

Date: July 24, 2020

ADDENDUM NO. THREE (3)
PROJECT NO: 116769R
TITLE OF PROJECT: Dam Reconstruction
FACILITY LOCATION: Bastrop State Park, Bastrop County Texas

NOTICE TO ALL OFFERORS:

This addendum shall be considered part of the Contract Documents and is issued to change, amplify, or delete from or otherwise explain the documents where provisions of this addendum differ from those of the original contract documents. This addendum shall have precedence over the original contract documents and shall govern.

Offerors are hereby notified that they shall incorporate this addendum in their proposal, and it shall be construed that the Contractor's Proposal shall reflect with full knowledge, all items, changes and modifications to the contract documents herein specified.

Offerors are advised to check for updates, addenda issuance, and proposal opening date changes at the TPWD Infrastructure Division Website:

http://www.tpwd.state.tx.us/business/bidops/current_bid_opportunities/construction/

REPLACE the Revised Contractor's Price Proposal issued with Addendum No. 2 on July 7, 2020 with the attached **Revised 07/24/20 Contractor's Price Proposal** dated July 24, 2020. *(9 pages)*

REPLACE Specification Section 33 11 13 Concrete Pressure Pipe Bar-Wrapped Steel Cylinder Type issued with Addendum No. 2 on July 7, 2020 with the attached **Specification Section 33 11 13 – Prestressed Concrete Pressure Pipe, Steel Cylinder Type** *(12 pages)*

The deadline for receipt of Proposals is hereby **extended** to **August 6, 2020 at 2:00PM (CT)**

Offerors shall acknowledge receipt of this addendum in the space provided on the Contractor's Price proposal form located above the signature block. WARNING: OFFEROR'S FAILURE TO ACKNOWLEDGE RECEIPT OF ADDENDA MAY RESULT IN REJECTION OF PROPOSAL.

END OF ADDENDUM NUMBER THREE (3)

Sincerely,

/s/Mindi Johnson for Mandy Holcomb

Mandy Holcomb, CTCD, CTCM
Sr. Contract Manager
Infrastructure Division

Attachments:

1. Revised Contractor's Price Proposal (9 Pages)
2. Specification Section 33 11 13 – Prestressed Concrete Pressure Pipe, Steel Cylinder Type (12 Pages)

TEXAS PARKS AND WILDLIFE

REVISED BY ADDENDUM NO. 3 CONTRACTOR'S PRICE PROPOSAL

Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

Having carefully examined the Request for Competitive Sealed Proposals (CSP) for **Project No. 116769R, Dam Reconstruction located at Bastrop State Park, Bastrop County, Texas** for the Texas Parks and Wildlife Department, as well as the premises and conditions affecting this work, and all other contract documents, the undersigned proposes to furnish all labor, equipment and materials necessary to complete the work for the sum of:

PRICE PROPOSAL SCHEDULE					
Furnish all labor, equipment, materials, and incidentals necessary to provide Dam Reconstruction located at Bastrop State Park in accordance with the Request for Competitive Sealed Proposals and Contract Documents for the following:					
BASE PROPOSAL ITEMS NO. 1 - 66					
ITEM	ITEM DESCRIPTION	ESTIMATED	UOM	UNIT PRICE	PRICE
1	Mobilization	1	LS		\$ -
2	Preparation of ROW	5	AC		\$ -
DAM RECONSTRUCTION					
3	Toad Fence	4,130	LF		\$ -
4	Care of Water	24	MO		\$ -
5	Rock berm	100	LF		\$ -
6	Erosion Control Log	4,140	LF		\$ -
7	Slurry Wall	14,130	SF		\$ -
8	Downstream ROW Clearing	0	N/A		\$ -
9	Concrete Riprap	590	SY		\$ -
10	Concrete Stilling Basin, Integral Color	460	CY		\$ -
11	Concrete Retaining Walls, Integral Color	5,195	SF		\$ -
12	Concrete Principal Spillway Riser, Integral Color	1	LS		\$ -
13	Baffled Outlet	27	CY		\$ -

ITEM	ITEM DESCRIPTION	ESTIMATED	UOM	UNIT PRICE	PRICE
14	Reinforced Concrete Maintenance Ramp	45	SY		\$ -
15	Roller Compacted Concrete (RCC)	3,220	CY		\$ -
16	18-foot Double Swing Gate	1	EA		\$ -
17	26-foot Double Swing Gate	1	EA		\$ -
18	36-foot Double Swing Gate	1	EA		\$ -
19	Pedestrian Rail	330	LF		\$ -
20	Excavation	22,720	CY		\$ -
21	Rock Riprap (12")	310	CY		\$ -
22	Rock Riprap (18")	75	CY		\$ -
23	Grouted Rock Riprap (18")	370	CY		\$ -
24	Topsoil	3,230	SY		\$ -
25	Tree & Stump Removal (Clearing and Grubbing)	0	N/A		\$ -
26	Vegetative Watering	3,230	SY		\$ -
27	Irrigation	1	LS		\$ -
28	Seeding	3,230	SY		\$ -
29	Temporary Erosion Control Blanket	3,775	SY		\$ -
30	Permanent Erosion Control Blanket	1,305	SY		\$ -
31	Trees (installation, staking, bed prep, & backfill)	79	EA		\$ -
32	Trees (loblolly pine, planting only)	159	EA		\$ -
33	6-inch PVC Pipe	256	LF		\$ -
34	6-inch Slotted PVC Drain	1,715	LF		\$ -
35	5'x5' Manhole	2	EA		\$ -
36	60" Prestressed Concrete Lined Steel Cylinder Pipe (AWWA C301)	130	LF		\$ -
37	Embankment (Structural Fill)	9,155	CY		\$ -
38	Embankment (Clay/Impervious Fill)	440	CY		\$ -

ITEM	ITEM DESCRIPTION	ESTIMATED	UOM	UNIT PRICE	PRICE
39	Piezometer	2	EA		\$ -
DAM RECONSTRUCTION SUBTOTAL					\$ -
Note: All roadway elements associated with the dam are included in the Roadway subtotal.					
ROADWAY					
ITEM	ITEM DESCRIPTION	ESTIMATED	UOM	UNIT PRICE	PRICE
40	Traffic Control	24	MO		\$ -
41	6-inch Continuously Reinforced Concrete	550	SY		\$ -
42	Excavation	630	CY		\$ -
43	Topsoil	2,735	SY		\$ -
44	Embankment	2,850	CY		\$ -
45	Vegetative Watering	2,735	SY		\$ -
46	Seeding	2,735	SY		\$ -
47	Temporary Erosion Control Blanket	1,105	SY		\$ -
48	Flexible Base	2,025	SY		\$ -
49	Cement Treated Aggregate Base	800	SY		\$ -
50	HMA (Base Course, Type B) (Prime Coat, Tack Coat)	1,921	SY		\$ -
51	HMA (Surface Course, Type D)	2,316	SY		\$ -
52	6-inch Curb & Gutter	780	LF		\$ -
53	Metal Beam Guard Fence	350	LF		\$ -
54	Small Signs Assembly	39	EA		\$ -
55	Delineators	16	EA		\$ -
56	18" Class III Reinforced Concrete Pipe	90	LF		\$ -
ROADWAY SUBTOTAL					\$ -
PARKING AREA					
ITEM	ITEM DESCRIPTION	ESTIMATED	UOM	UNIT PRICE	PRICE
57	Topsoil	2,355	SY		\$ -
58	Embankment	3,820	CY		\$ -

ITEM	ITEM DESCRIPTION	ESTIMATED	UOM	UNIT PRICE	PRICE
59	Vegetative Watering	2,355	SY		\$ -
60	Seeding	2,355	SY		\$ -
61	Temporary Erosion Control Blanket	1,370	SY		\$ -
62	Flexible Base	1,175	SY		\$ -
63	HMA (Base Course, Type B) (Prime Coat, Tack Coat)	1,159	SY		\$ -
64	HMA (Surface Course, Type D)	1,104	SY		\$ -
65	Wheel Stops	8	EA		\$ -
66	Small Signs Assembly	12	EA		\$ -
PARKING AREA SUBTOTAL					\$ -
TOTAL BASE PROPOSAL ITEMS NO. 1 - 66					\$ -

Total Base Proposal Items 1-66 written in words

ALTERNATE PROPOSAL ITEM NO. 1 - Furnish equipment, materials and incidentals necessary to provide Lake Aerator equipment including weighted air tubing, flexible membrane disc diffusers, and associated couplings in accordance with the Request for Competitive Sealed Proposals and Contract Documents.

ITEM	ITEM DESCRIPTION	ESTIMATED	UOM	UNIT PRICE	PRICE
67	Lake Aerator Equipment	1	LS		\$ -
TOTAL ALTERNATE PROPOSAL ITEM NO. 1					\$ -

Total Alternate Proposal Item No. 1 written in words

ALTERNATE PROPOSAL ITEM NO. 2 - Furnish all labor, equipment, materials, and incidentals necessary to repair Park Roads 1A and 1C from New Parking Area to Harmon Road in accordance with the Request for Competitive Sealed Proposals and Contract Documents.

ITEM	ITEM DESCRIPTION	ESTIMATED	UOM	UNIT PRICE	PRICE
68	Park Road 1A and 1C Full Depth Repair	6,000	SY		\$ -

ITEM	ITEM DESCRIPTION	ESTIMATED	UOM	UNIT PRICE	PRICE
69	Park Road 1A and 1C Overlay	22,225	SY		\$ -
TOTAL ALTERNATE PROPOSAL ITEM NO. 2					\$ -

Total Alternate Proposal Item No. 2 written in words

TOTAL BASE PROPOSAL ITEMS NO. 1-66 + ALTERNATE PROPOSAL ITEM NO. 1, ITEM 67 + ALTERNATE PROPOSAL ITEM NO. 2., ITEMS 68 AND 69	\$ -
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Total Base Proposal Items No. 1-66 + Alternate Proposal Item No. 1, Item 67 + Alternate Proposal Item No. 2, Items 68 and 69, written in words

EACH PRICEING ITEM includes any and all appurtenant work and items necessary for fully functional and operational systems, COMPLETE AND IN PLACE, IN ACCORDANCE WITH THE Request for Competitive Sealed Proposals and Contract Documents. 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 prices bid. Work that is subsidiary to pay items includes, but is not limited to the following: SWPPP, aggregate drainage material, cleanout, backflow prevention valve, rodent guard, pedestrian rail, trash rack, slide gate, ladders, markers and striping, temporary seeding, concrete and/or asphalt pavement replacement (in areas outside of the pay limits that was damaged by the contractor), and all other work required to complete the project and restore the area of construction to preconstruction condition

UNIT PRICE as stated in the Price Proposal Schedule is the price per unit of measure for materials and services to be added to the Contract Sum by appropriate change order in the event it is determined by Owner that the materials and services are necessary.

The determination of the lowest Proposal price (for receipt of the total 40% points assigned to Criteria One, Item 6 of the CSP) will be based on the TOTAL BASE PROPOSAL ITEMS NO 1 - 66, ALTERNATE PROPOSAL ITEM NO. 1 AND ALTERNATE PROPOSAL ITEM NO. 2. HOWEVER, THE OWNER RESERVES THE RIGHT TO AWARD ANY COMBINATION OF PROPOSAL ITEMS OR TO REJECT ALL PROPOSALS.

OFFEROR UNDERSTANDS AND ACKNOWLEDGES THAT OFFEROR MUST MEET THE MINIMUM EXPERIENCE REQUIREMENT SET FORTH IN DIVISION 1, GENERAL REQUIREMENTS, SECTION 01000, SPECIAL CONDITIONS TO BE ELIGIBLE FOR AWARD OF THIS CONTRACT. OFFEROR, BY SIGNING THIS PROPOSAL, AFFIRMS THAT OFFEROR MEETS SUCH MINIMUM REQUIREMENTS.

The undersigned further agrees that, if awarded the Contract, the work will be completed within **seven hundred thirty (730) calendar days** commencing on the date specified in the Notice to Proceed.

The undersigned agrees that when written notice of proposal acceptance is furnished by the Owner within ninety **(90)** calendar days after the deadline for receipt of proposals, the undersigned will, within the stipulated time, execute and deliver the contract and all required bonds, certificates of

insurance, and PR-1 and PR-2 submittals and Form 1295 to the Owner. Failure to timely provide the insurance certificate, bonds, and submittals shall be grounds for disqualification of proposal and forfeiture of bid security. In such circumstances, TPWD shall be authorized to proceed to the next offeror in the order of the selection ranking.

If the above proposal amount exceeds \$25,000.00, the undersigned shall include herewith security in the form of a bid bond, certified check, or cashier's check for an amount not less than five percent (5%) of the total amount of the price to be awarded by Owner, unless otherwise stipulated under Special Conditions. To ensure adequate bid security, offerors should calculate bid security based on the total amount of all base price items plus all additive alternate prices (if any). The bid security will be returned to or forfeited by the undersigned in accordance with the Bid Security provision in the Instructions to Offerors. The undersigned further agrees that this bid security is the appropriate measure of liquidated damages which the Owner will sustain by the failure of the undersigned to execute and deliver said contract and required documents.

The undersigned agrees that this proposal will not be withdrawn for a period of ninety (90) calendar days from the date set for receipt of proposals, and the undersigned further agrees that the bid security will be forfeited in the event this proposal is withdrawn before expiration of said ninety (90) calendar days.

Pursuant to 2252.908 of the Government Code, the awarded Contractor(s) must use the Texas Ethics Commissions Application to enter the required information on Form 1295. Awarded Contractor(s) shall print a copy of the completed form, which will include a certification of filing that will contain a unique certification number. An authorized agent of the business entity must sign the printed copy of the form and have the form notarized. The completed Form 1295 with the certification of filing must be filed at the time of execution of the contract.

Additional information can be found at:

https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm

Offeror represents and warrants that, in accordance with Section 2155.005 of the Texas Government Code, neither the Offeror, nor the firm, corporation, partnership, or institution represented by the Offeror, or anyone acting for such firm, corporation, or institution has (1) violated any provision of the Texas Free Enterprise and Antitrust Act of 1983, Chapter 15 of the *Texas Business and Commerce Code*, or the Federal antitrust laws, or (2) communicated directly or indirectly the contents of this bid to any competitor or any other person engaged in the same line of business as the Offeror.

Pursuant to *Texas Government Code*, Title 10, Subchapter A, §2155.004 (a), Offeror certifies that neither Offeror nor any person or entity represented by Offeror has received compensation from TPWD to participate in the preparation of the specifications or solicitation on which this bid or contract is based. Under §2155.004 (b) of the Texas Government Code, Offeror certifies that the individual or business entity named in this bid or contract is not ineligible to receive the specified contract and acknowledges that the contract may be terminated, and payment withheld if this certification is inaccurate.

Pursuant to *Texas Government Code*, Title 10, Subchapter A, §2155.004 (b), §2155.006 (c), and Subchapter B, §2261.053 (c), Offeror certifies that the individual or business entity named in this bid is not ineligible to receive the specified contract and acknowledges that this contract may be terminated and payment withheld if this certification is inaccurate.

By signature hereon, the Offeror hereby certifies that he/she is not currently delinquent in the payment of any franchise taxes owed the State of Texas under Chapter 171, Tax Code. Making a false statement as to corporate tax status is a material breach of contract.

Offeror certifies that the bidding entity 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. Entities ineligible for federal procurement are listed at

<http://www.sam.gov>.

Offeror certifies that it is not listed in the prohibited vendors list authorized by Executive Order No. 13224, "Blocking Property and Prohibiting Transactions with Persons Who Commit, Threaten to Commit, or Support Terrorism", published by the United States Department of the Treasury, Office of Foreign Assets Control.

Under Section 2155.0061 of the Texas Government Code, the Offeror certifies that the individual or business entity named in this Response or contract is not ineligible to receive the specified contract and acknowledges that this contract may be terminated, and payment withheld if this certification is inaccurate.

Pursuant to Section 2155.003 of the Texas Government Code, Offeror represents and warrants that it 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 the contract.

Offeror agrees that any payments due under this contract shall be applied towards any debt or delinquency that is owed to the State of Texas.

Offeror represents and warrants its compliance with the requirements of the Americans With Disabilities Act (ADA) and its implementing regulations, as each may be amended.

Offeror agrees to comply with *Texas Government Code*, Title 10, Subtitle D, §2155.4441, relating to use of service contracts and the purchase of products and materials produced in the State of Texas.

Offeror certifies that if a Texas address is shown as the address of the Offeror on this bid, Offeror qualifies as a Texas Bidder as defined in Section 2155.444(c) of the Texas Government Code.

If Offeror is required to make a certification pursuant to Section 2271.001 of the Texas Government Code, Offeror certifies that Offeror does not boycott Israel and will not boycott Israel during the term of the contract resulting from this solicitation. If Offeror does not make that certification, Offeror must indicate that in its Bid and state why the certification is not required.

Section 2252.152 of the Texas Government Code prohibits TPWD from awarding a contract to any person who does business with Iran, Sudan, or a foreign terrorist organization as defined in Section 2252.151 of the Texas Government Code. Offeror certifies that it is not ineligible to receive the contract.

By signature hereon, the Offeror acknowledges that *Texas Government Code*, Title 10, Subchapter F, §§ 2252.201-2252.205 requires that all iron or steel products produced through a manufacturing process used in this project must be produced in the United States. By signing this bid, Offeror certifies that its bid price represents full compensation for compliance with the requirements of *Texas Government Code*, Title 10, Subchapter F, §§ 2252.201-2252.205.

Pursuant to Section 2254.0031 of the Texas Government Code, which incorporates by reference Section 271.904(d) of the Texas Local Government Code, Offeror shall perform services (1) with professional skill and care ordinarily provided by competent engineers or architects practicing under the same or similar circumstances and professional license, and (2) as expeditiously as is prudent considering the ordinary professional skill and care of a competent engineer or architect.

By signing this bid, Offeror acknowledges and understands that the acceptance of funds by the Offeror or any other entity or person directly under this Contract, or indirectly through a subcontract under this Contract, shall constitute acceptance of the authority of the State Auditor's Office, Comptroller or other agency of the State of Texas, TPWD or any successor agency, to conduct an audit or investigation in connection with those funds. The Offeror further agrees to cooperate fully with the above parties in the conduct of the audit or investigation, including

providing access to any information the state auditor considers relevant to the investigation or audit. The Offeror shall ensure that this paragraph concerning the State's authority to audit funds received indirectly by subcontractors through the Offeror and the requirement to cooperate is included in any subcontract it awards.

Offeror represents and warrants that the provision of goods and services or other performance under the contract will not constitute an actual or potential conflict of interest or reasonably create an appearance of impropriety.

Under Section 231.006(d) of the Texas Family Code, regarding child support, the Offeror certifies that the individual or business entity named in this bid 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 Offeror subject to Section 231.006 of the Texas Family Code, must include, in the spaces(s) below, the names and Social Security numbers of each person with at least 25% ownership of the business entity submitting the bid.

Name	SSN	%
Name	SSN	%
Name	SSN	%
Name	SSN	%

FEDERAL PRIVACY ACT NOTICE: This notice is given pursuant to the Federal Privacy Act. Disclosure of your Social Security Number (SSN) is required under Section 231.006(c) and Section 231.302(c)(2) of the Texas Family Code. The SSN will be used to identify persons that may owe child support. The SSN will be kept confidential to the fullest extent allowed under Section 231.302(e), Texas Family Code.

Under Section 669.003 of the *Texas Government Code*, Offeror certifies that it does not employ, or has disclosed its employment of, any former executive head of the agency. Offeror must provide the following information in the bid.

Name of former executive: _____

Name of State agency: _____

Date of separation from State agency: _____

Position with Offeror: _____

Date of employment with Offeror: _____

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**RECEIPT IS HEREBY ACKNOWLEDGED OF THE FOLLOWING ADDENDA TO THIS IFB
(INITIAL IF APPLICABLE)**

No. 01 _____ No. 02 _____ No. 03 _____ No. 04 _____ No. 05 _____
No. 06 _____

**WARNING: OFFEROR'S FAILURE TO ACKNOWLEDGE RECEIPT OF ADDENDA MAY RESULT
IN REJECTION OF BID.**

OFFEROR'S AFFIRMATION: SIGNING THIS BID WITH A FALSE STATEMENT OR MATERIAL MISREPRESENTATIONS MADE DURING THE PERFORMANCE OF A CONTRACT IS A MATERIAL BREACH OF CONTRACT AND SHALL VOID THE SUBMITTED BID OR ANY RESULTING CONTRACTS.

The undersigned certifies that I am duly authorized to submit this bid and execute a contract on my own behalf or on behalf of the Offeror listed below.

_____			By _____	
Name of Contracting Firm			Authorized Signature	Date
_____			_____	
Address			Printed Name	
_____			_____	
City	State	Zip	Title	
_____			_____	
(Area Code) Phone Number			(Area Code) Phone Number	
_____			_____	
Email address			(Area Code) FAX Number	
_____			_____	
Texas Identification Number			(Area Code) Cell Number	

SECTION 33 11 13 – PRESTRESSED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE

PART 1 - GENERAL

1.1 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment

1. Concrete Pressure Pipe

a. Measurement

- 1) Measured horizontally along the surface from center line to centerline of the fitting or appurtenance

b. Payment

- 1) The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” shall be paid for at the unit price bid per schedule of values.

c. The price bid shall include:

- 1) Furnishing and installing Concrete Pressure Pipe with joints as specified by the Drawings, Mobilization, Coating, Lining, Pavement removal, Excavation, Hauling, Disposal of excess material, Furnishing, placement, and compaction of embedment, Trench water stops, Joint restraint, Bolts and nuts, Welding, Gaskets, if allowed, Furnishing, placement, and compaction of backfill, Clean-up, Cleaning, Disinfection and Testing.

2. Concrete Pressure Pipe Fittings

a. Measurement

- 1) Measurement for this Item shall be by lump sum.

b. Payment

- 1) The work performed and materials furnished in accordance with this Item shall be paid for subsidiary to concrete pressure pipe.

c. The price bid shall include:

- 1) Furnishing and installing Concrete Pressure Pipe Fittings as specified by the Drawings, Mobilization, Coating, Lining, Pavement removal, Excavation, Hauling, Disposal of excess material, Furnishing, placement, and compaction of embedment, Trench water stops, Joint restraint, Bolts and nuts, Welding, Gaskets, if allowed, Furnishing, placement, and compaction of backfill, Clean-up, Cleaning, Disinfection, Testing

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME):

ASME B16.1 Gray Iron Pipe Flanges and Flanged Fittings (Classes 25, 125 and 250).

AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM):

ASTM A242 Standard Specification for High-Strength Low-Alloy Structural Steel.

ASTM A307 Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

ASTM B117 Standard Practice for Operating Salt Spray (Fog) Apparatus.

ASTM B633 Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.

ASTM C33 Standard Specification for Concrete Aggregates.

ASTM C144 Standard Specification for Aggregate for Masonry Mortar.

ASTM C150 Specification for Portland Cement.

ASTM C293 Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Center-Point Loading).

ASTM C497 Methods of Testing Concrete Pipe.

ASTM C882 Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear.

ASTM C1090 Standard Test Method for Measuring Changes in Height of Cylindrical Specimens of Hydraulic-Cement Grout.

ASTM E165 Standard Practice for Liquid Penetrant Examination for General Industry.

AMERICAN WELDING SOCIETY (AWS):

AWS D1.1 Structural Welding Code - Steel.

AMERICAN WATER WORKS ASSOCIATION (AWWA):

AWS C206 Field Welding of Steel Water Pipe.

AWS C207 Steel Pipe Flanges for Waterworks Service - Sizes 4 IN through 144 IN.

AWS C301 Prestressed Concrete Pressure Pipe, Steel-Cylinder Type.

AWS M9 Concrete Pressure Pipe.

AMERICAN WATER WORKS ASSOCIATION/AMERICAN NATIONAL STANDARDS INSTITUTE (AWWA/ANSI):

AWWA/ANSI C111/A21.11 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

1.3 SUBMITTALS

A. Product Data

1. Exterior Coating
 - a. Material data
 - b. Application recommendations
 - c. Field touch-up procedures
2. Joint Wrappers
 - a. Material
 - b. Installation recommendations
3. Flexible Joint Couplings
 - a. Manufacturer
 - b. Model
4. Mixes
 - a. Mortar for interior joints and patches
 - b. Bonding agents for patches
5. Gaskets (if applicable)

B. Shop Drawings – Furnish for Concrete Pressure Pipe used in the potable water systems including:

1. Wall thickness design calculations sealed by a Licensed Professional Engineer in Texas including:
 - a. Internal pressure
 - 1) Working Pressure
 - 2) Test Pressure
 - 3) Surge pressure
 - b. External pressure
 - 1) Deflection
 - 2) Buckling
 - c. Special physical loading such as supports or joint design
 - d. Thermal expansion and/or contraction, if applicable for the proposed installation
2. Thrust restraint calculations for all fittings and valves including the restraint length sealed by a Licensed Professional Engineer in Texas.
3. Fabrication and lay drawings showing a schematic location with profile and a tabulated layout schedule that is sealed by a Licensed Professional Engineer in Texas and includes:
 - a. Pipe class
 - b. Joint types
 - c. Fittings

- d. Thrust Restraint
- e. Stationing (in accordance with the Drawings)
- f. Transitions
- g. Joint deflection
- h. Outlet locations for welding, ventilation, and access
- i. Welding requirements

C. Certificates and Test Reports

- 1. Submittals for certificates and testing reports shall be as outlined in Article 1.4 of this Section.

1.4 QUALITY ASSURANCE

A. Qualifications

1. Manufacturers

- a. Shall be American Concrete Pressure Pipe Association (ACPPA) Quality Program certified, I.S.O. Quality Certification Program certified, or equal, for Concrete Pressure Pipe and accessory manufacturing.
- b. Pipe manufacturing operations (pipe, lining, and coatings) shall be performed under the control of the manufacturer.
- c. Pipe shall be the product of 1 manufacturer which has had not less than 5 years successful experience manufacturing AWWA C301 pipe of the particular type and size indicated.
 - 1) This experience record will be thoroughly investigated by the Engineer, and acceptance will be at the sole discretion of the Engineer and City.
 - 2) Pipe manufacturing operations (pipe, fittings, lining, and coating) shall be performed at 1 location, unless otherwise approved by the Engineer.
- d. Pipe shall be manufactured in accordance with the latest revisions of AWWA C301.

B. Certifications

- 1. Prior to shipment of the pipe, the Pipe Manufacturer shall submit the following:
 - a. A Certificate of Adequacy of Design stating that the pipe to be furnished complies with AWWA C301 and these Specifications
 - b. Copies of results of factory hydrostatic tests shall be provided to the Engineer
 - c. Mill certificates, including chemical and physical test results for each heat of steel
 - 1) The manufacturer shall perform the tests described in AWWA C301, for all pipe, fittings, and specials, except that the absorption test detailed in this Specification shall supersede the requirements of the applicable portion of AWWA C301.
 - d. Certified test reports for welder certification for factory and field welds in accordance with AWWA C301, Section 5
 - e. Certified test reports for cement mortar tests

f. Certified test reports for steel cylinder tests

C. Hydrostatic Pressure Testing

1. Hydrostatic pressure testing shall meet or exceed the requirements of AWWA C301 Section 4.6 – Fabrication.
 - a. Each pipe cylinder, with rings welded to its ends, shall be hydrostatically tested prior to application of lining or coating.
 - b. The internal test pressure shall be that which results in a fiber stress equal to 75 percent of the minimum yield strength of the steel used.
 - c. Each pipe cylinder tested shall be completely watertight under maximum test pressure.
 - d. Test pressure shall be held for sufficient time to observe the weld seams.
 - e. Pipe manufacturer shall maintain a recording of the pressure gauge report and provide to the Engineer.
2. Fittings shall be fabricated from hydrostatically tested pipe or fabricated of welded steel sheets or plates.
 - a. Fittings shall be tested in accordance with AWWA C301.
3. Factory Testing
 - a. Cement Mortar Coating - Absorption Test
 - 1) A water absorption test shall be performed on samples of cured mortar coating taken from each working shift.
 - a) The mortar coating samples shall have been cured in the same manner as the pipe.
 - b) A test value shall consist of the average of a minimum of 3 samples taken from the same working shift.
 - c) The test method shall be in accordance with ASTM C497, Method A.
 - d) The average absorption value for any test shall not exceed 9 percent and no individual sample shall have an absorption exceeding 11 percent.
 - e) Tests for each working shift shall be performed on a daily basis until conformance to the absorption requirements has been established by 10 consecutive passing test results, at which time testing may be performed on a weekly basis for each working shift.
 - (1) Daily testing shall be resumed for each working shift with failing absorption test results and shall be maintained until conformance to the absorption requirements is re-established by 10 consecutive passing test results.

D. Cement Mortar Lining

1. Shop-applied cement mortar linings shall be tested in accordance with AWWA C301.

E. Manufacturer's Technician for Pipe Installation

1. Pipe Manufacturer's Representative

- a. During the construction period, the pipe manufacturer shall furnish the services of a factory trained, qualified, job experienced technician to advise and instruct, as necessary, in pipe laying and pipe jointing.
 - 1) The technician shall assist and advise the Contractor in his pipe laying operations and shall instruct construction personnel in proper joint assembly and joint inspection procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packing

1. Prepare pipe for shipment to:
 - a. Afford maximum protection from normal hazards of transportation
 - b. Allow pipe to reach project site in an undamaged condition
2. Pipe damaged in shipment shall not be delivered to the project site unless such damaged pipe is properly repaired.
3. After the completed pipe and fittings have been removed from the final cure at the manufacturing plant:
 - a. Protect pipe lining from drying by means of plastic end covers banded to the pipe ends.
 - b. Maintain covers over the pipe ends at all times until ready to be installed.
 - c. Moisture shall be maintained inside the pipe by periodic addition of water as necessary.
4. Pipes shall be carefully supported during shipment and storage.
 - a. Pipe, fittings and specials shall be separated so that they do not bear against each other and the whole load shall be securely fastened to prevent movement in transit.
 - b. Ship pipe on padded bunks with tie-down straps approximately over stulling.
 - c. Store pipe on padded skids, sand or dirt berms, tires or other suitable means to protect the pipe from damage.
 - d. Each end and each length of pipe, fitting or special (42-inches and larger) and the middle of each pipe joint shall be internally supported and braced with stulls to maintain a true circular shape.
 - 1) Internal stulls shall consist of timber or steel firmly wedged and secured so that stulls remain in place during storage, shipment and installation.
 - 2) Pipe shall be rotated so that one stull remains vertical during storage, shipment and installation.
 - 3) At a minimum, stulls shall be placed at each end, each quarter point and center.

B. Delivery, Handling, and Storage

1. Once the first shipment of pipe has been delivered to the site, the Engineer and the Contractor shall inspect the pipe's interior coating for excessive cracking.

- a. If excessive cracking is found, exceeding the allowance in AWWA C301, modify shipping procedures to reduce or eliminate cracking.
 2. Deliver, handle and store pipe in accordance with the manufacturer's recommendations to protect coating systems.
- C. Marking for Identification
1. For each joint of pipe and each fitting, plainly mark on 1 end:
 - a. Class for which it is designated
 - b. Date of manufacturer
 - c. Identification number
 - d. Top centerlines shall be marked on all specials.

PART 2 - PRODUCTS

2.1 EQUIPMENT, PRODUCT TYPES, AND MATERIALS

- A. Materials
1. General
 - a. Pipe shall be manufactured in accordance with the latest revisions of AWWA C301, AWWA M9, as well as the special requirements of this Specification.
 - b. All pipe shall meet the requirements of NSF 61.
 2. Cement
 - a. Cement for use in concrete and mortar shall be Type I or II Portland Cement.
 3. Aggregates
 - a. Aggregates for concrete lining and coating shall conform to ASTM C33.
 4. Sand
 - a. Sand used for inside and outside joints shall be of silica base, conforming to ASTM C144.
 5. Mixes
 - a. Cement Mortar
 - 1) Cement mortar used for pouring joints shall consist of:
 - a) 1 part Portland Cement
 - b) 2 parts clean, fine, sharp silica sand
 - c) Mixed with water
 - d) No manufactured sand shall be permitted.
 - e) Exterior joint mortar shall be mixed to the consistency of thick cream.
 - f) Interior joint mortar shall be mixed with as little water as possible so that the mortar is very stiff, but workable.
 - g) Cement shall be ASTM C150, Type I or Type II.
 - h) Sand shall conform to ASTM C144.

- 2) Cement mortar used for patching shall be mixed as per cement mortar for inside joints.
 6. Pipe Ends
 - a. The standard pipe end shall include steel joint ring and a continuous solid rubber ring gasket as per AWWA M9.
 7. Gaskets
 - a. Flange in accordance with AWWA C207.
 - b. Provide Gaskets Conforming to the physical and marking requirements specified in ANSI/AWWA C111/A21.11.
 - 1) All gaskets shall meet or exceed the latest revisions NSF 61.
 - 2) Rubber gaskets shall be made of vulcanized styrene butadiene rubber SBR, unless otherwise specified in Drawings.
 - 3) Gaskets shall be free from porous areas, foreign material and other defects that make them unfit for intended use.
 - 4) Gaskets shall be the size and shape required to provide an adequate compressive force against the plain end and socket after assembly to affect a positive seal under all combinations of joint and gasket tolerances.
- B. Performance / Design Criteria
1. Pipe Design
 - a. Pipe shall be designed, manufactured and tested in accordance with the latest revisions of AWWA C301, AWWA M9, as well as the special requirements of this Specification.
 - b. Sizes and pressure classes (working pressure) shall be as specified in the Drawings.
 - c. For the purposes of pipe design, working pressure plus transient pressure shall be as indicated below.
 - d. Pipe design shall be based on trench conditions and design pressure class specified in the Drawings.
 - e. Pipe shall be designed according to the methods indicated in AWWA C301 and AWWA M9 for trench construction, using the following parameters:
 - 1) Unit Weight of Fill (w) = 130 pounds per cubic foot
 - 2) Live Load = AASHTO H-20 truck for unpaved conditions
 - 3) Live Load = Cooper E-80 loading for railroad crossings
 - 4) Trench Depth = As indicated on Drawings
 - 5) Coefficient $K_u' = 0.150$
 - 6) Trench Width (B_d) as indicated on Drawings
 - 7) Bedding Conditions = as indicated on Drawings
 - 8) Pressure Class = 150 psi min. working pressure
 - 9) Surge Allowance = 100 psi minimum

- a) where: Total Pressure (including surge) = 150 psi + 100 psi = 250 psi.
- 10) Deflection Lag Factor = 1.0
- 11) Soil Reaction Modulus (E') < 1,000
- f. Pipe design shall provide cathodic protection. The Cathodic protection system shall be designed by a Texas licensed Professional Engineer.
- 2. Inside Diameter
 - a. The inside diameter, of the cement mortar lining shall be the nominal diameter specified, unless otherwise indicated on the Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General

- 1. Install Concrete Pressure Pipe, fittings, specials and appurtenances as required for the proper functioning of the completed pipe line.
- 2. Install pipe, fittings, specials and appurtenances as specified herein, as specified in AWWA M9, and in accordance with the pipe manufacturer's recommendations.
- 3. Lay pipe to the lines and grades show on the Drawings.
- 4. Excavate, embed and backfill trenches in accordance with Geotechnical Report.
- 5. At the close of each operating day:
 - a. Keep the pipe clean and free of debris, dirt, animals and trash – during and after the laying operation.
 - b. Effectively seal the open end of the pipe using a gasketed night cap.

B. Pipe Handling

- 1. Haul and distribute pipe fittings at the project site and handle piping with care to avoid damage.
- 2. Before lowering into the trench and inspect each joint of pipe and reject or repair any damaged pipe.
- 3. Pipe shall be handled at all times with a minimum of 1 wide non-abrasive sling, belts or other equipment designed to prevent damage to the coating or lining.
- 4. The equipment shall be kept in such repair that its continued use is not injurious to the coating.
- 5. The spacing of pipe supports required to handle the pipe shall be adequate to prevent cracking or damage to the lining or coating.

C. Pipe Jointing

- 1. General
 - a. Thoroughly clean the bell and spigot rings before laying each joint of pipe by brushing and wiping.

- b. If any damage to the protective coating on the metal has occurred, repair the damage before laying the pipe.
 - c. Lubricate the gasket and the inside surface of the bell with an approved lubricant (flax soap) which will facilitate the telescoping of the joint.
 - d. Tightly fit together sections of pipe and exercise care to secure true alignment and grade.
 - e. When a joint of pipe is being laid, place the gasket on the spigot ring and enter the spigot end of the pipe into the bell of the adjoining pipe and force into position.
 - 1) The inside joint space between ends of the pipe sections shall have an opening within the tolerances as recommended by the pipe manufacturer.
 - f. No "blocking up" of pipe or joints will be permitted, and if the pipe is not uniformly supported or the joint not made up properly, remove the joint and properly prepare the trench.
 - g. After joining, check the position of the gasket with a feeler gauge.
 - 1) If the gasket is out of position, disassemble the joint and repeat the joint laying procedure.
 - h. For interior welded joints, complete backfilling before welding.
 - i. For exterior field-welded joints, provide adequate working room under and beside the pipe.
2. Exterior Joints
- a. Make the exterior joint by placing a joint wrapper around the pipe and secure in place with 2 metal straps.
 - 1) The wrapper shall be 9 inches wide for pipe 36-inches and larger, and 7 inches wide for smaller pipe, hemmed on each side.
 - 2) The wrapper shall be fiberglass reinforced or burlap cloth, with lengths encircling the pipe, leaving enough opening between ends to allow the mortar to be poured inside the wrapper into the joint.
 - 3) Fill the joint with mortar from 1 side in 1 continuous operation until it has flowed entirely around the pipe.
 - 4) During the filling of the joint, pat or manipulate the sides of the wrapper to settle the mortar and expel any entrapped air.
 - 5) Leave wrappers in place undisturbed until the mortar has set-up.
3. Interior Joints
- a. Upon completion of backfilling of the pipe trench, fill the inside joint recess with a stiff cement mortar/high-strength grout.
 - b. Prior to placing of mortar/grout, clean out dirt or trash which has collected in the joint and moisten the concrete surfaces of the joint space by spraying or brushing with a wet brush.
 - c. Ram or pack the stiff mortar/grout into the joint space and take extreme care to insure that no voids remain in the joint space.

- d. After the joint has been filled, level the surfaces of the joint mortar/grout with the interior surfaces of the pipe with a steel trowel so that the surface is smooth.
 - e. Interior joints of pipe smaller than 21-inches shall have the bottom of the bell buttered with grout, prior to inserting the spigot, such that when the spigot is pushed into position it will extrude surplus grout from the joint.
 - 1) The surplus grout shall be struck off flush with the inside of the pipe by pulling a filled burlap bag or an inflated ball through the pipe with a rope.
4. Protection of Exposed Metal
- a. Protect exposed ferrous metal by a minimum of 1 inch coating of cement mortar as previously specified for inside joints, unless otherwise specified in the Drawings.
 - b. Exposed large flat surfaces such as flanges, bolts, caulked joints, threaded outlets, closures, etc., shall have coating reinforced with galvanized wire mesh.
 - c. Thoroughly clean and wet the surface receiving a cement mortar coating with water just prior to placing the cement mortar coating.
 - d. After placing, take care to prevent cement mortar from drying out too rapidly by covering with damp earth or burlap.
 - e. Cement mortar coating shall not be applied during freezing weather.
5. Patching
- a. Excessive field-patching of lining or coating shall not be permitted.
 - b. Patching of lining or coating will be allowed where area to be repaired does not exceed 100 square inches and has no dimensions greater than 12 inches.
 - c. In general, there shall not be more than 1 patch on either the lining or the coating of any 1 joint of pipe.
 - d. Wherever necessary to patch the pipe, make patch with cement mortar as previously specified for interior joints.
 - e. Do not install patched pipe until the patch has been properly and adequately cured and approved for laying by the City.
 - f. Promptly remove rejected pipe from the site.
- D. Field Pressure Testing
1. Method 1
- a. Before placing any concrete or earthfill around the conduit or filling the pipe joints, the conduit shall be tested for leaks in the following manner:
 - 1) The ends of the conduits shall be plugged and a standpipe with a minimum diameter of 2 inches shall be attached to the upstream plug. The conduit shall be braced at each end to prevent slippage. The conduit and the standpipe shall be filled with water. The water level in the standpipe shall be maintained at least 10 feet above the invert of the upstream end of the conduit for at least 2 hours. Any leaks shall be repaired, and the conduit shall be tested again as described. The procedure shall be repeated until the conduit is watertight.
 - 2) The pipe joins shall show no leakage. Damp spots developing on the surface of the pipe are not considered as leakage.

2. Method 2

- a. Before placing any concrete or earthfill around the conduit or filling the pipe joints, the conduit shall be air tested in accordance with ASTM C 924. The conduit shall be braced on each end to prevent slippage. All end plugs used for the air test shall be capable of resisting the internal pressure and must be securely braced.
- b. All testing equipment to be used shall be furnished by the contractor and shall be inspected and approved by the engineer. The pressure gauges used shall be graduated to read in increments of 0.1 pounds per square inch and calibrated to provide accuracy within 10 percent plus or minus of the standard gauge. The contractor has the option of prewetting the conduit or line before testing. Any conduit that fails to pass this test must be repaired by a method satisfactory to the engineer. After the repairs are made, the conduit shall be retested until it passes the test requirements.

END OF SECTION 33 11 13