams, metal chairs, spacers and other metal accessories necessary to provide the required clear distances and proper alignment and spacing between bars shall be galvanized or shall have plastic protective covering over portions in contact with forms.
- H. Clean reinforcement free of scale, loose or flaky rust or other foreign material, including oil, mud or coating that will reduce bond to concrete.
- I. Accommodate placement of formed openings.
- J. Maintain concrete cover around reinforcing as follows:
 - 1. Slabs:
 - 1½ inches in general, top and bottom.
 - 1½ inches at surfaces troweled as floor finish, walkway, or driveway.
 - 2 inches on bottom for slabs over water
 - 2. Footings:
 - 2 inches at top of footings.

- | | | |
|----|--------------------|--|
| | 3 inches | at bottom, sides, and end of footings. |
| 3. | Walls: | |
| | 2 inches | on surfaces against earth. |
| | 1 inch | on interior surfaces. |
| 4. | Beams and Girders: | |
| | 2 inches | minimum to stirrup steel. |
| | 2½ inches | minimum to longitudinal steel. |
| 5. | Columns: | |
| | 2 inches | in general, to main vertical reinforcement. |
| | 2 ½ inches | to main reinforcement on surfaces in contact with water. |

K. Bond and ground all reinforcement to requirements of Section 16170.

3.2 FIELD QUALITY CONTROL:

A. Field inspection will be performed under provisions of Section 01400.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Mix design requirements for cast-in-place concrete consisting of Portland cement, aggregate, water, and admixtures.
- B. Formwork, reinforcement, joints, and placing requirements for cast-in-place concrete.
- C. Types of cast-in-place concrete specified: Normal weight concrete.
- D. Repairing concrete surface defects.
- E. Finishing concrete surfaces.
- F. Curing cast-in-place concrete, including slabs.

1.2 REFERENCES

- A. Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, 2014 Edition.
- B. ACI 301 - Structural Concrete for Buildings.
- C. ACI 302 - Guide for Concrete Floor and Slab Construction.
- D. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- E. ACI 305R - Hot Weather Concreting.
- F. ACI 306R - Cold Weather Concreting.
- G. ACI 308 - Standard Practice for Curing Concrete.
- H. ACI 318 - Building Code Requirements for Reinforced Concrete.
- I. ANSI/ASTM D994 - Preformed Expansion Joint Filler for Concrete (Bituminous Type).
- J. ANSI/ASTM D1190 - Concrete Joint Sealer, Hot-Poured Elastic Type.
- K. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).

- L. ANSI/ASTM D1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
- M. ASTM A615--Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
- N. ASTM B221 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.
- O. ASTM C31 - Making and Curing Concrete Test Specimens in the Field.
- P. ASTM C33 - Concrete Aggregates.
- Q. ASTM C39--Compressive Strength of Cylindrical Concrete Specimens.
- R. ASTM C94 - Ready-Mixed Concrete.
- S. ASTM C143--Slump of Portland Cement Concrete.
- T. ASTM C150 - Portland Cement.
- U. ASTM C172--Sampling Freshly Mixed Concrete.
- V. ASTM C173--Air Content of Freshly Mixed Concrete by the Volumetric Method.
- W. ASTM C260 - Air Entraining Admixtures for Concrete.
- X. ASTM C330 - Light Weight Aggregates For Structural Concrete.
- Y. ASTM C494 - Chemicals Admixtures for Concrete.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Certificates: Mill certificates for bulk cement.
- C. Product Data: Manufacturer's product data sheets for admixtures and bonding agents
- D. Submit test data on proposed design mixes for each type of concrete to be used in the Project to verify that Specification requirements are met or exceeded.
- E. Mix Designs:
 - 1. Submit mix designs for each specified concrete and grout type. Design data shall include the name of the concrete supplier; manufacturer/supplier and type of cement used; size and type of aggregate; proportional weights of

cement, aggregate, and water per cubic yard of concrete; name and quantity of admixture used.

1.4 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01700.
- B. Accurately record actual locations of embedded utilities and components which are concealed from view.

1.5 QUALITY ASSURANCE

- A. Project Controls: Provide necessary controls during evaluation of material, mix designs, production and delivery of concrete, placement, compaction, finishing and curing necessary to assure that Work will be accomplished in such a manner to produce the Work in accordance with Contract Documents.
- B. Perform Work in accordance with ACI 301.
- C. Acquire cement and aggregate from same respective source for all Work.
- D. Conform to ACI 305R when concreting during hot weather.
- E. Conform to ACI 306R when concreting during cold weather.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Materials shall be delivered, stored, and handled in a manner to prevent deterioration, contamination, or any other circumstance that would be harmful to cast-in-place concrete.

1.7 FIELD SAMPLES

- A. Provide under provisions of Section 01400. Coordinate with Section 03100.
- B. Construct and erect a field sample for architectural concrete surfaces receiving special treatment or finish as result of formwork.
- C. Sample Panel: Sufficient size to indicate special treatment or finish required.
- D. If requested by Engineer, cast concrete against sample panel. Obtain acceptance of resultant surface finish prior to erecting formwork.
- E. Locate where directed.
- F. Accepted sample panel is considered basis of quality for the finished work. Keep sample panel exposed to view for duration of concrete work.

- G. Accepted sample may not remain as part of the Work.

1.8 PROJECT CONDITIONS

- A. Do not place concrete during rain, sleet, or snow unless protection is provided and approved by the Engineer.
- B. Coordinate concrete placement schedule with other related work.
- C. Notify Engineer at least 24 hours before placement.

1.9 COORDINATION

- A. Coordinate work under provisions of Section 01039.
- B. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I/II, Type I – Only type of one brand of cement shall be used for exposed concrete.
- B. Coarse Aggregates: Shall consist of gravel, crushed gravel, crushed stone, air-cooled blast furnace slag, or a combination thereof, conforming to ASTM C-33 with a maximum size of 1½-inches. Where required due to minimum spacing of reinforcing steel, maximum size of coarse aggregate shall be reduced to 1-inch with prior written approval of the Engineer.
- C. Fine Aggregate: Shall conform to ASTM C-33 and shall be washed river sand composed of clean, uncoated grains of strong materials.
- D. Abrasive aggregates shall be equal to fine (c.f.) “Alumdum” aggregate as manufactured by Norton Company, Worcester, Mass. or “Frictex NS” as manufactured by Sonneborn - Contech. Use only as approved by Engineer.
- E. Water: Potable water free from detrimental chemicals and solids that will decrease the strength of the concrete.
- F. Embedded Items: Embedded items shall be of the size and type shown or as needed for the application.
- G. Curing Materials: Curing materials shall be burlap, impervious sheets, or membrane-forming compounds.

- H. Dowels: Plain carbon steel bars, minimum yield point of 60,000 psi for use in slabs on grade.
- I. Expansion Joint Filler Strips: Premolded nonextruding, resilient bituminous or non bituminous type for use in concrete paving or construction, thickness as shown.
- J. Form Materials: Wood, metal or other Engineer approved materials that will produce the specified finishes without adversely affecting the concrete surfaces.
- K. Form Coating: Nonstaining form oil or form-release agent that will not deleteriously affect concrete surfaces nor impair subsequent applications.
- L. Form Ties: Metal, factory-fabricated removable snap-off type, that will not leave holes less than 1/4 inch nor more than 1 inch deep and not more than 1 inch in diameter.
- M. Joint Sealant: As approved by Engineer for sealing joints in concrete against moisture infiltration. Reference Section 07900.
- N. Reinforcement: Bar reinforcement shall be deformed, Grade 60 conforming to ASTM A615. Mesh reinforcement shall be welded wire fabric with wires at right angles to each other.
- O. Bonding Agent: As approved by Engineer.
- P. Admixtures: Air-entraining, retarders, and other admixtures as approved by Engineer

2.2 ADMIXTURES

- A. A retarding admixture, conforming to ASTM C-494, pre-tested with job materials under job conditions, may be used if approved by Engineer, whenever necessary to prevent cold joints due to the quantity of concrete placed, to permit revibration of the concrete, to offset the effects of high concrete temperature rise.

2.3 ACCESSORIES

- A. Curing Compound: Concrete curing compound shall be of a nature and composition not deleterious to concrete and shall be of a standard and uniform quality ready for use as shipped by the manufacturer. At the time of use, the curing compound shall be in a thoroughly stirred condition. Curing compounds shall not be diluted by the addition of solvent or thinners, or be altered in any manner without the specific approval of and in a manner prescribed by the manufacturer. Curing compound shall conform to the requirements of ASTM C-309 Type 1.
 - 1. The curing compound shall be sufficiently transparent and free from color so that there will be no permanent change in the color of the concrete. The compound shall contain, however, a temporary dye of sufficient color to make the membrane clearly visible for a period of at least four hours after application.

- B. Cement Grout: Cement based grout shall be used for grouting the filter underdrains. Cement grout shall meet the requirements of the filter manufacturer as stated in Section 11220.
- C. Non-shrink Cement-Based Grout: Grout for setting equipment, columns and other bases and anchor bolts shall be non-shrink cement based grout. Nonshrink cement-based grout shall consist of pre-measured, prepackaged materials supplied by the manufacturer, requiring only the addition of potable water. The manufacturer's instructions shall be printed on the outside of each bag.
 - 1. The manufacturer shall submit information verifying the cement-based grout exhibits the following properties:
 - a. Nonshrink -- No shrinkage (0.0%) and a maximum 4.0 percent expansion when tested in accordance with ASTM C-827. No shrinkage (0.0%) and a maximum of 0.2 percent expansion in the hardened state when tested in accordance with CRD-C 621.
 - b. Compressive Strength -- A minimum 28-day compressive strength of 5,000 psi when tested in accordance with ASTM C-109.
 - c. Setting Time -- A minimum initial set time of 60 minutes when tested in accordance with ASTM C-191.
 - d. Composition -- No metallic particles (aluminum powders, iron filings) or expansive cement.
 - 2. The contractor shall perform all grouting in accordance with the manufacturer's recommendations. Technical service shall be supplied upon request.
 - 3. Grout shall be Five Star Grout, as manufactured by U.S. Grout Corporation, Fairfield, CT or equal.
- D. Non-shrink Epoxy-Based Grout: Nonshrink Epoxy-based Grout shall be a pourable, 100 percent solids epoxy system consisting of three, pre-measured, prepackaged components: resin, hardener, and specially-blended aggregate. Resin component shall not contain any non-reactive dilutents. Variation of component ratios is not permitted unless specifically recommended by the manufacturer.
- E. The manufacturer shall submit information verifying the epoxy grout exhibits the following properties:
 - 1. Grout for bonding new cement to old, setting reinforcing dowels into pre-drilled holes and/or pressure grouting shall be an epoxy grout mixed in accordance with the manufacturer's instructions.

2. Non-shrink - No shrinkage (0.0%) and a maximum 4.0 percent expansion when tested in accordance with ASTM C-827.
 3. Compressive Strength - A minimum compressive strength of 10,000 psi in seven days when tested according to ASTM C-579, Method B.
 4. Heat Development - A maximum 100°F peak exotherm in a 2" diameter x 4" high sample when tested at 75°F material and laboratory temperatures.
 5. Thermal Coefficient - A maximum 30×10^{-6} in./in./°F thermal coefficient when tested according to ASTM C-531.
- F. The contractor shall perform all grouting in accordance with the manufacturer's recommendations. Technical service shall be supplied upon request.
- G. Grout shall be Five Star Epoxy Grout, as manufactured by U.S. Grout Corporation, Fairfield, CT or equal.
- H. Drypack Mortar: Drypack mortar shall be composed of approximately one part Type II Portland cement, one and one-half to two parts sand, two to three fluid ounces water reducing densifier per sack of cement, aluminum powder as required for shrinkage control, and sufficient water to make a stiff workable mix. Sand, cement, water, and water reducing densifier shall be as specified for concrete.

2.4 CONCRETE MIX QUALITY AND CONTROL

- A. Design: Concrete shall be composed of Portland cement, fine aggregate, coarse aggregate and water. All concrete shall be designed by an approved testing laboratory in accordance with the ACI Standard Recommended Practice for Selecting Proportions for Concrete (ACI-211) to produce the strength for each class of concrete specified, and with slumps and maximum sizes of coarse aggregate in accordance with the requirements outlined below. The concrete shall be so designed that the concrete materials will not segregate and excessive bleeding will not occur. Any costs to the testing laboratory for designing concrete mixes shall be borne by the Contractor.
- B. Prior to placing any concrete, the Contractor shall submit for review mix designs for each specified concrete and grout type. Design data shall include the name of the concrete supplier; manufacturer/supplier and type of cement used; size and type of aggregate; proportional weights of cement, aggregate, and water per cubic yard of concrete; name and quantity of admixture used. Trial batches shall be made and the following data shall be submitted: 1-seven day, 1-fourteen day, and 1-twenty-eight day compressive strength test for each mix at various slumps; and percent of air content for each mix. No deviation for accepted mix designs will be permitted without prior written approval by the Engineer.
- C. Concrete Class: Concrete mixes shall be proportioned to obtain the following characteristics:

1. Class "A" Concrete:
 - a. Concrete mix shall have a minimum compressive strength of 3,500 psi at 28 days with a minimum of 5 bags of cement per cubic yard.
 - b. Air Content shall be $4\% \pm 1\%$.
 - c. Maximum Water Cement Ratio shall be 0.45.
2. Class "B" Concrete:
 - a. Concrete mix shall have a minimum compressive strength of 2,000 psi at 28 days.
 - b. Maximum Water Cement Ratio shall be 0.60.

D. Refer to structural drawings for concrete mix designs for the beams, slabs, and footings.

E. Concrete shall be Class "A", unless specified otherwise.

F. MAXIMUM SLUMPS FOR VARIOUS TYPES OF CONSTRUCTION

<u>Types of Construction</u>	<u>Hand Placed Maximum*</u>	<u>High Frequency Vibrator Used Maximum*</u>
Reinforced Foundation Walls & Footings	4"	2"
Slabs, Beams, and Reinforced Walls	4"	3"
Building Columns	4"	3"
Pavements	3"	2"

*Where conflicting requirements exist, the more rigid requirements shall be followed. Should specified reference standards conflict with Contract Documents, request clarification from the Engineer before proceeding.

- G. The slump shall not exceed the maximum specified above for the type of construction for which it is to be used. The 28-day compressive strength determined in accordance with current ASTM Specifications C-39 and C-31 and with specimens cured in accordance with C-31 shall not be less than that shown above for the specified class of concrete. No water will be added after the amount specified by the mix design.
- H. If admixtures are used, slump shall be as approved by Engineer.
- I. Production of Concrete: All ready-mixed concrete shall be batched, mixed and transported in accordance with "Specifications for Ready-Mixed Concrete (ASTM C-94)". Plant equipment and facilities shall conform to the "Check List for Certification of Ready-Mixed Concrete Production Facilities" of the National Ready-Mixed Concrete Association.

- J. Laboratory Testing: The Owner shall engage an independent testing laboratory to conduct concrete tests. Unless otherwise informed the Contractor will be responsible for sampling concrete for test cylinders, recording, providing all materials required, and for making all slump tests in the field directed by the Engineer. All costs in connection with work performed by the laboratory shall be paid by the Owner. When cylinder reports indicate concrete does not meet strength requirements delineated in the Contract Documents, the Contractor shall be responsible for the costs of developing a redesign of the concrete mix.
- K. At least one test shall be made on fresh concrete for each 60 cubic yards of each class of concrete (or fraction thereof) placed on any one day and in any event, not less than one test for each class of concrete each day it is used. Testing shall be done in accordance with the following ASTM Specifications, latest edition:
1. C-172 - Standard Method of Sampling Fresh concrete
 2. C-31 - Standard Method of Making and Curing Concrete Compression & Flexure Test Specimens in the Field
 3. C-39 - Standard Method of Test of Compressive Strength of Molded concrete Cylinders
 4. C-143 - Standard Method of Slump Test for Consistency of Portland Cement Concrete
- L. Before any concrete is poured, the Contractor shall construct a storage box in accordance with ASTM Specification C-31. Each set of tests shall consist of one slump test and three compression test cylinders. All cylinders shall be kept in the storage box for the first 24 hours. The three cylinders shall be laboratory cured and tested for adequacy of the design for strength of the concrete in accordance with ASTM Specification C-31. One cylinder shall be tested at seven days and two at twenty-eight days.
- M. Failure of Concrete to Meet Strength Requirements: The concrete shall be considered acceptable if, for any one class of concrete, the average of all tests or any five consecutive tests is equal to or greater than the specified strength, provided that no more than one test of the five falls between 90 percent and 100 percent of the specified strength. The only cylinders to be used for determination of concrete acceptability will be those laboratory cured and tested at twenty-eight days. When it appears the tests of laboratory-cured cylinders will fail to meet these requirements, the Engineer may require changes in the proportions of concrete for the remainder of the work in order to meet the strength requirements. In addition, the Engineer may also require additional curing not to exceed a total of twenty-one days on portions of the concrete already poured.
- N. The Engineer may also require tests in accordance with Methods of Securing, Preparing and Testing Specimen from Hardened Concrete for Compressive and Flexural Strengths (ASTM Specifications C-42) when the concrete cylinder tests fail to meet strength requirements. In the event there still is question as the quality of the concrete in the structure, the Engineer may require load tests for that portion where the questionable concrete has been placed. Such load tests will be made as outlined in Chapter 20 of

American Concrete Institute Building Code. (ACI 318-71), and shall be at the expense of the Contractor.

- O. Removal of Under Strength Concrete: If the above tests indicate that a particular batch of previously placed concrete is under strength, the Engineer may direct that the under strength batch be removed and replaced. The removal of the under strength concrete shall also include the removal of concrete that has obtained the required strength if the Engineer deems this necessary to obtain structural or visible continuity when the concrete is replaced.
- P. The removal, and replacement of any under strength concrete, shall be made at no additional cost to the Owner. This shall include any new formwork required or any reinforcing steel that may be required. The Owner shall not be charged any additional costs for any extra work that is required because of the failure of any concrete to meet the minimum test requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify site conditions under provisions of Section 01039.
- B. Verify requirements for concrete cover over reinforcement as referenced in Section 03200 are met.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.2 PREPARATION BEFORE PLACING

Water shall be removed from excavations before concrete is deposited. Hardened concrete, wood chips, shavings, and other debris shall be removed from interior of forms and inner surfaces of mixing and conveying equipment. Wood forms shall be oiled or, except in freezing weather, wetted with water in advance of pouring. Contractor shall verify that all reinforcement is properly place, aligned, and secured prior to pouring concrete and shall coordinate with Resident Project Representative.

3.3 CONVEYING

Concrete shall be conveyed from mixer to forms as rapidly as practicable and by methods which will prevent segregation and loss of ingredients. It shall be deposited as nearly as practicable in its final position. Chutes used shall be such that concrete slides in them and does not flow. Chutes, if permitted, shall have a slope of less than 1 on 2. Where a vertical drop greater than 5 feet is necessary, placement shall be through elephant trunks or similar devices to prevent segregation.

3.4 PLACING

Concrete shall be placed before initial set has occurred and in no event after it has contained its water content for more than 30 minutes. Unless otherwise specified, all concrete shall be placed upon clean, damp surfaces free from running water, or upon properly consolidated fills, but never upon soft mud or dry, porous earth. The concrete shall be compacted and worked in an approved manner into all corners and angles of the forms and around reinforcement and embedded fixtures as to prevent segregation of the coarse aggregate. Construction of forms for the lifts of vertical walls shall be such as to make all parts of the walls easily accessible for the placement, spading, and consolidation of the concrete as specified herein.

3.5 VIBRATION

All concrete shall be placed with the aid of mechanical vibration equipment as approved by the Engineer. Vibration shall be transmitted directly to the concrete; in no case shall it be transmitted through forms. The duration of vibration at any location in the forms shall be held to the minimum necessary to produce thorough compaction. Vibrations shall be supplemented by forking or spading by hand, and adjacent to the forms on exposed faces in order to secure smooth, dense and even surfaces, with particular care being taken to prevent coarse aggregate from becoming set too near any surfaces that are to receive rubbed finish.

3.6 CONSTRUCTION JOINTS

Construction joints shall be in accordance with Section 03400 - Construction Joints and Waterstops. Waterstops shall be installed in all construction joints below grade or in liquid containing structures as noted on the plans. Install as per Section 03400 - Construction Joints & Waterstops.

3.7 PATCHING

Any concrete which is not formed as shown on the Plans, or for any reason is out of alignment or level or shows a defective surface shall be considered as not conforming with the intent of these Specifications and shall be removed from job by Contractor at his expense, unless the Engineer grants permission to patch defective area, which shall be done in accordance with the following procedures. Permission to patch any such area shall not be considered a waiver of the right of the Engineer to require complete removal of defective work if patching does not, in the opinion of the Engineer, satisfactorily restore quality and appearance of surface. Suitable non-shrink, latex or epoxy mortar shall be used for patching and repairing defective surface if directed by the Engineer.

- A. After removing forms, all concrete surfaces shall be inspected and any poor joints, void, stone pockets, all tie holes, or other defective areas shall be patched, if permitted by the Engineer. Where necessary, defective areas shall be chipped away to a depth of not less than 1" with edges perpendicular to the surface. Area to be patched and a space at least 6" wide entirely surrounding it shall be wetted to prevent absorption of water from the patching mortar. A grout of equal parts Portland cement and sand, with sufficient water to produce a brushing consistency, shall then be well brushed into the surface followed immediately by the patching mortar. The patch shall be made of the same material and of

approximately the same proportions and shall not be richer than one part cement to three parts sand. White Portland cement shall be substituted for a part of the gray Portland cement to match color of the surrounding concrete. The proportion of white and gray cements shall be determined by making a trial patch. The amount of mixing water shall be as little as consistent with the requirements of handling and placing. The mortar shall be retempered without the addition of water by allowing it to stand for a period of one hour during which time it shall be mixed occasionally with a trowel to prevent setting.

- B. The mortar shall be thoroughly compacted into place and screeded off so as to leave patch slightly higher than surrounding surface. It shall then be left undisturbed for a period of one to two hours to permit initial shrinkage before being finally finished. The patch shall be finished in such a manner as to match the adjoining surface. On exposed surfaces where unlined forms have been used, the final finish shall be obtained by striking off the surface with a straightedge spanning the patch and held parallel to the direction of the form marks.
- C. Tie holes left by withdrawal of rods or the holes left by removal of ends of ties shall be filled solid with mortar after first being thoroughly wetted.

3.8 SLABS ON GRADE

The Contractor shall insure that subgrade has been thoroughly compacted and leveled prior to concrete placement. Sprinkle all sub-grades with water no more than half an hour prior to placing concrete.

- A. Place vapor barrier below interior slabs unless noted otherwise. Sprinkling of fill is not necessary when using vapor barrier. Lap vapor barrier 6" in direction of pour, and seal laps with specified mastic. Repair all ruptures of the vapor barrier that might occur before or during concrete pour.
- B. The Contractor shall insure that all reinforcing steel is located properly prior to pour, and that steel will not be vertically displaced during the pour.

3.9 EDGING

Edges exposed to view on the outside of structures, footings, pads and slabs, and all those in the inside of structures shall be chamfered, unless otherwise approved by the Engineer. Chamfer shall be at an angle of 45 degrees, as shown on the Plans. If so required by the Engineer, however, the Contractor shall provide square edges for any portion of the work.

3.10 SLAB FINISHES

- A. Exterior Walks: The top surface shall be "slip-resistant" as follows:

The surface shall be steel troweled as noted in Paragraph C below, and have a final finish applied by brushing lightly with a soft bristle brush to form a slightly roughed surface.

- B. Interior slabs that are to receive a finish floor covering (this does not include ceramic tile covering) shall be finished by tamping the concrete with special tools to force the coarse aggregate below the surface, then screeding and floating with straightedges to bring the surface to the required finish level. While the concrete is still green but sufficiently hardened to bear a man's weight without deep imprint, it shall be wood floated to a true and even plane with no coarse aggregate visible. Sufficient pressure shall be used on the wood floats to bring moisture to the surface. After surface moisture has disappeared, surfaces shall be steel-trowelled to a smooth, even, impervious finish, free from trowel marks. After cement has set enough to ring the trowel, surface of all slabs shall be given a second steel trowelling to a burnished finish.
- C. Interior slabs to receive fill or mortar setting bed shall be finished by tamping concrete with special tools to force coarse aggregate below the surface, and screeded with straightedges to bring surface to required finish plane. Surface shall be left roughened sufficiently to produce good bond with topping material.
- D. Top and bottom slabs of all structures and water carrying conduits except as noted otherwise on the Plans shall be finished as follows: The top of the slab shall be screeded to grade and cross section; lightly tamped as required to bring up a good bed of mortar for finishing and re-screeded as necessary. The surface shall then be finished with a wood float and leveling darby. No further finish will be required on top slabs of structures or conduits which are to be buried. In the case of all exposed top slabs of structures and conduits, they shall be given a final wood float and a light broomed, slip resistant finish to a uniform surface which conforms with accuracy to required shape, slope and grade. Slabs shall be edged as appropriate.
- E. All interior floor slabs shall be "slip resistant finish", unless called out otherwise, as follows: The top surface shall be steel trowelled as noted in Paragraph B above and have a final finish applied by brushing lightly with a soft bristle brush to form a slightly roughed surface.
- F. The floor surfaces of basins in which raking mechanisms are to be installed shall be finished, as indicated on the Plans, 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 by weight.

The sweeping-in process shall be performed in the presence of the Engineer or the Engineer's Representative or, if necessary, under the supervision of a factory representative of the equipment manufacturer.

The slab upon which the grout is to be applied shall be finished in accordance with the provisions of Paragraph D above except that after leveling and floating, it shall be raked in such a manner as to provide a good bond for the grout. 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.

- G. Concrete Hardener shall be applied to the floors where scheduled to be exposed concrete. Concrete surfaces to be treated must be thoroughly set and dry, clean and free of dust. Three applications of "lapidolith", "saniseal", "hornolith", "vitrox", or Engineer approved

equal liquid are required, using one gallon per 100 square feet for the complete treatment. Apply hardener strictly according to the manufacturer's printed instructions. Any substitution for the specified hardeners must be of the magnesium fluosilicate or zinc fluosilicate types.

3.11 FINISH OTHER THAN FLOORS

- A. All top surfaces, other than slabs, not covered by forms, and which are not to be covered by additional concrete or fill shall receive a wood float finish without additional mortar. Care shall be taken that no excess water is present when the finish is made. Other surfaces shall be brought to finished elevations and left true and regular. All exposed interior concrete shall be grouted smooth and give a cement wash of one part light colored Portland cement and two parts fine aggregate mixed with water to consistency of thick paint. Grout shall be cork or wood floated to fill all pits, air bubbles, and surface holes. Excess grout shall be scraped off with a trowel and rubbed with burlap to remove any visible grout film. Surface shall be kept damp during setting period. The finish for any area shall be completed in same day and the limits of a finished area shall be made at natural breaks in finished surface.
- B. Rubbed Finish: Unless otherwise indicated, all faces (except top surfaces of slabs) exposed to view, such as walls, grade beams, columns, beams, canopy soffits and fascias, etc. shall be finished as follows:

Forms shall be removed, as specified in Section 03100 - Concrete Formwork, and all fins removed, off-sets leveled, damaged places and depressions resulting from the removal of metal ties or other causes shall be carefully pointed with a mortar of sand and cement in the proportion which has been employed for the particular class of concrete treated. The surface film of all such pointed places shall be carefully removed before setting occurs. After the point has set sufficiently to permit it, all exposed surfaces shall be dampened and rubbed with a No. 16 carborundum stone, to a smooth even plane. Final rubbing shall be done with a No. 30 carborundum stone, or an abrasive of equal quality, to obtain an entire surface of a smooth texture and uniformity in color. Mortar or grout worked up during rubbing shall be promptly removed by sacking with burlap or other suitable means so that no visible grout film or paste will remain. A cement wash or plaster coat shall not be used. All surfaces shall be finished uniformly smooth and washed clean. The rubbed finish for any area shall be completed in the same day and the limits of a finished area shall be made at natural breaks in the finished surface. If the Contractor does not provide suitable surface finish using carborundum stones specified above the Engineer, without additional cost to the Owner, may require to use of a power operated grinding machine to produce the desired finish.

3.12 CURING

- A. Unformed concrete surfaces shall be water cured to prevent check of the fresh concrete surface. Where drying conditions are severe, as determined by the Engineer, fog sprays shall be employed to prevent checking of the fresh concrete surface. Fog spraying shall be continued as specified until the finished surface has attained sufficient strength to permit

flooding or covering with burlap mats. Where drying conditions are not severe, as determined by the Engineer, unformed concrete surfaces shall be covered with wet burlap mats as soon as the concrete has sufficiently set, and shall thereafter be kept under wet burlap.

Formed surfaces, both interior and exterior, shall be water cured by water sprays or under burlap mats beginning as soon as the forms are stripped. Prior to stripping of forms, the concrete and forms shall be kept moist by the water sprays.

Unless otherwise specified, surfaces shall be water cured for seven days after the concrete is placed.

After 48 hours of water cure, and with the acceptance of the Engineer, the curing of concrete surfaces may be completed by the curing compound method. Curing compounds shall be applied in strict conformance with the manufacturer's instructions. If the compound is applied to a surface which is later to be painted, the Contractor shall thoroughly sandblast the surface to remove all vestiges of the compound prior to concrete finishing. Curing compound shall not be used on any surfaces against which additional concrete or other finishing materials are to be bonded.

- B. In all concrete structures, Class A concrete made with normal Portland cement shall be prevented from drying for at least the first seven days after placing. Whenever the temperature of the surrounding air is between 40°F and 60°F, adequate provision shall be made for maintaining the temperature of concrete above 60°F or the moist curing period shall be extended to insure a compressive strength corresponding to that which would be secured under provisions of the previous part of this paragraph.
- C. Whenever the temperature of surrounding air is below 40°F, all Class A concrete shall be maintained at a temperature of not less than 50°F for at least 72 hours for normal concrete or for as much more time as is necessary to insure proper rate of curing of the concrete. The housing, covering or other protection used in connection with curing shall remain in place and intact at least 24 hours after the artificial heating is discontinued. No salt or other chlorides shall be used for prevention of freezing.
- D. Protection from the Sun: All concrete shall be adequately protected from injurious action of sun in a manner satisfactory to the Engineer.
- E. Temperature Control: During and at the conclusion of the specified curing period, means shall be provided to insure that the temperature of the air immediately adjacent to the concrete does not fall more than 3°F in any one hour nor more than 30°F in any 24 hours.

3.13 CONCRETING IN COLD WEATHER

When the atmospheric temperature may be expected to drop below 40°F at the time concrete is delivered to the work site, during placement, or at any time during the curing period, the following provisions also shall apply:

- A. The temperature of the concrete at the time of placing shall not be less than 50°F nor more than 90°F. The temperature of neither aggregates nor mixing water shall be more than 100°F just prior to mixing with the cement.
- B. When the daily minimum temperature is less than 40°F, concrete structures shall be insulated or housed and heated after placement. The temperature of the concrete and air adjacent to the concrete shall be maintained at not less than 50°F nor more than 90°F for the duration of the curing period.
- C. Methods of insulating, housing, and heating the structure shall conform to "Recommended Practice for Cold Weather Concreting," ACI Standard 306.
- D. When dry heat is used to protect concrete, means of maintaining an ambient humidity of at least 40 percent shall be provided unless the concrete has been coated with curing compound as specified in Section 21 or is covered tightly with an approved impervious material.

3.14 CONCRETING IN HOT WEATHER

When climatic or other conditions are such that the temperature of the concrete may reasonably be expected to exceed 90°F at the time of delivery at the work site, during placement, or during the first 24 hours after placement, the following provisions also shall apply:

- A. The Contractor shall maintain the temperature of the concrete below 90°F during mixing, conveying, and placing. Methods used shall conform to "Recommended Practice for Hot Weather Concreting," ACI Standard 305.
- B. The concrete shall be placed in the work immediately after mixing. Truck mixing shall be delayed until only time enough remains to accomplish it before the concrete is placed.
- C. Exposed concrete surfaces, which tend to dry or set too rapidly, shall be continuously moistened by means of fog sprays or otherwise protected from drying during the time between placement and finishing, and after finishing.
- D. Finishing of slabs and other exposed surfaces shall be started as soon as the condition of the concrete allows and shall be completed without delay.
- E. Concrete surfaces exposed to the air shall be covered as soon as the concrete has hardened sufficiently and shall be kept continuously wet for at least the first 48 hours of the curing period, and for the entire curing period unless curing compound is applied as specified.
- F. Formed surfaces shall be kept completely and continuously wet for the duration of curing period (prior to, during, and after form removal) or until curing compound is applied as specified.

3.15. INSERTS AND EMBEDDING

- A. Inserts: Where pipes, castings or conduits are to pass through the walls, the Contractor shall place such pipes or castings in the forms before pouring the concrete, or in special

cases, with the express consent of the Engineer or as specified, he shall build accepted boxes in the forms to make openings for subsequent insertion of such pipes, castings or conduits as required by the Engineer. To withstand water pressure and to insure water-tightness around the openings so formed, the boxes shall be provided with continuous keyways and waterstop all the way around, and they shall have a slight flare to facilitate grouting and the escape of entrained air during grouting. Before placing the grout, the concrete surfaces and the surfaces of the insert shall be coated with an epoxy bonding compound. Mixing and application of the bonding agent and time of placement of the grout shall be in accordance with the manufacturer's directions.

Additional reinforcement shall be provided around large openings, as shown on the Plans. The pipes, castings or conduits as specified shall be grouted in place by pouring in non-shrink epoxy based grout under a head of at least 4". The grout shall be poured or rammed or joggled into place to fill completely the space between pipes, castings or conduits, and the sides of the openings so as to obtain the same water-tightness as the wall itself. The grouted castings shall then be water cured as specified herein. The grouting material so placed shall be surfaced when the forms are removed to give a uniform appearance to the wall if such wall be exposed to view.

- B. Embedding: The Contractor shall set accurately and hold in exact position in the forms until the concrete is poured and set, all gate frames, gate thimbles, special castings, channels or other metal parts that are to be embedded in the concrete; and he shall set accurately all inserts and anchor or other bolts necessary for the attaching of piping, valves, metal sash and equipment. All nailing blocks, plugs, strips and the like, necessary for the attachment of trim, finish and similar work shall be furnished and placed by the Contractor.

Block-outs may be used for embedded items, with the prior written consent of the Engineer. Where block-outs are allowed, non-shrink cement based grout shall be used to seal the embedded items.

In lieu of embedding anchor bolts and other items to be anchored in the concrete, the Contractor will be permitted, with prior written acceptance of the Engineer, to drill holes in hardened concrete and install the anchor bolts and other items with non-shrink epoxy based grout. Drilling or coring holes shall be done by rotary drill with diamond boring or coring bits. Bonding mortar or grout shall be epoxy bonding adhesive grout or epoxy bonding adhesive mortar. Holes shall be blown clean and dry before installation of embedded items. Before insertion, both the hole and the item to be embedded shall be coated with bonding compound. Studs of equal size and length may be substituted for anchor bolts if nut fasteners are used. When accepted by the Engineer, three-part compounded expansion shields may be used for anchorage of minor miscellaneous metal.

3.16. DRYPACK MORTAR

Where surfaces are required to be built up with mortar, such surfaces shall be thoroughly roughened by brushing, completely cleaned, and coated with appropriate bonding compound before the application of the required mortar. The mortar shall be applied immediately following the application of the bonding compound in bands or strips to form a compact durable covering of the required thickness and shall be free from lumps and depression. Construction joints in the mortar shall be sloped to thin edges and, before application is resumed, the joint shall be

thoroughly cleaned. Drypack mortar shall be used for built-up surfaces, setting miscellaneous metal items, and correcting minor repairs and imperfections.

No mortar shall be applied during freezing weather unless adequate protection is provided.

The mortar shall be cured as specified for concrete.

3.17. MODIFICATION OF EXISTING CONCRETE

Where the work indicated on the Plans requires modification of existing concrete structures or concrete poured over six months previously to be removed or modified, the existing concrete shall be cut accurately to the lines required in the presence of the Engineer or the Engineer's Representative. Concrete faces exposed to view shall be cut with a concrete saw. The cutting shall be accomplished in a manner that preserves, free from cracks or other injuries, those parts of the existing structure that are to remain. Where the cut surface is to be left exposed, it shall be cleaned and faced with non-shrink grout and finished to match adjacent surface. Where new concrete or mortar is to be placed against existing concrete surfaces or surfaces that have been cut, such surfaces shall be thoroughly cleaned by sandblasting, and coated with bonding compound just prior to the placement of the new concrete. Bonding compounds shall be as specified herein. Depth of saw cut should be $\frac{3}{4}$ " minimum. Unless otherwise indicated on the Plans or specified, continuity of reinforcing steel shall be obtained by either exposing bars to provide sufficient laps with new bars or by welding existing bars with new bars as specified. Where indicated, existing bars shall be exposed and fully developed by; embedding in new concrete.

3.18 PROTECTION AND REPAIR OF CONCRETE CONSTRUCTION

All surfaces shall be protected against injury. During the first 72 hours after placing the concrete, any wheeling, working or walking on the concrete shall not be permitted. All slabs subject to wear shall be covered with a layer of sand or other suitable material as soon as the concrete has set. Sisalcraft paper or other similar tough waterproof paper may also be used, provided all joints between adjacent strips of paper are carefully sealed. This does not alter the requirements for proper curing as specified herein.

No concrete slabs or top surfaces or walls shall be placed during rain unless acceptable protective shelter is provided, and during such weather, all concrete placed within the preceding 12 hours shall be protected with waterproof canvas or other suitable coverings. These shall be provided and kept ready at hand.

Immediately after the removal of forms, all concrete shall be inspected, and all pour joints, rough sections or rock pockets containing loose materials such size and shape as will form a 1" key for cement mortar fill. Before the mortar is applied, the surface of the existing concrete shall be coated with epoxy bonding compound. All form tie holes and small imperfections shall be filled. The fill for small imperfections and form ties shall consist of cement mortar composed of one part cement well mixed with three parts of the fine aggregate by volume and just enough water so that the mortar will stick together on being molded into a ball by slight pressure of the hands; and it shall be thoroughly compacted into place. Where the area or volume of defective concrete is large, it may be repaired by; reforming the surface and filling the opening with concrete. For such major repairs, the filling shall be reinforced and doweled securely to the old concrete, neatly

finished to match the surface and texture of the adjacent concrete. All patches shall be cured as accepted by the Engineer.

END OF SECTION

SECTION 03400

CONSTRUCTION JOINTS AND WATERSTOPS

PART 1 GENERAL

1.1 SUMMARY

- A. Install construction joints, expansion joints, and place waterstops where shown on the drawings, as specified herein, and as needed for a complete and proper installation.

1.2 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section;
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

1.3 QUALITY ASSURANCE:

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

PART 2 PRODUCTS

2.1 POLYVINYL PLASTIC WATERSTOP

- A. Waterstops shall be installed in all construction joints with water or other liquid on one side of joint and at other locations as required by the Plans. All waterstops shall be continuous throughout their length.
- B. Pre-molded expansion joint filler strips shall be non-extruding type conforming to current AASHTO Designation M153.
- C. The waterstops shall be heavy duty polyvinyl waterstop conforming to Corps of Engineers Specification CRD-C-572, latest edition, as manufactured by Serviced Products Division of W.R. Grace and Company; Vinylstops by Sonneborn-Contech; W.R. Meadows, Inc.; Vinylex Corporation; or an approved equal of the same type and material and approximately equal in dimensions and weight but not necessarily of exactly the same shape. Waterstops shall be "Rib Type" with a center bulb, 4-inches wide, capable of resisting a maximum pressure load of 65 feet of water, unless otherwise shown on Plans.
- D. "Expansion Type" waterstops shall be of ribbed construction, 6-inches wide, with a capacity for 1-inch of movement.

- E. All waterstops shall be installed so that $\frac{1}{2}$ its width will be embedded on one side of the joint and $\frac{1}{2}$ on the other. The Contractor shall employ a method of holding the waterstop in position for the first pour that is satisfactory to the Engineer. The method selected must insure that the waterstop will be held securely in true vertical or horizontal position and in straight alignment in the joint.
- F. Care shall be exercised to insure that the waterstop is completely encompassed in good mortar.

PART 3 EXECUTION

3.1 JOINTS IN WATERSTOPS

- A. All waterstops shall be continuous and so joined at all points of contact in the same plane, or at intersections with waterstops in different planes, as to form a complete barrier to the passage of water through any construction, contraction, or expansion joint.
- B. Joints in the waterstops, whether made for the purpose of continuity in a straight strip or for the purpose of securing a watertight junction between strips in different planes, shall be made by heat welding as hereinafter specified.
- C. Joints in PVC waterstops shall be made by heating the two surfaces to be jointed until the material has softened to the point where it is just short of being fluid and then bringing the two softened surfaces together with a slight rubbing motion followed by firmly pressing them together so that a solid and tight bond is made.
- D. The joints in strips of waterstop made in the above manner shall be such that the entire cross section of the joint shall be dense, homogenous and free of all porosity. All finished joints shall have a tensile strength of not less than 75 percent of the material of the strip as extruded.
- E. The heating of the surfaces to be joined shall be done by means of an electric splicing iron designed for the specified purpose and controlled by means of a voltage regulator.
- F. In use, the heat of the hot plate shall be so regulated as to prevent too rapid melting and accompanying charring of the waterstop material.
- G. The use of makeshift hot plates will not be permitted nor will other means of heating the strips to be joined be allowed except in a case of emergency, as determined by the Engineer.
- H. The Contractor shall provide such jigs as will assist in making the joints in a proper and workmanlike manner and in holding the strips so that the alignment of jointed strips is correct and angles are true to those required.
- I. Prior to embedment, all joints in the waterstop strips will be inspected by the Engineer and any found defective shall be remedied without delay.

3.2 PROTECTION OF WATERSTOP BETWEEN POURS

- A. The Contractor shall take such steps as are necessary to protect exposed waterstops in the interim period between concrete pours.

3.3 EXPANSION JOINTS

- A. Expansion joints of the size and type shown on the Plans, or specified herein, shall be placed in concrete pavement or structure as shown on the Plans.
- B. Preformed Asphalt Fiber Joint Material:
 - 1. Asphalt fiber sheet filler shall consist of preformed strips of inert material impregnated with asphalt.
 - 2. It shall be of the thickness shown on the Plans or indicated in these Specifications.
- C. The sheet filler shall conform to the requirements of AASHTO Specification M-59 with the following additional provisions.
- D. The sheet filler shall be of such character that it will not be deformed by ordinary handling during hot weather nor become hard and brittle in cold weather. It shall be of a tough, resilient, durable material not affected by weathering.
- E. Hot Poured Rubberized Tar Joint Sealer:
 - 1. Hot poured rubberized mastic sealer shall consist of a mixture of durable, elastic rubber, coal tar pitch, and other materials which will form a resilient and adhesive compound capable of effectively sealing concrete joint surfaces against repeated expansion and contraction.
 - 2. The material shall be installed in accordance with the manufacturer's directions.

3.4 CONSTRUCTION JOINTS

- A. Location of all construction joints shall be approved by the Engineer Maximum length of wall pours shall be 40 feet.
- B. Maximum height of wall pours shall be 18 feet.
- C. In watertight structures, continuous PVC waterstop shall be provided in the construction joints or as shown on the plans.
- D. Bottom slabs and wall footings for concrete structures that will hold water shall be poured monolithically without cold joints or other discontinuities or weakened areas.
- E. Radial control joints consisting of ½ inch to ¾ inch wide troweled grooves shall be required at 60 increments in circular slabs.
- F. Such joints shall be caulked with epoxy joint sealer after the concrete is cured and prior to placement of grout topping if required.

- G. All cracks greater than 0.05-inches wide not located in control joints shall be sealed by cutting a bevel groove on the water side of the crack $\frac{1}{2}$ inch to $\frac{3}{4}$ inch wide and caulking with epoxy sealant.
- H. Crack widths shall be measured at the concrete surface.
1. Construction joints shall be formed as indicated on the Drawings or as approved or directed by the Engineer.
 2. Where indicated or required, dowel rods shall be used.
 3. All concrete at the joints shall have been in place not less than 12 hours, and longer if so directed by the Engineer, before concrete resting thereon is placed.
 4. Before placing is resumed or commenced, excess water and laitance shall be removed and concrete shall be cut away where necessary to insure a strong, dense concrete at the joint.
 5. In order to secure adequate bond, the surface of concrete already in place shall be cleaned, roughened, and then spread with a $\frac{1}{2}$ " layer of mortar of the same cement-sand ratio as is used in the concrete, immediately before the new concrete is deposited.
 6. The unit of operation is not to exceed 50 feet in any horizontal direction, unless otherwise required by the Drawings or herein specified.
 7. Construction joints, if required, shall be located near the mid-point spans for slabs, beams, or girders.
 8. Joints in columns or piers shall be made at the underside of the deepest beam or girder at least 5 hours before any overhead work is placed thereon.
 9. Joints not shown or specified shall be so located as to least impair strength and appearance of work.
 10. Vertical joints in wall footings shall be reduced to a minimum.
 11. Placement of concrete shall be at such a rate that surfaces of concrete not carried to joint levels will not have attained initial set before additional concrete is placed thereon.
 12. Girders, beams, and slabs shall be placed in one operation.
 13. To insure a level, straight joint in exposed vertical surfaces, a strip of dressed lumber may be tacked to the inside of the forms at the construction joint.
 14. The concrete shall be poured to a point 1" above the underside of the strip.
 15. The strip shall be removed 1 hour after concrete has been placed, and any irregularities in the joint line leveled off with a wood float and all laitance removed.

3.5 ADHESIVE WATERSTOP

- A. Adhesive waterstop shall be used only where specifically shown on the Plans, and is not considered an acceptable alternative to PVC waterstop.
- B. Preformed plastic waterstop shall meet or exceed all requirements of Federal Specification SS-S-00210, "Sealing Compound, Preformed Plastic for Expansion Joints", Type I or Type II.
1. Such plastic waterstop shall be equal to SYNKO-FLEX as manufactured by Synko-Flex Products, Inc. Houston, Texas or equal and shall meet the following requirements.
- C. The plastic waterstop shall be produced from blends of refined hydrocarbon resins and plasticizing compounds reinforced with inert mineral filler, and shall contain no solvents, irritating fumes or obnoxious odors.
1. The plastic waterstop shall not depend on oxidizing, evaporating or chemical action for its adhesive or cohesive strength.
 2. It shall be supplied in extruded form of suitable cross-section and of a size to seal the joint areas of concrete sections.
 3. The plastic waterstop shall be protected by a suitable removable two-piece wrapper.
 4. The two-piece wrapper shall be so designed that 2 may be removed longitudinally without disturbing the other half, to facilitate application of the sealing compound.
 5. The flexible plastic waterstop shall also meet the requirements as stated in the following table:

<u>Composition</u>	<u>Test Method</u>	<u>Min</u>	<u>Max</u>
Bitumen (petroleum plastic content)	ASTM D 4	50	70
Ash-Inert Mineral Matter	AASHTO T 111	30	50
Volatile Matter	ASTM D 6	--	2.0

<u>Property</u>	<u>Test Method</u>	<u>Min.</u>	<u>Max.</u>
Specific Gravity @ 77°F.	ASTM D 71	1.20	1.30
Ductility @ 77°F. (cm)	ASTM D 113	5.0	--
Softening Point	ASTM D 36	320°F	--
Penetration 77°F. (150 gms) 5 sec.	ASTM D 217	50	120

END OF SECTION

DIVISION 09
FINISHES

SECTION 09800

PAINTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. The work of this section includes the coating of all interior and exterior surfaces.

1.2 REFERENCES

- A. ASTM D16--Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
- B. ASTM D3359--Method for Measuring Adhesion by Tape Test.
- C. NACE (National Association of Corrosion Engineers)--Industrial Maintenance Painting.
- D. NPCA (National Paint and Coating Association)--Guide to U.S. Government Paint Specifications.
- E. SSPC (Society for Protective Coatings)--Steel Structures Painting Manual.
- F. TCEQ (Texas Commission on Environmental Quality)--30 TAC Chapter 111—Control of Air Pollution from Visible Emissions and Particulate Matter.
- G. Paint manufacturer's printed instructions.
- H. TAC--Texas Administrative Code.

1.3 DEFINITIONS

- A. dft--dry film thickness
- B. mil(s)--a unit of measure equal to a thousandth of an inch (0.0254) mm.
- C. VOC(s)--volatile organic compound(s)

1.4 INTERPRETATION

- A. The Engineer's decision shall be final in the interpretation and/or conflict between any of the referenced Specifications and Standards contained herein.

1.5 SUBMITTALS

- A. Information to be Provided:
 - 1. Provide a list of materials to be used under this Section.
 - 2. Submit the list before materials are delivered to the job site.

3. Cross reference the list to the coating systems identified.
 4. Furnish with the list, the coating manufacturer's standard product data and color chart for each material to be used.
- B. Manufacturer's color charts shall be submitted to the Engineer at least 30 days prior to paint application.
- C. Coordinate work to allow sufficient time for paint to be delivered to the job site.

1.6 QUALITY ASSURANCE

- A. General:
1. Use quality assurance procedures and practices to monitor all phases of surface preparation, application and inspection throughout the duration of the project.
 2. Procedures or practices not specifically defined herein may be utilized provided they meet recognized and accepted professional standards.
- B. Surface Preparation:
1. Surface preparation will be based upon comparison with:
 - a. "Pictorial Surface Preparation Standards for Painting Steel Surfaces," SSPC-VIS 1-89 and ASTM Designation D2200-95,
 - b. "Field Measurement of Surface Profile of Blast Cleaned Steel," ASTM D 4417-91, Method A or Method C; or "Field Measurement of Surface Profile of Abrasive Blast cleaned Steel Surfaces Using a Replica Tape," NACE Standard RP0287-87, and
 - c. "Fabrication Details, Surface Finish Requirements, and Proper Design Considerations for Tanks and Vessels to be Lined for Immersion Service," NACE Standard SP0178-91 and Visual Comparator.
 - d. In all cases the written standard shall take precedence over the visual standard. If clarification of standards is required, consult with Engineer.
- C. Application: No coating shall be applied:
1. When the surrounding air temperature or the temperature of the surface to be coated or painted is below the minimum surface temperature for the products specified herein; or in rain, snow, fog or mist; when the temperature is less than 5 degrees F above the dew point; when the air temperature is expected to drop below 35 degrees F within six hours after application of coating.
 2. Dew point shall be measured by use of an instrument such as a Sling Psychrometer in conjunction with U.S. Department of Commerce Weather Bureau Psychrometric Tables.

3. If the above conditions are forecast, coating or painting shall be completed in time to permit the film sufficient drying time prior to damage by atmospheric conditions.

D. Thickness and Holiday Checking (Steel Surfaces):

1. Thickness of coatings shall be checked with a non-destructive, magnetic-type thickness gauge. Use an instrument such as a Tooke Gauge if a destructive tester is deemed necessary.
2. The integrity of coated surfaces shall be checked with an approved inspection device.
3. Non-destructive holidays shall not exceed 67½ volts nor shall destructive holiday detectors exceed the voltage recommended by the manufacturer of the coating system.
4. For thickness between 10 and 20 mils, use a non-sudsing type wetting agent, such as Kodak Photo-Flo.
5. Failures shall be marked, repaired in accordance with the manufacturer's printed recommendations and retested.
6. No pinholes or other irregularities will be permitted in the final coating.

E. Inspection Devices:

1. The contractor shall furnish, until final acceptance of coating and painting, inspection devices in good working condition for detection of holidays and measurement of dry film thickness (dft) of coating.
2. The Contractor shall also furnish U.S. Department of Commerce, National Bureau of Standards certified thickness calibration plates to test accuracy of dft gauges and certified instrumentation to test accuracy of holiday detector.
3. Dry film thickness gauges and holiday detectors shall be made available for the Engineer's use at all times until final acceptance of application.
4. Holiday detection devices shall be operated in the presence of the Engineer.

F. Contractor shall monitor and record dew point, wet film thickness, and dry film thickness during application. Monitoring records shall be submitted to the Engineer.

G. Warranty Inspection:

1. Warranty inspection shall be conducted during the eleventh month following completion of all coating and painting work.
2. All defective work shall be repaired in accordance with this specification and to the satisfaction of the Engineer/Owner.

1.7 QUALIFICATIONS

- A. The Contractor shall have three years practical experience and successful history in the application of specified products to surfaces in water treatment.

1.8 SAFETY AND HEALTH REQUIREMENTS

A. General:

1. The Contractor shall perform all work in accordance with applicable local, state, and federal laws and regulations, and material manufacturer's instructions and recommendations pertaining to the methods, materials, or activities in the work.
2. The Contractor shall provide and require the use of personal protective equipment for persons working on or about the project.

B. Head and Face Protection and Respiratory Devices:

1. Equipment shall include protective helmets, which shall be worn by all persons while in the vicinity of the work.
2. In addition, workers engaged in or near the work during sandblasting shall wear appropriate eye and face protection devices and air purifying, half mask, or mouthpiece respirators with appropriate filters.

C. Ventilation:

1. Where ventilation is used to control hazardous exposure, all equipment shall be explosion-proof.
2. Ventilation shall reduce the concentration of air contaminants to the degree a hazard does not exist.
3. Air circulation and exhausting of solvent vapors shall be continued until coatings have fully cured.

- D. Sound Levels: Whenever the occupational noise exposure exceeds maximum allowable sound levels, the Contractor shall provide and require the use of approved ear protective devices.

E. Illumination:

1. Adequate illumination shall be provided while work is in progress, including explosion-proof lights and electrical equipment.
2. Whenever required by the Engineer, the Contractor shall provide additional illumination and necessary supports to cover all areas to be inspected.
3. The level of illumination for inspection purposes shall be determined by the Engineer.

- F. Temporary Ladders and Scaffolding:
 - 1. All temporary ladders and scaffolding shall conform to applicable safety requirements.
 - 2. They shall be erected where requested by the Engineer to facilitate inspection and be moved by the Contractor to locations requested by the Engineer.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Materials shall be Tnemec.
 - 1. Materials specified are those that have been evaluated for the specific service.
 - 2. Products are listed to establish a standard of quality.
- B. Requests for substitution shall include manufacturer's literature for each product giving name, product number, generic type, descriptive information, solids by volume, recommended draft and certified laboratory test reports showing results to equal the performance criteria of the products specified herein. In addition, a list of five projects shall be submitted in which each product has been used and rendered satisfactory service.
- C. The listed projects shall be in the State of Texas.

2.2 DELIVERY AND STORAGE

- A. All materials shall be brought to jobsite in original sealed containers.
 - 1. They shall not be used until the Engineer has inspected contents and obtained data from information on containers or label.
 - 2. Materials exceeding storage life recommended by the manufacturer shall be rejected.
- B. All coatings and paints shall be stored in enclosed structures to protect them from weather and excessive heat or cold.
 - 1. Flammable coatings or paint must be stored to conform with City, County, State, and Federal safety codes for flammable coating or paint materials.
 - 2. Coatings and paints shall be protected from freezing at all times.

2.3 MATERIALS

- A. The number of coats called for in this schedule shall be considered minimum.
- B. If additional coats are required for complete coverage and uniform appearance, they shall be applied.

- C. Colors will be selected by the Owner.
- D. The system numbering may not be sequential or inclusive of all numbers from the first to last system or schedule numbers.

SYSTEM NO. 1

TYPE OF SURFACE: Interior exposed ductile piping, fittings, and valves. Not suitable for use in direct contact with potable water.

TYPE OF STRUCTURE: Normal plant conditions such as: machinery, pipes, valves, fittings, etc.

EXPOSURE CONDITION: Interior Exposed

SURFACE PREPARATION: Minimum surface preparation of bare steel or previously painted steel requires a cleanliness level as defined by SSPCSPWJ-4/NACE WJ-4 Light Cleaning by use of Low Pressure Water Cleaning (LP WC) between 3,500 and 5,000 psi using a 0 degree rotating nozzle. If all visible contaminants, loose mill scale, loose rust and other corrosion products, and loose paint have not been removed, SSPC-SP2 Hand Tool Cleaning or SSPC-SP3 Power Tool Cleaning should be employed until the surface cleanliness definition is met.

PAINTING SYSTEM:

FIRST COAT: Tnemec Series 138 Pro-Tuff Mastic applied at 4.0 to 6.0 dft mils

SECOND COAT: Tnemec Series 138 Pro-Tuff Mastic applied at 4.0 to 6.0 dft mils.

Total Minimum Dry Film Thickness = 8 dft mils

SYSTEM NO. 2

TYPE OF SURFACE: Exterior exposed ductile piping, fittings, and valves.

TYPE OF STRUCTURE: Normal conditions such as: machinery, pipes, valves, fittings, etc.

EXPOSURE CONDITION: Non-Submerged; Exterior Exposed

SURFACE PREPARATION:

Minimum surface preparation of bare steel or previously painted steel requires a cleanliness level as defined by SSPCSPWJ-4/NACE WJ-4 Light Cleaning by use of Low Pressure Water Cleaning (LP WC) between 3,500 and 5,000 psi using a 0 degree rotating nozzle. If all visible contaminants, loose mill scale, loose rust and other corrosion products, and loose paint have not been removed, SSPC-SP2 Hand Tool Cleaning or SSPC-SP3 Power Tool Cleaning should be employed until the surface cleanliness definition is met.

PAINTING SYSTEM:

FIRST COAT: Tnemec Series 138 Pro-Tuff Mastic applied at 4.0 to 6.0 dft mils.

SECOND COAT: Tnemec Series 138 Pro-Tuff Mastic applied at 4.0 to 6.0 dft mils.

THIRD COAT Tnemec Series 290 CRU applied at 2.0 to 3.0 dft mils.

Total Minimum Dry Film Thickness = 10.0 dft mils

PART 3 EXECUTION

3.1 GENERAL

- A. All surface preparation, coating, and painting shall conform to applicable standards of the Society for Protective Coatings, NACE International, and the manufacturer's printed instructions. Material applied without prior approval from the Engineer shall be removed and re-applied to the satisfaction of the Engineer at the expense of the Contractor.
- B. All work shall be performed by skilled craftsmen qualified to perform the required work in a manner comparable with the best standards of practice. Continuity of personnel shall be coordinated with the Engineer.
- C. The Contractor shall provide a supervisor at the work site during cleaning and application operations. The supervisor shall have the authority to sign change orders, coordinate work, and make decisions pertaining to the fulfillment of the contract.
- D. Dust, dirt, oil, grease, or any foreign matter that will affect the adhesion or durability of the finish must be removed by washing with clean rags dipped in an approved cleaning solvent and wiped dry with clean rags.
- E. Coating and painting systems include surface preparation, prime coating, and finish coatings.
 - 1. Unless otherwise approved by the Engineer, prime coating shall be field applied.

2. Where prime coatings are shop applied, the Contractor shall instruct suppliers to provide the prime coat compatible with the finish coat specified.
 3. Any off-site work which does not conform to this specification that is damaged during transportation, construction, or installation shall be thoroughly cleaned and touched-up in the field as directed by the Engineer.
 4. The Contractor shall use repair procedures, which insure the complete protection of all adjacent primer.
 5. The specified repair method and equipment may include wire brushing, hand or power tool cleaning, or dry-air blast cleaning.
 6. In order to prevent injury to surrounding painted areas, blast cleaning may require use of lower air pressure, smaller nozzle and abrasive particle sizes, or shorter blast nozzle distance from surface shielding and masking.
 7. If damage is too extensive or uneconomical to touch-up, then the item shall be re-cleaned and coated as directed by the Engineer.
 8. If approved by the Engineer, all shop primed materials shall be inspected prior to the priming by the Engineer or a third party, independent inspector.
 - a. The independent inspector shall provide written reports.
 - b. The reports shall be delivered to and approved by the Engineer prior to acceptance of the material at the project site.
 - c. All cost associated with the inspection and reports shall be included in the Contractor's lump sum bid price.
- F. The Contractor's coating and painting equipment shall be designed for application of materials specified and shall be maintained in good working condition.
- G. Compressors shall have suitable traps and filters to remove water and oils from the air.
- H. Application of the first coat shall follow immediately after surface preparation and cleaning and before rust bloom occurs. Any cleaned areas not receiving first coat within this period shall be recleaned prior to application of first coat.
- I. Prior to assembly, all surfaces made inaccessible after assembly shall be prepared as specified herein and shall receive the coating or paint system specified.

3.2 SURFACE PREPARATION

- A. The latest revision of the following surface preparation specifications of the Society for Protective Coatings shall form a part of this specification:
1. Solvent Cleaning (SSPC-SP1): Removal of oil, grease, soil, and other contaminants by use of solvents, emulsions, cleaning compounds, steam

cleaning, or similar materials and methods which involve a solvent or cleaning action.

2. Hand Tool Cleaning (SSPC-SP2): Removal of loose rust, loose mil scale, and other detrimental foreign matter to degree specified by hand chipping, scraping, sanding, and wire brushing.
 3. Power Tool Cleaning (SSPC-SP3): Removal of loose rust, loose mil scale, and other detrimental foreign matter to degree specified by power wire brushing, power impact tools, or power sanders.
 4. White Metal Blast Cleaning (SSPC-SP5): Blast cleaning to a gray-white uniform metallic color until each element of surface area is free of all visible residues.
 5. Commercial Blast Cleaning (SSPC-SP6): Blast cleaning until at least two-thirds of each element of surface area is free of all visible residues.
 6. Brush-Off Blast Cleaning (SSPC-SP7): Blast cleaning to remove loose rust, loose mil scale, and other detrimental foreign matter to degree specified.
 7. Near White Blast Cleaning (SSPC-SP10):
 - a. The removal of all visible oil, grease, dirt, dust, mil scale, rust, paint, oxides, corrosion products, and other foreign matter by compressed air nozzle blasting, centrifugal wheels, or other specific method.
 - b. Discoloration caused by certain stains shall be limited to no more than 5% of each square inch of surface area.
 8. Power Tool Cleaning to Bare Metal (SSPC-SP11):
 - a. The removal of all visible oil, grease, dirt, mil scale, rust, paint, oxide, corrosion products, and other foreign matter.
 - b. Slight residues of rust and paint may be left in the lower portion of pits if the original surface is pitted.
 - c. Differs from SSPC-SP3 in that it requires more thorough cleaning and a surface profile not less than 1 mil (25 microns).
 - d. For areas where abrasive blasting is prohibited or not feasible.
- B. Slag and weld metal accumulation and spatters not removed by the Fabricator, Erector, or Installer shall be removed by chipping and grinding.
- C. All sharp edges shall be panned, ground, or otherwise blunted as required by the Engineer.
- D. Blast cleaning shall produce a surface profile of 2.0-2.5 mils or in accordance with recommendations of the manufacturer of the specified coating or paint system to be applied.

- E. Abrasive used in blast cleaning operations shall be new, washed, graded, and free of contaminants that would interfere with adhesion of coating or paint and shall not be reused unless specifically approved by the Engineer.
- F. During blast cleaning operations, caution shall be exercised to insure that existing coatings or paint to remain are not exposed to abrasion from blast cleaning.
- G. The Contractor shall keep the area of his work and the surrounding environment in a clean condition. He shall not permit blasting materials to accumulate as to constitute a nuisance or hazard to the accomplishment of the work, the operation of the existing facilities, or nuisance to the surrounding environment.
- H. Blast cleaned surfaces shall be cleaned prior to application of specified coatings or paint.
- I. No coatings or paint shall be applied over damp or moist surfaces.
- J. All welds shall be neutralized with a suitable chemical compatible with the specified coating materials.
- K. Specific Surface Preparation: Surface preparation for the specific system shall be as noted in Section 2.1.

3.3 APPLICATION

- A. Coating and paint application shall conform to the requirements of the Society for Protective Coatings Paint Application Specification SSPC-PA1, latest revision, for "Shop, Field, and Maintenance Painting", the American Water Works Association and the manufacturer of the coating and paint materials.
- B. All paint shall be thoroughly agitated prior to use and shall be kept agitated while using.
- C. All ready-mixed paint shall be applied as received from the manufacturer, without addition of any type of drier or thinner, except as permitted by the manufacturer.
- D. Each application of coating or paint shall be applied evenly, free of brush marks, sags, runs, with no evidence of poor workmanship.
 - 1. Care shall be exercised to avoid lapping on glass or hardware.
 - 2. Coatings and paints shall be sharply cut to lines.
 - 3. Finished surfaces shall be free from defects or blemishes.
- E. Protective coverings or drop cloths shall be used to protect floors, textures, and equipment.
 - 1. Care shall be exercised to prevent coatings or paints from being spattered onto surfaces, which are not to be coated or painted.
 - 2. Report surfaces from which materials cannot be satisfactorily removed to the Engineer.

- F. When two coats of coating or paint are specified, where possible, the first coat shall contain sufficient approved color additive to act as an indicator of coverage or the two coats shall be of contrasting color.
 - 1. Each coat of paint shall dry thoroughly as specified by the manufacturer prior to application of successive coats.
 - 2. Do not immerse coating until appropriate dry film thickness has been obtained and finish coating system has been allowed to cure as recommended by the paint manufacturer.
- G. If roller application is deemed necessary, the Contractor shall apply additional coats to achieve the specified thickness.
- H. Each coating shall be applied at the rate specified and in the manner specified by the manufacturer.
- I. All welds and irregular surfaces shall receive a brush coat of the specific product prior to application of the first complete coat.

3.4 COATING SYSTEM APPLICATION

- A. After completion of surface preparation as specified for the specific system, materials shall be applied as noted in Section 2.3.

3.5 COLOR SCHEME

- A. The Engineer shall select colors for the project. The Contractor shall submit a current chart of the manufacturer's available colors to the Engineer thirty days prior to the start of coating and painting.
- B. The identification of influent, effluent, waste backwash, and chemical feed lines shall be accomplished by use of labels or various colors of paint. Where labels are used, they shall be placed along the pipe at no greater than five foot intervals. Where colors are used they shall follow the color code prescribed in 30 TAC 290. The table below is a guideline for the color selection. However, all final colors shall be verified by the Contractor to be compliant with State and Federal requirements. Color coding must be by solid color or banding. If bands are used, they shall be placed along the pipe at no greater than five foot intervals. The color code is as follows:

PAINTING COLOR SCHEDULE

<u>Item</u>	<u>Color</u>
Pumps, Rotors, Blowers, Motors, Baseplates, Misc. Equipment, and Exposed Piping –	
Potable Water	Light Blue
Non-Potable Water	Violet (light purple)

Compressed Air	Light Green
Instrument Air	Light Green w/ Dark Green bands
Sewage	Dark Gray
Alum Solution	Yellow w/ Green Bands
Liquid Alum	Yellow w/ Orange Bands
Chlorine Gas	Yellow
Chlorine Solution	Yellow w/ Red Bands
Gas	Safety Red
Caustic (Solution)	White w/ Orange Bands
Caustic (Liquid)	White w/ Red Bands
Ferric Sulfate	Brown w/ Yellow Bands
Polymer	White w/ Green Bands
Ammonia	Yellow w/ Brown Bands
Fluoride	White w/ Yellow Bands
Settled Water	Green
Filter Effluent	Light Blue
Backwash Supply	Light Blue
Backwash Waste	Dark Gray
Drain	Dark Gray
Raw Water	Tan
Reuse Water	Purple

Hoists, Supports, Bridge Cranes and Monorails	Safety Yellow
Structural Steel Members, Bar Joists, Roof Decks, Support Angles, Embedded Frames	Red Oxide
Electrical Enclosures, Panels, and Supports	Electrical Gray
Hollow Metal Doors, Roll Up Doors, Metal Frames, Steel Windows, & Subframes	as selected by Owner
Wood Doors and Frames	as selected by Owner
Gutters and Downspouts	as selected by Owner
Interior All Concrete Masonry Unit Walls	as selected by Owner
Exterior Standard Concrete Masonry Unit Walls	as selected by Owner
Interior Drywall	as selected by Owner
Concrete	Gray or as selected by Owner

Irrespective of the finish coat color designations, the following shall be painted as listed:

OSHA Orange: Moving parts of equipment, protected by guards-shafts, couplings, pulleys, and sprockets (the guards themselves to be same color as equipment color).

OSHA Yellow: Caution signs and all physical hazards, outside levers, weight on check valves, lower pulley block sprockets and chains on valve operators, inside of openings adjacent to steps on ladder, platforms subject to being struck.

Dark Green: "Safety" and location of First-Aid equipment such as gas masks, first-aid kits, and safety deluxe showers.

Black & White: Areas to remain clear.

3.6 DISINFECTION

- A. The Contractor shall disinfect all systems which may reasonably be expected to come into contact with potable water. The Engineer shall have final authority to determine which surfaces, systems, and other work areas require disinfection. Coordinate painting with disinfection requirements.

3.7 VAPOR REMOVAL

- A. All solvent vapors shall be completely removed by suction-type exhaust fans and blowers before placing system in operating service.

3.8 CLEAN UP

- A. Upon completion of the work, all staging, scaffolding, containers, waste, used abrasive, and other debris shall be removed from the site.
- B. Spots and stains caused by coatings, paints, oils, thinners, and other products shall be removed and the jobsite cleaned thoroughly.
- C. Damage to systems, surfaces, and appurtenances resulting from Contractors work shall be cleaned, repaired, and refinished to the satisfaction of the Engineer at no cost to the Owner.

3.9 SCHEDULE

- A. Filter 1 – 4 Pipe Gallery:
 - 1. Existing and proposed piping, valves, and fittings filter pipe gallery (Interior Exposed, Non-Submerged): System No. 1. Colors shall be in accordance with TCEQ color code. All piping shall receive new labels and flow arrows.
- B. Filter 5 – 10 Pipe Gallery:
 - 1. Existing and proposed piping, valves, and fittings in filter pipe gallery (Interior Exposed, Non-Submerged): System No. 1. Colors shall be in accordance with TCEQ color code. All piping shall receive new labels and flow arrows.

END OF SECTION

DIVISION 11
EQUIPMENT

SECTION 11220

FILTRATION SYSTEM

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Work Included:

1. All of the equipment described in this section shall be supplied by a single underdrain manufacturer regularly engaged in that business. This section requires the furnishing and installation of one (1) filter as shown on the contract drawings. The filter is 34'-0" x 11'-3". The section also requires furnishing and installing ten (10) filter effluent valve positioners/controllers. The equipment to be supplied shall consist of:
 - a) Type S filter underdrain with I.M.S® 200 media retainer.
 - b) Filter media.
 - c) Valve Positioners/Controllers

B. References

1. NSF - Standard 61 - Drinking Water Systems Components - Health Effects.
2. AWWA B100 Water Treatment Filtering Material latest edition.
3. ASTM Standards listed in Section 1.4.H, Table 1.

1.2 PERFORMANCE AND DESIGN REQUIREMENTS

A. General Requirements

1. The filter underdrain system shall be designed and installed to ensure long term stability in its operating characteristics. It shall be resistant to changes in head loss, flow uniformity, and any other effects which would in time cause loss of efficiency or effectiveness in its operation.
2. The underdrain system is intended to allow for the uniform collection of filtered water and uniform distribution of backwash water and air over the total area of the filter floor.
3. The backwash system shall allow for separate air scouring and water backwashing and for the simultaneous use of air and water at the specified rates.

4. The system shall be designed to avoid localized areas of excessive flow (maldistribution) which may cause mounding, lateral displacement, or other deleterious disturbances in the filter media.
 5. When subjected to a flow rate of 20 gpm/sf of filter area the headloss through an underdrain lateral 40 feet long shall not exceed 36 inches water column. This does not include head losses for special feed arrangements.
 6. To ensure the underdrain will control distribution (limit maldistribution) and not be over-powered by the media headloss, the minimum headloss through the orifices (primary and secondary) of an individual underdrain block shall not be less than 20 inches water column at a backwash flow rate of 20 gpm/sf of filter area.
 7. The filters shall consist of 12 inches of silica sand media, and 24 inches of anthracite media.
 8. An air scour system at the rate of 4 scfm/sf shall be supplied to ensure optimum cleaning.
- B. Design Flow Rates: The filter underdrain system shall be furnished and installed to perform satisfactorily and as specified when operated under the following conditions:
1. Downflow of filtered water up to 10 gpm/sf.
 2. Upflow of backwash air at a rate 4 scfm/sf.
 3. Upflow of backwash air, together with backwash water. Typical recommended combined air and water rates: 4 scfm/sf and 5 gpm/sf.
 4. Upflow of backwash water up to 25 gpm/sf.
- C. Flow Distribution: The filter underdrain system, as installed, shall provide acceptable flow uniformity. Maldistribution (MD) of air and water flows during backwash shall be as follows:
1. Lateral Water MD: The maldistribution in a lateral 40 feet long or less shall not exceed +/- 5 percent of the average gpm/sf of filter for a backwash rate of 20 gpm/sf.
 2. Flume Water MD: Note, additional maldistribution, due to specific flume arrangement, entry conditions into both flume and underdrain laterals and flow velocities, must be considered.
 3. System Air MD: Visually, the air should show a uniform pattern.
- D. Structural Design Requirements
1. General: The filter underdrain system, including anchorage, supports, etc. shall be designed to safely withstand loading for the specified conditions.

2. Internal Loading: The filter underdrain system, when installed, shall be designed for a net internal loading during backwash of the greater of either 600 psf or 200 percent of the maximum pressure at maximum backwash rates. No credit shall be taken for the weight of gravel or filter media.
 3. Downward Load: The filter underdrain system shall also be designed to withstand a net downward loading of not less than 2,500 psf.
- E. Air Temperature: During backwash with air, the underdrain shall be suitable to withstand a maximum air temperature of 200° F.

1.3 QUALITY ASSURANCE

- A. Manufacturer: The filter system shall be supplied by one manufacturer that shall assume total responsibility for the parts operating as a whole and shall be manufactured by Xylem Water Solutions Zelienople LLC.
- B. Experience: The filter system shall be a standard product of a filter manufacturer who has been actively providing dual-parallel lateral air/water underdrain equipment for at least 15 years. Upon request, the filter manufacturer will provide the Engineer with a list of installations of underdrain which totals not less than 200.
- C. NSF Certification: All materials used in contact with the water and backwash air shall meet National Sanitation Foundation (NSF) Standard 61 Drinking Water System Components - Health Effects.
- D. Underdrain: The dual-parallel block units with integral flow metering elements and any specialties required for installation such as special anchorage, grout retaining plates, closures, gaskets, etc., shall be the products of a single manufacturer/supplier.
- E. Media: The filter equipment manufacturer shall furnish a Quality Control Manual demonstrating that the filter media to be furnished will comply with the requirements of the contract specifications. The Quality Control Manual will define the following:
1. Qualification of the raw feedstock
 2. Control procedures at the screening mill
 3. Independent testing laboratories
 4. Packaging definition
 5. Purchase orders
 6. Storage procedures

1.4 SUBMITTALS

- A. Submit to the Engineer complete shop drawings showing details of fabrication, materials of construction, installation and leveling data of all items furnished under this section.
- B. Details submitted shall include as a minimum, headloss data for air, water and combined air/water backwash, installation details, flow distribution calculations, certification of compatibility of the underdrain system with the filter media specified in this section, details for installing reinforcing and other items to be embedded in concrete.
- C. Testing Procedures: Detailed start-up, hydraulic, and air scour test procedures.
- D. Proper documentation showing NSF-61 certification of all underdrain components.
- E. The media submittal and technical information will be provided and approved by a licensed engineer regularly employed by the filter manufacturer. The engineer shall have at least 15 years' experience in water treatment. All submittal shall include the following information as a minimum:
 - 1. Supplier's Name
 - 2. Resume of engineer Providing Submittal
 - 3. Quality Control Manual
 - 4. Gradation of Each Media Type
 - 5. Date of Sampling/Lot Number
 - 6. Samples of Each Media Type (If Required)
 - 7. Representative Sample Analysis, (i.e. effective size, uniformity coefficient, specific gravity, acid solubility and Mohs' hardness for Anthracite only.)
 - 8. Material Quantities
 - 9. Diagram with Type of Material and Depth of Each
 - 10. Estimated Shipping Schedule
 - 11. Media Loading Procedure
 - 12. All testing shall conform to the requirements of the latest edition of AWWA B100.

1.5 SHIPMENTS

- A. Media materials will not be shipped until the submittal is approved by the Owner. Approval of the submittal, including the Quality Control Manual, samples and independent testing, shall constitute acceptance of the media.

- B. The schedule of work shall be submitted to the Owner for approval prior to commencement of work.
- C. The contractor shall be responsible for coordinating the shipment of supplies of materials and equipment specified herein. Coordination will be required during construction, startup and/or testing.
- D. The Owner shall provide storage space for the filter media and protect it from exposure to sunlight if stored for more than two weeks.

PART 2 PRODUCTS

2.1 UNDERDRAIN

- A. The underdrain system for the filters shall be a dual parallel lateral type with an integral media support cap whereby feeder and compensating chambers are provided within the cross section of a single block. The cross section of the underdrain shall be so arranged that the feeder (or primary) chamber is adjacent and connected to the compensating (or secondary) chambers through a series of orifices. The orifices shall be located at four different elevations and sized to provide uniform distribution of air and water. All internal orifices shall be integrally molded to provide a smooth bore orifice. Underdrains requiring secondary drilling procedures will not be considered acceptable. The primary chamber should provide at least 50 square inches of cross sectional area per block to reduce flow velocity during backwash.
- B. The compensating chambers shall provide the essential uniform pressure and flow distribution from the top of the blocks. The discharge flow from the top of the blocks into the filter bed shall be provided by approximately twenty-three dispersion orifices per square foot of filter area. The orifices shall be not less than 7/32 inches diameter to prevent clogging and shall be recessed from the surface by approximately 1/8 inch. The top of each orifice shall be encircled by a depression approximately 3/8 inch x 3/4 inch.
- C. The underdrain shall have a horizontal flat top discharge surface, so that the finished filter bottom is essentially flat, with above stated dispersion orifices for uniform energy intensity of air and water coverage which direct flow vertically for effective penetration and cleaning of the media.
- D. A water recovery channel with return holes shall be incorporated into the top of the underdrain block to ensure uniform and continuous air flow from the top deck orifices and provide greater air stability. Underdrains without a water recovery channel will not be considered acceptable.
- E. The secondary chambers of the underdrain shall have baffles sized and located to provide effective air control and to reduce level sensitivity. Underdrains without baffles will not be considered acceptable.

2.2 AIR HEADER

- A. The existing air header in the flume shall be reused with the new underdrain system if not damaged during removal of the existing underdrain system.

2.3 FILTER MEDIA

- A. Filter sand shall be composed of hard, durable clean siliceous particles, free of all mica with an average specific gravity of 2.6 (± 0.05) and shall be in strict accordance with AWWA B100, and have an effective size of 0.45-0.55 mm, and a uniformity coefficient of 1.40 or less, for a finished depth after backwashing and scraping and removal of fines and debris of 12 inches. A 1/2-inch skimming allowance shall be provided.
- B. Filter anthracite shall be composed of specially selected and graded hard, durable anthracite coal particles. The anthracite shall be composed entirely of deep mined material. A quality control manual shall be included to show the source of the material and the quality of the material produced. The anthracite shall have an average specific gravity of 1.65 (± 0.05) with a hardness (Mohs' scale) of 2.7 or more and shall be essentially free of iron, clay, shale, extraneous dirt, and excessive dust with moisture less than 4.0 percent as shipped. The anthracite shall be in accordance with AWWA B100, and have an effective size of 0.95-1.05 mm₂ and a uniformity coefficient of 1.40 or less for a finished depth after backwashing and scraping and removal of fines and debris of 24 inches. A skimming allowance of 1 inch shall be provided.

2.4 VALVE POSITIONER/CONTROLLERS

- A. An electronic valve positioner/controller shall be provided for each filter effluent control valve (Filters 1 – 10). each controller shall be rated NEMA 4X and will be mounted on the Filter Control Console.
- B. The unit shall accept 4-20 mA DC remote setpoint and flow feedback signals. Output signals shall be via dual relay contact closures with contact rating of 10A, 120/240VAC, single phase. Temperature range shall be 32 degrees F to 150 degrees F. The unit shall operate on a nominal 115VAC, 60 HZ, single phase power input.
- C. The effluent valve units shall include ENTER (LOCAL/REMOTE SETPOINT SELECT) and INCREASE/DECREASE buttons. In the REMOTE SETPOINT mode, the unit shall accept a remote setpoint signal and position the flow control valve via the relay contact outputs to maintain the flow setpoint. The unit shall support On/Off, Proportional (P), Proportional with Integral and/or Derivative (PI, PD, PID), or PID with fuzzy logic. In the LOCAL SETPOINT mode, the flow setpoint will be adjusted manually by pressing the INCREASE/DECREASE buttons. The unit shall have a dual LED display for indicating the flow setpoint and the flow in GPM.
- D. The valve positioner/controller shall be a Valve PAC Series III as manufactured by the Leopold a Xylem Brand, Zelienople, PA.

2.5 MATERIALS AND CONSTRUCTION

A. Underdrain

1. Material: The individual blocks used in the system shall be of impervious high strength, completely corrosion-resistant, high-density polyethylene (HDPE) material. The blocks shall be resistant to erosion and corrosion and have uniform smooth surfaces.
2. Dimensions: The block size and weight shall permit ease of handling and installation. The block nominal dimensions shall be 12 inches high by 11 inches wide by 48 inches long. The weight of the block shall be approximately 25 pounds. One-piece extruded underdrain will not be considered acceptable.
3. Block Geometry: The blocks shall be essentially rectangular in shape with dispersion orifices located in the top flat surface. The blocks shall have ridges and pockets for structural rigidity. The sides of the block shall have grout lock-in lugs to key into surrounding grout so that the walls can bond with the grout.
4. Lateral Construction: The blocks shall be arranged end-to-end and mechanically joined to form continuous underdrain laterals approximately equivalent to the length of the filter cell. The joints shall be sealed utilizing only one (1) O-Ring seal, bell and spigot type with internal alignment tabs for proper joint alignment, and be air and water-tight. Joints shall be of snap-lock type so that the blocks are joined with integral interlocking snap lugs and lug receptors for ease of assembly and installation of the laterals. One-piece extruded underdrain will not be considered acceptable.
5. I.M.S® 200 media retainer: The I.M.S® 200 media retainer shall be made of thermoplastic through the injection molded process and sealed to the top of the underdrain. The opening size shall be sufficient to prevent the media from obstructing or passing through the underdrain. Vertical baffles shall be located on the bottom side of the media retainer to “compartmentalize” the fluid to keep it from moving horizontally along the bottom side of the media retainer thus ensuring each pattern of slots in the media retainer receives equal quantities of air and or water during the backwash cycle. The I.M.S® 200 media retainer shall replace the need for support gravel and shall not increase the underdrain height by more than 1 1/4 inch. The cap shall be attached and sealed to the underdrain at the factory using Type 316 stainless steel self-tapping screws and butyl sealant.

B. Air Header

1. General: The existing air header shall be reused.

C. Grout Retainer

1. An Underdrain Flume Plate (GROUT-TITE® Bridge) shall be utilized over the filter flume. Underdrain Flume Plate shall be of high-impact polystyrene properly keyed to fit the underdrain blocks to allow adjustment of lateral center-to-center distance without difficulty. The Underdrain Flume Plate shall span the width of the flume

and shall be laid side by side to cover the entire length of the flume and create a homogenous seal thus eliminating the intrusion of grout. The ends of the Underdrain Flume Plate shall have overlapping edges formed into the piece to create a contiguous seal perpendicular to the width of the flume. The elevation of the Underdrain Flume Plate can be adjusted vertically by means of the anchor rod legs to ensure tight fitment against the bottom side of the underdrain flume block. Underdrain Flume Plate shall be supplied by the filter manufacturer.

D. Grout

1. Cement: Cement shall be standard brand Portland cement conforming to ASTM C150, Type II, for general use. Cement that has become "lumpy" shall not be used.
2. Water: Water for mixing and curing shall be clean and clear potable water. The water shall be considered potable if it meets the requirements of the local government agencies. Water with a total dissolved solids of 1000 mg/l or higher or greater than 10 NTU shall not be used.
3. Sand: Sand shall be clean and washed masonry sand. When tested in accordance with ASTM D2419, the sand equivalency shall not be less than 90% for an average of three samples, or less than 85% for any individual sample. 100% of sand particles shall pass No. 4 sieve and not more than 4% of sand particles shall pass No. 200 sieve.
4. Chemical Admixtures: No chemical admixture is needed in most of the applications. The grout can be mixed in a small batch and used immediately.
5. Strength: The grout used in installing the blocks shall have a minimum compressive strength of 3000 psi after 30 days of curing. Normally, use a grout with one part Portland cement and two parts clean silica sand properly mixed and wetted with a maximum water-cement ratio by weight equal to 0.50 to 0.55 for the base grout and 0.61 to 0.67 for the fill grout.

PART 3 EXECUTION

3.1 PRODUCT HANDLING, STORAGE AND DELIVERY

- A. Place or store underdrains and specialties only in designated staging areas shown on the drawings and approved by the Engineer.
- B. Store underdrains and specialties off the ground, under ultraviolet-resistant tarps from time of delivery on-site until final installation of the filters.
- C. Replace, at no charge to Owner, underdrains and specialties damaged during storage and delivery.
- D. Underdrains and specialties are subject to inspection at the Engineer's request if visual evidence of damage is observed.

- E. All filter media will be shipped in "semi-bulk" containers (super-bags) having lifting loops and bottom discharge spout.
- F. Delivery of "bulk" shipments will not be permitted.

3.2 INSTALLATION

A. Filter Underdrains and Air Header

1. The Contractor shall install the filter underdrain system in strict accordance with: (1) the manufacturer's written instructions and recommendations and the manufacturer's installation drawings; (2) the oral and written directions provided by the manufacturer's technical representative who is supervising and observing the WORK; and (3) any additional requirements specified herein.
2. Floor Preparation
 - a. Care shall be exercised in preparing the filter floor slab and in setting the anchors to assure proper alignment and elevation. Steel anchor rods shall be furnished by the filter manufacturer and set in the floor slab on both sides of the distribution flume in accordance with the drawing provided. The floor slab shall be screeded into a flat level plane and be free of protrusions and depressions, but have a rough, broom finish.
 - b. DO NOT PAINT the floor or wall area where it will come in contact with the grout surrounding the underdrain. The filter floor and filter wall extending sixteen (16) inches up from the filter floor is not to be painted.
3. Underdrain Lateral Installation
 - a. The underdrain laterals shall be set in relatively level rows on a bed of grout over the filter floor slab. Plates for closing the ends of each row of blocks shall be furnished by the filter manufacturer and installed by the Contractor. After joining, aligning and setting the blocks, and the bed grout is set-up, as soon as possible, all spaces between the rows of blocks and walls shall be filled with grout so that the entire bed is totally sealed and held firmly in place. Once all grouting is complete, the grout shall be allowed to cure for at least 3 full days before any functional testing.
 - b. Anchor rods, if required as shown in the contract drawings, shall be supplied by the underdrain manufacturer and installed by the Contractor. Installation of the anchor rods shall be in accordance with the manufacturer's approved installation drawings and instruction manual.
 - c. After the anchor rods have been installed and the epoxy has cured, a non-destructive vertical pull test shall be performed. Testing shall be performed on 100% of the anchor rods. The pull test shall be performed by

the underdrain Manufacturer in accordance with the Manufacturer's instruction manual.

4. Cleaning and Protection During Installation, Testing, and Startup

- a. The Contractor shall take all precautions recommended by the underdrain manufacturer or specified herein to ensure that the filter underdrain system and any piping communicating therewith is completely clean and free of any debris, dirt, or other foreign materials which could clog the underdrain system or interfere with flow. Backwash air and water piping shall be thoroughly flushed clean. All loose debris and dirt within the filter cell and flume shall be removed by brooming down and vacuuming. Care shall be taken to keep grout from being deposited anywhere where it could interfere with flow. Any grout so deposited shall be removed. As installation progresses, partially completed portions of the WORK shall be protected with heavy plastic sheeting or other suitable material to maintain the cleanliness of the underdrain system. Such protection shall be maintained until the support gravel is installed.
- b. Any time the underdrain laterals are to be used as a work surface, the underdrain block shall be overlaid with ½ inch minimum plywood sheeting where necessary, to distribute the load of yard buckets, wheel barrows, ladders, scaffolds, etc., to prevent damage to the underdrain.

B. Media

1. Marks shall be placed on the side of the filter designating the top elevation of each layer.
2. Carefully place each layer so as not to disturb the previous layers.
3. Complete the installation of each layer before the next layer above is started. Do not stand or walk directly upon the filter materials. Workers must stand or walk on boards that will sustain their weight without displacing the gravel and media.
4. Measure depth of each layer of media after it has been backwashed and skimmed as recommended by the filter equipment manufacturer.
5. Clean the filter tanks before any media is placed and keep them clean throughout the placing operation.
6. Filter Sand and Filter Anthracite: Place the filter sand and filter anthracite in the bed in the order of their respective specific gravities. Place and level the filter sand first. Then backwash the bed a minimum of three times, and remove the surface fines by scraping as required to the correct elevation. Place the filter anthracite and backwash the bed three times, and remove the surface fines by scraping as required to the correct elevation.

3.3 FIELD TESTING

A. Underdrain Lateral Flow Distribution Test

1. The filter underdrain system in each filter cell shall be given a series of visual, qualitative, flow distribution tests to verify that I.M.S® 200 media retainer gaps are not clogged with debris and that flow distribution is uniform. These tests shall be performed before the filter media is placed.
2. During each test, the underdrain laterals shall be visually inspected for uniform distribution of air and water and for any signs of quiescent zones and excessive surface turbulence.

3.4 MANUFACTURER'S SERVICES

A. Mechanical Filter Equipment Services

1. Install all items in accordance with the filter equipment manufacturer's recommendations. Upon completion of the installation, the technical director shall furnish a certificate of compliance detailing that the filtering materials have been installed in accordance with the manufacturer's instructions.
2. The underdrain manufacturer shall retain on its permanent staff, field service representatives with at least 10 years of experience in the placement of underdrain.
3. The Contractor shall provide the services of the manufacturer's technical representative for not less than 6 working days (8 hours per day) to inspect and instruct the Contractor on the installation and testing of the filter underdrain system in 2 trips.
4. Additional supervision for testing or other purposes in excess of that included above shall be made available by the manufacturer with reasonable notice and at the manufacturer's prevailing per diem rate plus living and travel expenses.

3.5 DISINFECTION

- A. After all work is completed and before the filter is placed in service, the Contractor shall disinfect the entire filter by chlorination in accordance with ANSI/AWWA C653 Standard. Contractor is responsible for all cost associated with disinfecting and testing.

3.6 SPARES

A. Spares shall be provided as follows:

- Ten (10) underdrain o-rings.
- Five (5) H.I.P.S bridging pieces.
- Five (5) Plastic end caps.

END OF SECTION

DIVISION 13
SPECIAL CONSTRUCTION

SECTION 13420

ULTRASONIC LEVEL TRANSMITTERS

PART 1 GENERAL

1.1 DESCRIPTION

- A. Contractor shall furnish and install ten (10) continuous level transmitters; one (1) for each filter. The filter level sensing system shall be an ultrasonic continuous level transmitter, complete with sensing element and integral electronics. New level sensing system shall be incorporated into the existing filter controls as required. All Filters shall have capabilities for automatic, semi-automatic, and manual control of the backwash sequence and shall be capable of operating in either a declining Rate, constant Rate or constant level mode of filtration.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Provisions, Supplemental General Provisions, and Sections in Division 1 of these Specifications.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals
- B. Section 01400 - Quality Control
- C. Section 01600 - Materials and Equipment

1.3 QUALITY ASSURANCE

- A. Section 01400 - Quality Control
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper installation of the work of this Section.

1.3 SUBMITTALS

- A. Section 01300 - Submittals.
- B. Submittal data shall be provided to the Engineer for approval prior to delivery and shall include the following:
 - 1. Functional schematic showing control process.
 - 2. Specification data for each unit.
 - 3. Wiring diagrams.
 - 4. Panel layouts with panel wiring and/or piping diagrams.

1.4 ACCEPTABLE MANUFACTURERS

- A. AMETEK or Engineer approved equal.

1.5 DELIVERY, HANDLING, AND STORAGE

- A. Comply with pertinent provisions of Section 01600.

PART 2 PRODUCTS

2.1 GENERAL:

- A. The continuous level transmitter shall employ an ultrasonic level measuring principle. It shall control an isolated 4-20 mA_{dc}, HART output proportional to level, distance, volume or flow rate into a loop resistance of 600 ohms at 24V_{dc}. The sensor shall be capable of being mounted in a 2 inch diameter nozzle and be recessed up to 18 inches (0.45 m), which shall permit the system to measure level or distance to the top of the vessel. The ultrasonic sensor shall be of an integral mount to the electronic unit. The standard enclosure shall be one of two options:
 - 1. A rugged PBT (Valox, UV stabilized) indicating housing with a CPVC sensor housing.
 - 2. Cast Aluminum Explosion Proof non-indicating housing with CPVC sensor housing.
- B. The system shall meet the requirements of NEMA 4X (IP66) for corrosion resistance and wash down service. Additionally, the sensor housing (only) shall be capable of limited submersion up to the process connection. The power input shall be from 12 to 30 VDC.
- C. System configuration shall be accomplished through PC Software, HART Communicator, or standard integral display with 3-key, environmentally sealed membrane keypad and 2-line, 7-digit, LCD display for level, distance, volume, flow, totalization, temperature and / or milliamp indication. The user may select any, or all display parameters above and configure to manually or automatically scroll through all selections. Echo strength will be displayed concurrent with displayed measurement data. The system shall be capable of

displaying measurement data in the following engineering units: feet, inches, meters, centimeters, millimeters, gallons per minute, cubic meters per hour, or percent. The configuration menu shall be password protected to prevent unauthorized changes.

- D. System software will support linear level or distance and open channel flow rates for the following flumes and weirs: Parshall flumes, Rectangular weirs (with and without end contractions, Trapezoidal (Cippoletti) weirs, Trapezoidal flumes, V-Notch weirs, Leopold-Lagco flumes, Palmer-Bowlus flumes, Compound weirs, Cutthroat flumes, "H" flumes. A 21-point strapping table is included for user-defined vessels, weirs and flumes. The receiver shall incorporate two (2) totalizers, one (1) nonresettable and one (1) user resettable via secondary password. Level to volume conversions of vertical cylinders, horizontal cylinders and spheres are included.
- E. The system shall be supplied with SmartGain™ - a patented technique of automatically ignoring interfering signal reflections from non-level echoes and internal vessel obstructions, such as ladders, agitator blades and pipes without user intervention. The system shall be capable of being configured with or without level being present in the vessel.
- F. The system shall also be capable of making a measurement in a pipe up to a 30 ft. (9.1 m) range. The pipe can be the same length as the measurement range or shorter than the measurement range and the pipe can be as small as 2" (50 mm) diameter.
- G. The level measuring system shall have maximum range of at least 30 ft. (9.1 m) on liquid applications with a near zone of 12 inches (305 mm). The accuracy shall be 0.15% of sensor range with a resolution of no less than 1/8th inch (3 mm).
- H. The sensor shall be enclosed in a protective CPVC housing for corrosive service with a 2" NPT or 2" BSP mounting thread. The recommended operating temperature range for the sensor shall be from -40°F to 158°F (-40°C to +70°C). The electronics shall be enclosed optionally in either a PTB (Valox, UV stabilized) or Cast Aluminum housing. The electronic unit shall be capable of ambient temperature ranges of -40°F to 180°F (-40°C to +82°C). The electronic unit shall employ a nominal 50 KHz operating frequency with a 10° acoustic beam angle. The temperature compensation, for variations in the speed of sound due to temperature changes, shall be automatic and over the entire operating range of the system.
- I. The system shall be capable of displaying diagnostic errors for loss of echo or violation of near zone. The transmitter shall indicate a near zone violation with a current output of 22mA or 3.7mA (user selectable). The transmitter shall indicate a loss of echo with a current output of 22mA or 3.7mA (user selectable). The system shall have a graphic display indicating return signal strength for purposes of installation orientation and troubleshooting.
- J. The level measuring system shall be suitable for installations in Class I, Div. 1 or Zone 0, or Zone 1 hazardous areas.

- K. The manufacturer shall have worldwide technical support and system start up assistance capabilities.
- L. The continuous ultrasonic level system shall be of the following model: AMETEK Drexelbrook USonic™ Ultrasonic Level System, or Engineer approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Employ, contract, and pay for services of instrumentation factory engineer to install, calibrate and commission instrumentation and control loops.

3.2 CALIBRATION AND COMMISSION

- A. Calibrate and commission control loops from primary element to final control element. Calibration includes simulating control signals to input terminals of control loop elements proportional to range of process variable being measured. Set zero (0) and span of all control elements to conform to simulated input signal.
- B. Commissioning includes verification that elements of control loop function throughout specified range. Provide commission documents to Engineer upon completion.

3.3 TEST EQUIPMENT

- A. Provide equipment for calibration of control loops which is certified by NBS. Equipment certification will be valid for one (1) year and will be provided to the Engineer upon request.

3.4 START-UP

- A. Tune all control loops to provide straight line control under dynamic conditions. Control loops will meet Engineers approval before project will be considered complete. Verify in writing that control loops are operating as specified upon completion of project.

3.5 GUARANTEE

- A. The manufacturer of equipment shall provide a performance guarantee that ultrasonic level sensor shall perform as required in this specification, and if performance is not achieved within six (6) months of installation, the flowmeter shall be removed and returned and the installed cost of flowmeter shall be refunded to the Owner.

3.6 OPERATION AND MAINTENANCE MANUALS

- A. Level sensor manufacturer shall provide operation and maintenance manuals as specified in Section 01730.
- B. Manual shall include trouble-shooting guides.

END OF SECTION

SECTION 13500

TURBIDIMETERS

PART 1 GENERAL

1.1 DESCRIPTION

A. Contractor shall furnish and install four (4) filter effluent turbidimeters. New filter effluent turbidimeters shall be incorporated into the existing filter controls as required. All Filters shall have capabilities for automatic, semi-automatic, and manual control of the backwash sequence and shall be capable of operating in either a Declining Rate, Constant Rate or Constant Level mode of filtration.

B. Section includes:

1. Instrument for continuous, online monitoring of turbidity in water that includes predictive diagnostics capability to monitor instrument status using the following compliance methods: USEPA Approved Hach Method 10258

1.2 Measurement Procedures:

A. The sensor is used with an SC controller to measure low range turbidity in water. These sensors collect scattered light at an angle of 90° in a 360° radius around the axis of the incident light beam.

1.3 Alternates:

A. Methods of turbidity measurements that do not include a laser light source and a 360° x 90° detection system are not acceptable.

B. Instruments that do not have predictive diagnostic capabilities are not acceptable

1.4 System Description:

A. Performance Requirements: USEPA Approved Hach Method 10258 Sensor:

a. Measuring Range:

1) 0 to 700 NTU / FNU / TE/F / FTU

2) 0 to 175 EBC

B. Other Specifications:

a. Detection Limit:

1) 0.002 NTU / NTU / FNU / TE/F / FTU

- b. Accuracy:
 - 1) $\pm 2\%$ of reading ± 0.01 NTU from 0 to 40 NTU based on formazin primary standard at 25°C
 - 2) $\pm 10\%$ of reading from 40 to 1000 NTU based on formazin primary standard at 25°C
- c. Repeatability:
 - 1) $\pm 1\%$ of reading or 0.002 NTU, whichever is greater based on formazin primary standard at 25°C
- d. Resolution
 - 1) 0.0001 NTU / FNU / TE/F / FTU / EBC
- e. Response Time:
 - 1) T90 <45s at 100 mL/min
- f. Sample Flow
 - 1) 100 to 1000 mL/min; optimal flow rate 200 to 500mL/min
- g. Sample Pressure
 - 1) Max. 6 bar (87 psi) compared to air at sample temperature range of 0 to 40 °C (32 to 104 °F)
 - 2) Max. 3 bar (43 psi) compared to air at temperature range of 40 °C to 60°C (104 °F to 140 °F)
- h. Sample Temperature
 - 1) 2 to 60 °C (36 to 140 °F)

1.5 Certifications:

- A. CE Compliant
- B. US FDA accession number: 1420493-001 EPA version, 1420492-001 ISO version. Complies with IEC/EN 60825-1 and to 21 CFR 1040.10 in accordance with Laser Notice No. 50)
- C. Australian RCM Marking

1.6 Environmental Requirements:

A. Operational Criteria:

1. Storage Temperature: -40 to 60 °C (-40 to 140 °F)
2. Operating Temperature: 0 to 50 °C (32 to 122 °F)
3. Relative Humidity: 5 to 95 %, non-condensing

1.7 Enclosure Rating:

- A. Electronic compartment IP55; all other functional units IP65 with process head/ACM attached

1.8 Maintenance Service:

A. Unscheduled Maintenance:

1. Clean the measurement vial, depending on cleanliness of the sample
2. Replacement of desiccant cartridge (depending on ambient temperature, ambient humidity, and sample temperature)
3. Replacement of measurement vial, depending on cleanliness of the sample

PART 2 PRODUCTS

2.1 Manufacturer:

- A. Hatch TU5300sc Low Range Laser Turbidimeter or Engineer pre-approved Equal when stated in an addendum 14 days prior to the bid opening.

2.2 Sensor

- A. The low range online laser turbidimeter consists of a Class 1 650nm (EPA) or 850 nm (ISO) laser light source and 360° x 90° detection system with predictive diagnostics designed to continuously monitor turbidity in a sample stream. Automatic cleaning and flow measurement options are available.

2.3 Equipment:

A. Online Turbidimeter:

1. Utilizes a laser-based 360° x 90° optical system that measures turbidity from multiple different angles.
2. Continuous particle removal using a vortex created by the fluid path.
3. Utilizes an identical laser-based optical system.

4. If chosen, includes capability to communicate measurements and calibration information via RFID to the laboratory turbidimeter described in 2.3.C.
 5. Includes capability to actively monitor all internal components and present diagnostics on the overall health of the turbidimeter and time to next required maintenance.
 6. When connected to a predictive diagnostics capable controller the overall status of instrument performance is displayed as a percentage value via a measurement indicator
 7. When connected to a predictive diagnostics capable controller the overall time remaining until maintenance tasks are due is displayed in days
 8. Built in-help screens included.
- B. Controller:
1. Provide an SC 200 controller for turbidimeter operation.
- C. Calibration Standards
1. Frequency of use of calibration standards determined by recommendation of local regulator.
 2. Manufacturer must make available certified calibration standards that can be used in online and bench top instruments for highest calibration accuracy
 3. Calibration standards must be capable of being used to calibrate laboratory turbidimeters with similar optics systems.
 4. Calibration standards must be capable of functioning with the instrument's optional RFID module.

2.4 Components

A. Analytical instrument:

To deliver:

1. Turbidimeter as selected in section 1.1.A.
2. Mounting bracket
3. Desiccant cartridge
4. User Manual

B. Dimensions:

1. Refer to turbidimeter drawings
- C. Weight:
 1. 5 lbs (2.3 kg)
- 2.5 Instrument Option: None
- 2.6 Instrument Accessories (for each turbidimeter provided):
 - A. Turbidimeter maintenance kit
 - B. Glass calibration/verification rod
 - C. StablCal® Sealed Vial Calibration Standards
- PART 3 EXECUTION
- 3.1 Preparation
 - A. Mounting
 1. Similar to existing turbidimeter that is being replaced.
 - B. Inlet and outlet connection sizes
 1. Provide new ¼" tubing and isolation valves as required. New tubing shall extend from sample tap to new turbidimeter.
- 3.2 Installation
 - A. Install turbidimeter following transmittal drawings and instrument user manual.
- 3.3 Manufacturer's Service and Start-Up
 - A. Contractor will include the manufacturer's services to perform start-up on instrument to include basic operational training and certification of performance of the instrument.
 - B. Contractor will include a manufacturer's Service Agreement that covers all the manufacturer's recommended preventative maintenance, regularly scheduled calibration and any necessary repairs beginning from the time of equipment startup through to end user acceptance / plant turnover and the first 12 months of end-user operation post turnover.
 - C. Items A and B are to be performed by manufacturer's factory-trained service personnel. Field service and factory repair by personnel not employed by the manufacturer is not allowed.
 - D. Use of manufacturer's service parts and reagents is required. Third-party parts and reagents are not approved for use.

END OF SECTION

APPENDICES

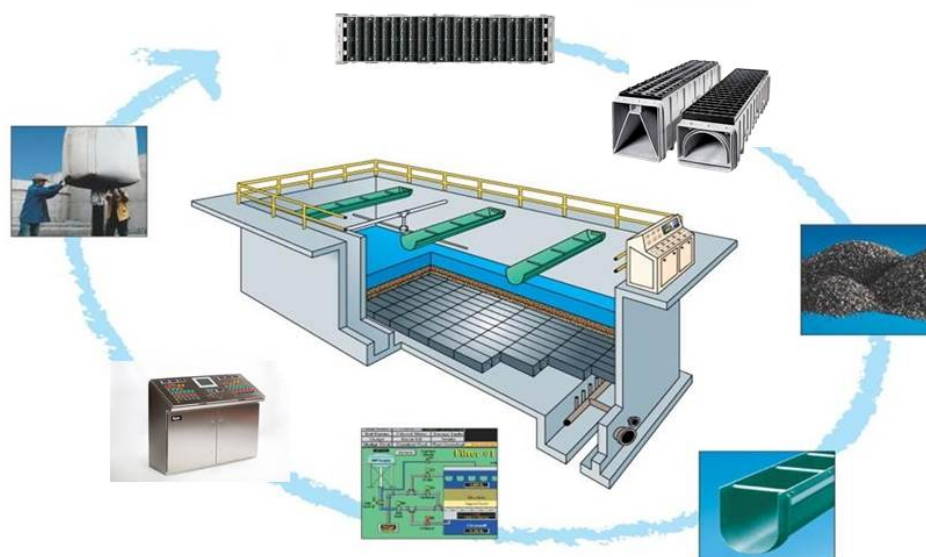
APPENDIX 1

Xylem/Leopold Scope of Supply Document

Proposal

Nacogdoches WTP

Nacogdoches, TX



1/7/2022



Xylem Water Solutions USA, Inc.
108 Tomlinson Drive, Suite 400
Zelienople, PA 16063
Mr. Bruce Wolfe
Direct: 724-453-2062
Mobile: 724-504-0366
Email: bruce.wolfe@xyleminc.com

1/7/2022

Project name : Nacogdoches, TX
Project number : I20223 R01

To Whom It May Concern:

Based on your inquiry, we are pleased to forward the following proposal to your attention. Thank you for the opportunity to offer our equipment and services for the Nacogdoches, TX, WTP project.

We hope that our proposal meets your expectation. If you have any questions, please do not hesitate to contact me or our local representative.

Respectfully,

Bruce Wolfe
Territory Manager

Table of Content

1	Technical Description	4
1.1	Scope of Supply	4
1.2	Services	5
2	Technical Clarification & Deviations	6
3	Price & Scope of Supply	6
3.1	Main Scope	6
4	Commercial Terms & Conditions	7
4.1	Delivery schedule	7
4.2	T&C's for proposal	Error! Bookmark not defined.

1 Technical Description

1.1 SCOPE OF SUPPLY

We are pleased to offer the following materials and services by Xylem Water Solutions USA, Inc. This quotation has been prepared using engineers plans and specification 11220.

FILTER UNDERDRAIN SYSTEM:

LEOPOLD UNIVERSAL® TYPE S® UNDERDRAIN:

Under this section, we propose to furnish Leopold Universal® Type S® Underdrain of the Dual/Parallel Lateral type, manufactured from corrosion resistant, high density polyethylene for installation in one (1) filter cell. The filter cell measures 34'-0" lateral run x 11'-3". The total filter area is 383 square feet.

The blocks shall be arranged end-to-end and mechanically joined with an O-ring to form continuous underdrain laterals approximately equivalent to the length of the filter cell. The joints shall be gasketed, bell and spigot type with internal alignment tabs for proper alignment, and be air and water tight. Joints shall be snap-lock type so that the blocks are joined with integral interlocking snap lugs and lug receptors for ease of assembly and installation of the laterals, and supplied with carbon steel "L" anchor rods. Epoxy, sealant, bonding agents, or other similar materials used during installation are not included and to be provided by others.

I.M.S® 200 MEDIA RETAINER:

Under this section, we propose to furnish 383 square feet of I.M.S® 200 media retainer. The scope includes molded thermoplastic I.M.S® 200 media retainer factory installed onto the proposed Leopold Universal® Type S® Underdrain block prior to shipment.

AIR HEADER PIPING:

The existing air header pipe to remain and be reused.

FILTER MEDIA:

	One (1) filter cell, 383 square feet
420 cubic feet	SILICA SAND – 12" Depth plus 1/2" skimming allowance and 5% extra Effective size: 0.45 mm to 0.55 mm Uniformity coefficient: 1.40 21 Tons
800 cubic feet	FILTER ANTHRACITE – 24" Depth plus

1" skimming allowance
Effective Size: 0.95 mm to 1.05 mm
Uniformity coefficient: 1.40
20 Tons

Submittals:

Materials meet and/or exceed American Water Works Association Standard B100 (latest revision) for Filtering Material. Typical samples and/or test reports detailing the physical and chemical characteristics of the filtering material will be provided for review and approval as required by the specification. If independent testing is required per specification, test reports of the actual material produced will be submitted for approval prior to release for shipment.

Packaging and Placement of Materials:

Material will be packaged in semi-bulk containers, "Super Bags," with lifting sleeves and bottom discharge spout, containing approximately 3,000 to 4,000 pounds per sack and palletized.

Quantities:

Quantities indicated above are Xylem Water Solutions USA, Inc best calculations of the quantity requirements. Five percent (5%) extra sand is included to cover incidental damage or loss. Any additional loss of material due to storage or handling is not covered by this proposal.

VALVE PAC CONTROLLERS:

We propose to replace the ten (10) existing Leopold Valve PAC II with Leopold Valve PAC III electronic valve positioner/controllers mounted in the existing panels. These units modulate the effluent control valves to maintain the desired flow rate. The new controllers are of the same physical size and will require some wiring modifications and tuning. Leopold will install and calibrate the new Valve Pac Controllers.

1.2 SERVICES

MANUFACTURER'S SERVICES (FILTER EQUIPMENT):

The services of a qualified Leopold technical representative to instruct the Contractor's personnel about the proper installation technique and testing of the **filter equipment** will be provided for a period of (5) days (8 hr/day) on site plus (4) days travel time to and from the job-site in two (2) trips. Additional services may be obtained at the current prevailing rate plus living and travel expenses.

MANUFACTURER'S SERVICES (VALVE PAC CONTROLLERS):

The services of a qualified Leopold technical representative for installation of the new Valve Pac's and operator training. This service includes (6) days on site plus (4) days travel time to and from the job-site in (2) trips. Additional services may be obtained at the current prevailing rate plus living and travel expenses.

2 Technical Clarification & Deviations

1. This section not used.

3 Price & Scope of Supply

3.1 MAIN SCOPE

BASIS of PRICING:

Any items and/or accessories not specifically called out in this quotation must be construed as being furnished by others.

This quotation is considered firm for 90 days. Orders received more than 90 days after the date of this quotation are reviewed by Xylem Water Solutions USA, Inc before acceptance and are subject to changes in prices or delivery depending on conditions existing at the time of entry. Quoted prices are firm for delivery within 12 months from the delivery date stipulated in the plans & specifications or mutually agreed upon by Xylem Water Solutions USA, Inc. and Purchase Order issuer at time of order placement.

We do not include any applicable taxes.

Orders resulting from this quotation should be addressed to Xylem Water Solutions USA, Inc. 227 S. Division St., Zelienople, PA, 16063, USA.

We propose to furnish the material described in this document for **a total selling price of:**

Filter Underdrain, Media and Services \$93,550.00.

Valve Pac Controllers and Installation \$25,182.00

All prices are DAP Job Site.

For further information pertaining to the equipment contained in this proposal, please contact our area representative, who is:

Environmental Improvements, Inc.
517 North Kealy
Lewisville, TX 75057

Phone: 972-436-2536

Fax: 512-295-4028

Attention: Michael Carpenter

Pricing is based on the following payment terms (net 30 days):

10% following initial submittal for approval

80% following the date of the respective shipments of the product

**5% following installation, not to exceed 150 days after shipment of the product
(whichever comes first)**

**5% following start-up, not to exceed 180 days after shipment of the product
(whichever comes first)**

4 Commercial Terms & Conditions

4.1 DELIVERY SCHEDULE

4.1.1 Production schedule

Submittal of mechanical drawings for approval 6 to 8 weeks after order acceptance.

4.1.2 Delivery time

Delivery of fabricated items and filter media 16 to 18 weeks after drawing approval.

FILTER MEDIA WARRANTY (if applicable): SELLER warrants that its filter media products will meet the standards established by the latest edition of AWWA (American Water Works Association) B100. SELLER shall be responsible for verifying that the filter media meets or exceeds the AWWA B100 Standard at the point of sale. Testing shall be by an independent laboratory, which regularly performs testing of filter media. BUYER shall notify Xylem Water Solutions USA, Inc. immediately upon discovery of any defective product. The SELLER shall have the right to inspect said product and BUYER shall, if requested, return the defective product to the SELLER with transportation prepaid. NO LIABILITY IS ASSUMED BY THE SELLER UNDER ANY CIRCUMSTANCES FOR LABOR, MATERIAL OR OTHER COSTS ASSOCIATED WITH THE REMOVAL OR REPLACEMENT OF MEDIA UNLESS PREVIOUSLY APPROVED IN WRITING BY AN AUTHORIZED EMPLOYEE OF THE SELLER.

4.2 TERMS AND CONDITIONS OF SALE – NORTH AMERICA

This order is subject to the Standard Terms and Conditions of Sale – Xylem Americas effective on the date the order is accepted. Terms are available at <http://www.xyleminc.com/en-us/Pages/terms-conditions-of-sale.aspx> and incorporated herein by reference and made a part of the agreement between parties.

Different terms are hereby rejected unless expressly assented to in writing.

AGREEMENT TO PURCHASE: BUYER agrees to purchase the equipment and services herein in accordance with the terms and conditions set forth above.

ACCEPTANCE: SELLER hereby accepts BUYER'S offer to purchase.

(BUYER)

BY: _____

_____, 20 _____

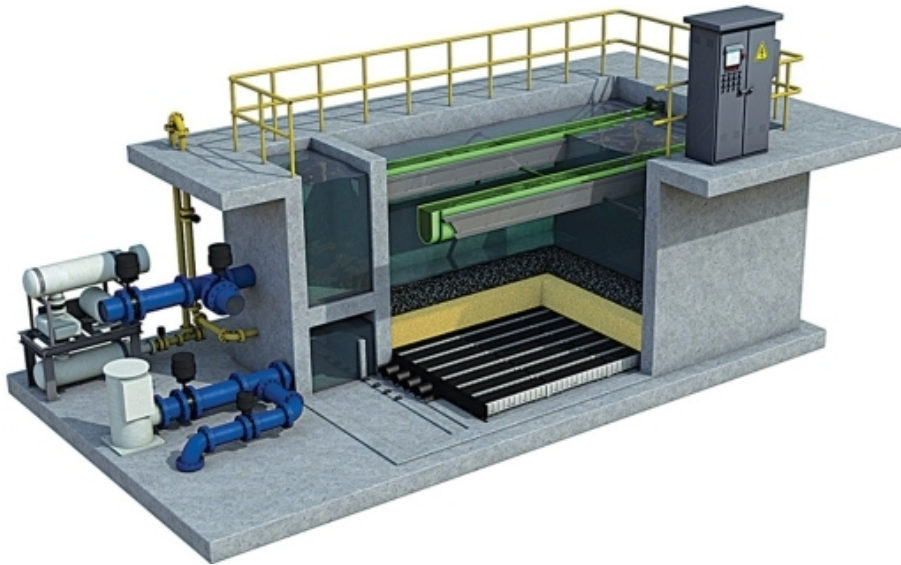
Xylem Water Solutions USA, Inc.

BY: _____

_____, 20 _____

2021 SWTP Filter 7 Rehabilitation Project

- Underdrain and Filter Media Replacement
- Replacement of Valves and Actuators
- Replacement of Effluent Turbidimeters
- Replacement of Ultrasonic Level Transmitters



https://www.tpomag.com/editorial/2017/03/rehabilitating_gravity_filters

Base Bid Amount:

<i>Stolz Mech. Contractors</i>	<i>\$ 785,732.00</i>
Horton Excavating	\$ 983,112.00
Duplicchain Contractors	\$ 1,095,532.00
Davis Construction	\$ 1,113,532.00

Add. Alt. Bid 1: \$ 35,000.00

Add. Alt. Bid 2: \$ 65,000.00

Total Award: \$ 885,732.00

PRESENTER: Steven Kirkland, City Attorney

ITEM/SUBJECT: Consider a resolution regarding the application of Centerpoint Energy Resources Corp., Beaumont/East Texas Division, to increase rates under the Gas Reliability Infrastructure Program; suspending Centerpoint's proposed effective date for forty-five days; and authorizing the City's continued participation in a coalition of cities known as the "Alliance Of Centerpoint Municipalities." (City Attorney)

SUMMARY/BACKGROUND:

ALLIANCE OF CENTERPOINT MUNICIPALITIES

The City is a member of the Alliance of CenterPoint Municipalities ("ACM"). ACM was organized by a number of municipalities served by CenterPoint Energy Resources Corp., Beaumont/East Texas Division ("CenterPoint") and has been represented by the law firm of Herrera Law & Associates, PLLC (through Mr. Alfred R. Herrera) to assist in reviewing applications to change rates submitted by CenterPoint.

"GRIP" RATE APPLICATION

Under section 104.301 of the Gas Utility Regulatory Act (GURA), a gas utility is allowed to request increases in its rates to recover a return on investments it makes between rate cases. This section of GURA is commonly referred to as the "GRIP" statute, that is, the "Gas Reliability Infrastructure Program," and is also referred to as an "Interim Rate Adjustment" ("IRA").

The Supreme Court of Texas concluded that a filing made under the GRIP statute permitted gas utilities the opportunity to recover return on capital expenditures made during the interim period between rate cases by applying for interim rate adjustment and that proceedings under the GRIP statute did not contemplate either adjudicative hearings or substantive review of utilities' filings for interim rate adjustments. Instead, the Court concluded, the GRIP statute provides for a *ministerial* review of the utility's filings to ensure compliance with the GRIP statute and the Railroad Commission's rules, and that it is within the Railroad Commission's authority to preclude cities from intervening and obtaining a hearing before the Railroad Commission. The Court's opinion has severely limited a city's ability to perform a meaningful review of a gas-utility's GRIP filing.

CENTERPOINT'S "GRIP" APPLICATION

On about March 3, 2022 CenterPoint filed for an increase in gas utility rates under the Gas Reliability Infrastructure Program ("GRIP") (Gas Utility Regulatory Act, § 104.301) and proposed an effective date of May 2, 2022, for its increase in rates. CenterPoint's application if approved by the Commission will result in an increase in the monthly customer charges as shown below:

Rate Schedule	Current Customer Charge	Proposed 2022 Interim Rate Adjustment	Adjusted Charge	Increase Per Bill
R-2098-I-GRIP 2022; R-2098-U-GRIP 2022 Residential	\$20.38 per customer per month	\$1.59 per customer per month	\$21.97 per customer per month	\$1.59 per customer per month
GSS-2098-I-GRIP 2022; GSS-2098-U-GRIP 2022 General Service Small	\$40.45 per customer per month	\$2.61 per customer per month	\$43.06 per customer per month	\$2.61 per customer per month
GSLV-629-I-GRIP 2022; GSLV-629-U-GRIP 2022 General Service Large Volume	\$151.10 per customer per month	\$13.74 per customer per month	\$164.84 per customer per month	\$13.74 per customer per month

CenterPoint's proposed increase results in the following approximate percentage increases in *base rates* in an average customer's bill. "Base rates" recover those elements of CenterPoint's costs over which it has direct control, which *excludes* the cost of gas:

Residential Customer:	5.0% increase in average customer's bill
Commercial Customer:	5.3% increase in average customer's bill
General Service – Large Volume:	5.7% increase in average customer's bill

Including the cost of gas, CenterPoint's proposed increase results in the following percentage increases in an average customer's bill:

Residential Customer:	3.1% increase in average customer's bill
Commercial Customer:	2.0% increase in average customer's bill
General Service – Large Volume:	0.75% increase in average customer's bill

REVIEW AND ACTION RECOMMENDED

Although the City's ability to review and effectuate a change in CenterPoint's requested increase is limited, the City should exercise due diligence with regard to rate increases of monopoly utilities who operate within its boundaries, including increases requested under the GRIP statute to ensure compliance with the requirements of that law. This includes whether CenterPoint's current rates produce a rate of return in excess of its authorized rate of return.

To exercise its due diligence, it is necessary to suspend CenterPoint's proposed effective date of May 2, 2022, for forty-five days to June 16, 2022, so that the City can evaluate whether the data and calculations in CenterPoint's rate application are correctly done.

Therefore, ACM's Special Counsel, the law firm of Herrera Law & Associates, PLLC (through Alfred R. Herrera) recommends that the City adopt a resolution suspending CenterPoint's

FINANCIAL:

No financial impact associated with this item

**COUNCIL PRIORITIES: THIS AGENDA ITEM IS CONSISTENT WITH THE
FOLLOWING CITY COUNCIL PRIORITIES**

Not Applicable

CITY CONTACT: Steven Kirkland, City Attorney
kirklands@nactx.us
936-559-2503

ATTACHMENTS: 1. Resolution

RESOLUTION NO. 1298-04-22

A RESOLUTION BY THE CITY OF NACOGDOCHES, TEXAS, ("CITY") REGARDING THE APPLICATION OF CENTERPOINT ENERGY RESOURCES CORP., BEAUMONT/EAST TEXAS DIVISION, TO INCREASE RATES UNDER THE GAS RELIABILITY INFRASTRUCTURE PROGRAM; SUSPENDING CENTERPOINT'S PROPOSED EFFECTIVE DATE FOR FORTY-FIVE DAYS; AUTHORIZING THE CITY'S CONTINUED PARTICIPATION IN A COALITION OF CITIES KNOWN AS THE "ALLIANCE OF CENTERPOINT MUNICIPALITIES;" DETERMINING THAT THE MEETING AT WHICH THE RESOLUTION WAS ADOPTED COMPLIED WITH THE TEXAS OPEN MEETINGS ACT; MAKING SUCH OTHER FINDINGS AND PROVISIONS RELATED TO THE SUBJECT; AND DECLARING AN EFFECTIVE DATE.

WHEREAS: on or about March 3, 2022 CenterPoint Energy Resources Corp., Beaumont/East Texas Division ("CenterPoint") filed for an increase in gas utility rates under the Gas Reliability Infrastructure Program ('GRIP'), resulting in a requested increase in the monthly customer charges as shown in the table below: and

Rate Schedule	Current Customer Charge	Proposed 2022 Interim Rate Adjustment	Adjusted Charge	Increase Per Bill
R-2098-I-GRIP 2022; R-2098-U-GRIP 2022 Residential	\$20.38 per customer per month	\$1.59 per customer per month	\$21.97 per customer per month	\$1.59 per customer per month
GSS-2098-I-GRIP 2022; GSS- 2098-U-GRIP 2022 General Service Small	\$40.45 per customer per month	\$2.61 per customer per month	\$43.06 per customer per month	\$2.61 per customer per month
GSLV-629-I-GRIP 2022; GSLV- 629-U-GRIP 2022 General Service Large Volume	\$151.10 per customer per month	\$13.74 per customer per month	\$164.84 per customer per month	\$13.74 per customer per month

WHEREAS: The City has a responsibility to exercise due diligence with regard to rate increases of monopoly utilities who operate within its boundaries; and

WHEREAS: The application to increase rates by CenterPoint is complex; and

WHEREAS: It is necessary to suspend CenterPoint's proposed effective date of May 2, 2022, for its increase in rates for forty-five days so that the City can assure itself that the data and calculations in CenterPoint's rate application are in accordance with the Section 104.301 of the Gas Utility Regulatory Act; and

WHEREAS: The effective date proposed by CenterPoint is May 2, 2022 but a suspension by the City will mean that the rate increase cannot go into effect prior to June 16, 2022.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF NACOGDOCHES, TEXAS THAT:

Section 1. That the statements and findings set out in the preamble to this resolution are hereby in all things approved and adopted.

Section 2. The City suspends the requested effective date by CenterPoint for forty-five days pursuant to the authority granted the City under Section 104.301 of the Texas Utilities Code. The City finds that additional time is needed in order to review the data and calculations that provide the basis for the rate increase application.

Section 3. The City shall continue its participation with other cities that are part of a coalition of cities known as the Alliance of CenterPoint Municipalities.

Section 4. The City authorizes the law firm of Herrera Law & Associates, PLLC, to act on its behalf in connection with CenterPoint's application to increase rates.

Section 5. To the extent allowed by law, CenterPoint is ordered to pay the City's reasonable rate case expenses incurred in response to CenterPoint's rate increase application within 30 days of receipt of invoices for such expenses.

Section 6. The meeting at which this resolution was approved was in all things conducted in compliance with the Texas Open Meetings Act, Texas Government Code, Chapter 551.

Section 7. This resolution shall be effective immediately upon passage.

PASSED AND APPROVED this _____ day of _____ 2022.

CITY OF NACOGDOCHES

By: _____
JIMMY MIZE, Mayor

ATTEST:

APPROVED AS TO FORM:

Jan Vinson, City Secretary

Steven Kirkland, City Attorney

PRESENTER: Steven Kirkland, City Attorney

ITEM/SUBJECT: Consider adopting a fee waiver policy to leverage the efforts of nonprofit agencies in improving the lives of the citizens of Nacogdoches in a fiscally responsible manner. (City Attorney)

SUMMARY/BACKGROUND: Numerous non-profit agencies provide services or undertake projects that directly serve residents of the City. Frequently, the agencies ask for City participation in funding the services or projects, often in the form of a fee waiver for a permit or other City service required by the agency for the project.

City fees are required by the Texas Constitution to be tied to the costs of issuing the permit, regulating the activity or providing the service. Fees are periodically reviewed and revised to ensure the fee covers, but does not exceed, the costs of the activity associated with the fee. A waiver of the fee transfers those costs to other persons seeking that permit or service. These waivers may be di minimus in impact, but best practices requires an accounting to ensure that is the case.

Even a di minimus impact would be a "gift of public resources" as that term is understood under the Texas Constitution, so a public purpose must be found. Because of the efforts of these agencies, the City does not have to develop programs of its own. For this reason, supporting the agency serves a public purpose.

Due to prior requests and the legal complexities associated with requests for fee waivers, City Council requested the City Attorney to draft a policy providing guidance to staff for "waiving" these fees. The attached policy outlines the types of fees at issue, requires an application setting out the nature of the agency, the specific request and the public purpose that will be served by the request. It gives the City Manager directions on the factors to be considered in granting the request and requires a budget be established for tracking the requests.

While the policy is intended to be comprehensive, it cannot possibly encompass all the ways the City is requested to assist with nonprofit agency projects and services. The policy makes clear that requests that do not fit the policy may be brought to City Council for consideration on an individualized basis.

FINANCIAL:

No financial impact associated with this item

COUNCIL PRIORITIES: THIS AGENDA ITEM IS CONSISTENT WITH THE FOLLOWING CITY COUNCIL PRIORITIES

Community Engagement/Diverse Environment
Neighborhood Revitalization and Attainable Housing

CITY CONTACT: Steven Kirkland, City Attorney
kirklands@nactx.us
936-559-2503

ATTACHMENTS: 1. Fee Waiver Policy 032222

Fee Waiver Policy.

It is the policy of the City of Nacogdoches to leverage the efforts of nonprofit agencies in improving the lives of the citizens of Nacogdoches in a fiscally responsible manner.

To implement this policy, an annual budget will be established by City Council for grants to support direct service to the community and community beautification efforts. Subject to availability of budgeted funds, the City Manager or designee may make a grant to a qualified nonprofit agency in an amount up to or equal to the city fee that is charged to an agency in providing the service. This program will be called the Nacogdoches Fee Waiver program.

Examples of fees^{i,ii} that may be included are: building permit fees, sign permit fees, health permit fees, inspection fees, plan review fees, water meter fees, utility tap fees, dumpster fees, landfill tipping fees, zoning and other planning application fees, subdivision plat fees, facility rental fees.

Generally, a waiver should be requested contemporaneously with or prior to the permit application. Fees that have already been paid by an Agency and are part of an approved waiver application, may be reimbursed if requested within 90 days of the date that they were paid.

Qualified Non Profit Agency means an agency organized under Texas or other state nonprofit organization law which is exempt from federal income tax and 1) which provides direct health, food, shelter, transportation, recreational or emergency services to residents of the City, or 2) which organizes and supports a community beautification effort.

The City Manager has discretion to grant some or all of the fees as (s)he determines appropriate using the following factors:

1. The number of residents receiving direct service from the agency.
2. The income level or disability status of the residents served.
3. The availability of other sources of money to provide the service.
4. Whether the program supports a City sponsored program, facility or community priority.
5. Whether the service is something that is traditionally provided by this City or similar cities in the State of Texas, that, because of the efforts of the nonprofit, the City does not need to establish or operate a program of its own.
6. The regulatory or budgetary requirements of the program or city service requiring a fee.
7. The amount of money available in the budget.

The City Manager shall require an application:

1. establishing the agency is a qualified nonprofit agency,
2. identifying the fees for which the agency seeks a grant,
3. describing how the grant will serve a public purpose, and
4. with such information as the agency may provide to assist the City Manager in evaluating the first four factors listed above.

The City Manager may bring any request that does not meet these requirements to City Council for action by Council.

ⁱ The City does not currently charge facility use fees to other governmental and semi governmental agencies that share facilities with the City on a reciprocal basis as needed.

ⁱⁱ The City does not currently charge a permit fee for festivals and events and this policy is not intended to address any future festival or event fees.

PRESENTER: Steven Kirkland, City Attorney, Steve Bartlett, Public Works Director, Pam Curbow, Finance Director

ITEM/SUBJECT: Receive a report, hold a discussion and give staff direction on an ordinance or policy to provide local preferences in procurement. (City Attorney)

SUMMARY/BACKGROUND: The City Council has requested that city purchases be directed where appropriate to local businesses. This workshop will present the statutory framework for granting local preferences and present a draft ordinance for discussion.

The Texas Local Government Code requires competitive bidding for purchases over \$50,000. Tx LGC 252.021. The City is required to award the contract to the lowest responsible bidder, unless the best value bidding process is followed. Tx LGC 252.043.

Under certain circumstances, the City may give a preference to local businesses. If a local business submits a bid that is 3% or 5% higher than the lowest non-local bid, the City may award the contract to a local bidder. The percentage varies depending on the type of purchase being awarded. The chart below shows the variations:

	Less than \$50,000	Less than \$100,000	Less than \$500,000	Over \$500,000
Goods	5%	5%	5%	3%
Services	5%	5%	5%	--
Construction	5%	5%	--	—
Professional	Knowledge of local conditions is a permitted consideration.			

Local Government Code 271.9051

Local Government Code 271.905

This is not specifically in the statute and has not been tested, but San Antonio and Houston ordinances have this consideration explicitly stated.

A city does not have to have an ordinance or even a policy to utilize the local preference statute. It may be done on a purchase by purchase basis, but the invitations to bid must state that the preference may be utilized. Texas cities have taken varied approaches to using the preference. Houston and San Antonio have adopted ordinances. Many other cities have incorporated local preferences into their purchasing policies. Ordinances tend to be more prescriptive, but transparent. Policies tend to be more flexible and nimbly deployed, but are less visible to the public. While ordinances require Council action, policies may be implemented without a Council vote.

A draft of an Ordinance is attached. The basic terms follow the statute, but there are some provisions that the Council will need to give direction if it chooses to do an Ordinance.

1. The definition of "principal place of business" is not defined in the statute. The offered definition was copied from the San Antonio ordinance, but the number of employees working in the city was lowered. That number may be adjusted or some other definition may be utilized.

The statute does require that the place of business must be located within the city limits.

2. There is no statutory requirement for bidding contracts under \$50,000, so the local preference statutes are not triggered. The practice for the City is to require three quotes for each purchase below \$50,000. The City is required to get two quotes from Historically Underutilized Businesses, Tx LGC 252.0215, for purchases between \$3,000 and \$50,000. Our City allows a 5% local preference, but otherwise purchases from the lowest quote.

There are other significant barriers to local participation in city contracts. State law requires all construction contracts to have performance and payment bonds, requires contractors to carry worker's compensation insurance and pay prevailing wages. The City has generally used these requirements as a standard across the board even where not necessarily required by statute. These are costs that some local providers are unwilling or unable to bear. Therefore, staff recommends that these insurance and other requirements be lowered to allow smaller, local businesses to compete for the City's business where allowed by statute.

Finally, communication regarding City purchasing needs and local supplier capacities has been inadequate to ensure meaningful opportunities to bid on City contracts. If this program is approved by the City Council, Staff recommends issuing a press release and social media campaign to explain the Buy Nacogdoches Program. Staff will also update the City's procurement page on the website to explain the program. Lastly, work with NEDCO and the Nacogdoches Chamber to assist the City to communicate to their members the City's Nacogdoches Buy Program and where to obtain more details regarding the recent changes.

FINANCIAL:

No financial impact associated with this item

COUNCIL PRIORITIES: THIS AGENDA ITEM IS CONSISTENT WITH THE FOLLOWING CITY COUNCIL PRIORITIES

Economic Development

CITY CONTACT: Steve Kirkland, City Attorney
kirklands@nactx.us
936-559-2503

ATTACHMENTS: 1. Draft Ordinance

Chapter 2 – ADMINISTRATION

Article V Buy Nacogdoches

Sec. 2-210. - Declaration of policy.

(a) It is the policy of the city to use the city's spending powers in a manner that promotes fiscal responsibility and maximizes the effectiveness of local tax dollars by ensuring a portion of citizens' tax dollars remain in the local economy for economic benefit of the citizens by utilizing all available legal opportunities to contract with city businesses.

(b) It is the policy of the city to achieve the policy goal in subsection (a) above by utilizing all permissible tools.

(c) Nothing in this article prohibits the city from rejecting all bids.

Sec. 2-211. - Definitions.

The following words and phrases, when used in this article, have the meanings provided in this section:

Bid means any procurement method governed by the Texas Local Government Code, Title 8, Subtitle C, Acquisition, Sale or Lease of Property, or as it may be amended.

City business means a business with a principal place of business within the city limits. When a bidder is a joint venture, each joint venture partner must meet the definition of a city business to be eligible for the preference described in this article.

Local business means a business with a principal place of business in Nacogdoches County. When a bidder is a joint venture, each joint venture partner must meet the definition of a local business to be eligible for the preference described in this article.

Principal place of business means the location where the business is:

(1) headquartered; or

(2) has an established place or places of business from which

(a) 5 or more full time employees of the business, or

(b) 20% or more of the entity's workforce are regularly based,

and from which a substantial role in the entity's performance of a commercially useful function or a substantial part of its operations is conducted by those employees.

A location utilized solely as a post office box, mail drop or telephone message center or any combination thereof, with no other substantial work function, shall not be construed as a principal place of business.

State Law reference— Similar provisions, V.T.C.A., Local Government Code §§ 271.905, 271.9051

Sec. 2-212. - Purchases of personal property.

(a) In purchasing any personal property that is not affixed to real property, if the city receives one or more bids from a bidder that is a city business and whose bid is within three percent of the lowest bid price received by the city from a bidder who is not a city business, the city may, subject to the provisions of Section 2-216, enter into a contract with:

(1) The lowest bidder; or

(2) The bidder that is a city business, as defined in this article.

(b) In purchasing any personal property that is not affixed to real property, if the city receives one or more bids from a bidder that is a city business and whose bid is within five percent of the lowest bid price received by the city from a bidder that is not a city business, the city may, subject to the provisions of Section 2-216, enter into a contract for an expenditure of less than \$500,000.00 with:

(1) The lowest bidder; or

(2) The bidder that is a city business, as defined in this article.

State Law reference— Similar provisions, V.T.C.A., Local Government Code §§ 271.905, 271.9051

Sec. 2-213. - Purchases of services.

(a) In purchasing services, not including professional or construction services, if the city receives one or more bids from a bidder that is a city business and whose bid is within five percent of the lowest bid price received by the city from a bidder who is not a city business, the city may, subject to the provisions of Section 2-216, enter into a contract for an expenditure of less than \$500,000.00 with:

(1) The lowest bidder; or

(2) The bidder that is a city business, as defined in this article.

(b) In purchasing construction services, if the city receives one or more bids from a bidder that is a city business and whose bid is within five percent of the lowest bid price received by the city from a bidder who is not a city business, the city may, subject to the provisions of Section 2-216, enter into a contract for an expenditure of less than \$100,000.00 with:

(1) The lowest bidder; or

(2) The bidder that is a city business, as defined in this article.

(c) In procuring architectural, engineering or land surveying services under the Professional Services Procurement Act, Tex. Gov't. Code, § 2254.004, the contracting department shall, when appropriate, consider knowledge of local conditions as part of the qualifications determination.—

State Law reference— Similar provisions, V.T.C.A., Local Government Code §§ 271.9051.

Sec. 2-214. - Purchases under \$50,000.00.

When procuring goods or services valued at less than \$50,000.00 that are not the subject of a blanket purchase order or contract, the city may, subject to the requirements of Section 2-216, select vendors and services providers who are city or local businesses, provided that any such vendor's quote is no more than five percent greater than the lowest quote in the event the lowest quote is from one other than a city business or a local business.

Sec. 2-215. - Buy Nacogdoches Program — Responsibilities and enforcement.

(a) The City Manager or his designee shall be responsible for establishing the documentation necessary to establish a principal place of business in the city or local area. Any entity claiming to be a city or local

business shall submit to the city a form promulgated by the City Manager, attested to by a duly authorized representative of the business. The City Manager shall make the final determination as to whether a business is a city or local business.

(b) The contracting or evaluating department shall award additional points to a local business in any bid based on a "best value" evaluation.

(c) The City Manager, in consultation with the City Attorney, is directed to provide guidance on best value bids to departments for implementing this article. Such guidance shall include a preference structure that grants the highest number of points to a city business, the next higher number of points to a local business, and no points to a business located outside of the city or local area.

(d) The submission of a form pursuant to subsection (a) above found to contain false information is grounds for debarment from any future contracts with the City.

Sec. 2-216. - Buy Nacogdoches Program—Exceptions.

(a) This program does not apply to any contract in which the federal government participates in the form of a grant or loan, or the city acts as a conduit for federal money.

(b) This program does not apply to contracts in which the contracting department has determined that it would unduly interfere with contract needs. In cases of purchases over \$100,000.00, such determination shall be made in writing, expressly approved by the City Manager.

(c) In accordance with Local Government Code § 271.9051, this program does not apply to the purchase of telecommunications services or information services, as those terms are defined by 47 U.S.C. Section 153.

Sec. 2-217. - Buy Nacogdoches Program—Effective date.

(a) This article shall be effective as to solicitations for procurements published on or after _____, 2022.

(b) The program will expire upon the publication on the city website of a comprehensive purchasing policy.

