

PROJECT MANUAL

CONTRACT DOCUMENTS SPECIFICATIONS & INSTRUCTIONS TO BIDDERS

WEBB COUNTY DRAINAGE DISTRICT

PROJECT 2024-001 LAGO DAM CONVERSION TO REGIONAL DETENTION POND



District Board Members

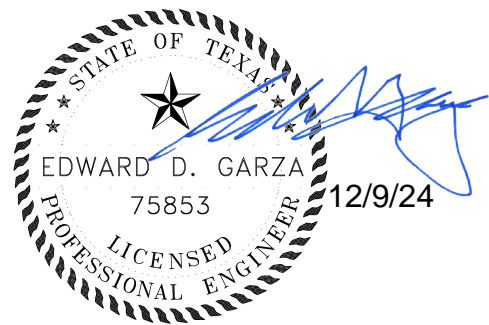
Margie Arce
Board Member

Sara Sanchez
Board Member



Crane Engineering Corp.
1310 Junction Drive, Ste. B
Laredo, Texas 78041
Firm # F-3353

Mr. Edward D. Garza, P.E., CFM
District Engineer



DECEMBER 2024

Webb County Drainage District No. 1
Project 2024-001
Lago Dam Conversion to Regional Detention Pond

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Webb County Drainage District No. 1
Project 2024-001
Lago Dam Conversion to Regional Detention Pond

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**DIVISION A
INSTRUCTIONS TO BIDDERS
& CONTRACT DOCUMENTS**

Webb County Drainage District No. 1
Project 2024-001
Lago Dam Conversion to Regional Detention Pond

Section 1 - Notice to Bidders

Formal Invitation for Bids

Notice is hereby given that the Webb County Drainage District No. 1 is accepting sealed bids, subject to the Terms and Conditions of this Invitation for Bids and contract provisions. Project includes the modification of an existing dam and installation of a multiple pipe outlet structure with concrete and rock rip-rap. Additional improvements include drainage extensions, and SW3P improvements for the **Lago Dam Conversion to Regional Detention Pond** area within the Webb County Drainage District No. 1 boundary. Plans and specifications may be viewed and/or downloaded free of charge from the Webb County Drainage District No. 1 website:

<https://webbcountydrainage.com/>

Plans and specifications may also be reviewed free of charge at the office of Crane Engineering Corp., 1310 Junction Drive, Suite B, Laredo, Texas 78041. Copies may be obtained upon payment of \$100.00 for each set of documents. Bids will be received at the office of Crane Engineering until Thursday, January 16th, 2025 at 4:00 P.M. and publicly opened, read, and taken under advisement on Friday, January 17th, 2025 at 11:00 A.M.

A Pre-bid conference with prospective bidders will be held on Wednesday, December 18, 2024 at 4:00 P.M. at Crane Engineering Corporation, 1310 Junction Drive, Suite B, Laredo, Texas 78041. Questions will be accepted until December 24, 2024 at 4:00 p.m.

Bids are to be submitted in a sealed envelope clearly marked:

**BID: Webb County Drainage District No. 1 – Project 2024-001
Lago Dam Conversion to Regional Detention Pond**

Bidders are encouraged to submit their bid in person (hand delivery) or electronically via email to miriamg@craneeng96.com. Original check or bond is required to be submitted before the deadline. Bids without the required check or original bond will NOT be considered. Mailed responses (i.e. USPS, FedEx, UPS), telegraphic or facsimile responses will NOT be considered.

Bids are to be hand delivered to:
Crane Engineering Corp.
1310 Junction Drive, Suite B
Laredo, Texas 78041

OR

E-mailed to:
miriamg@craneeng96.com

The Webb County Drainage District No. 1 reserves the right to reject any and all bids, and to waive any minor irregularities.

Publication Dates:

Sunday, December 8, 2024

Sunday, December 22, 2024

SECTION A-2 INFORMATION TO BIDDERS

Sealed bids will be received at the office of Crane Engineering until Thursday, January 16th, 2025 at 4:00 P.M. and publicly opened, read, and taken under advisement on Friday, January 17th, 2025 at 11:00 A.M. for the furnishing of all necessary materials, machinery, equipment, labor, superintendence, and all other services and appurtenances required the modification of an existing dam and installation of a multiple pipe outlet structure with concrete and rock rip-rap. Additional improvements include drainage extensions, and SW3P improvements for the Lago Dam Conversion to Regional Detention Pond area within the Webb County Drainage District No. 1 boundary and shall include acknowledgment of addenda submitted, and all other documents included in said bid call. Said bids shall be marked,

Webb County Drainage District No. 1 Project 2024-001 Lago Dam Conversion to Regional Detention Pond

Bids shall be based on a per unit of work basis and shall include dollar amounts for each specific unit in improvements listed including those items listed as alternatives as per the proposal sheet included in the specifications of this project.

Each proposal and a proposal guaranty must be originals and must be sealed in an envelope plainly marked with the name of the project as shown above, and the name and address of the Bidder. When submitted by mail, this envelope shall be placed in another envelope addressed as indicated in this Notice to Bidders and shall be marked as a bid for the project above referred.

Further, on federally funded projects, contractor must comply with the Federal Labor Standards Provision, Davis Bacon Act, Equal Opportunity Clause, Wage Determination and HUD and Urban Development Federal Requirements as it regards to payrolls and basic records. **This project is not a federally funded project.**

Only the bids and bid guaranties actually in the hands of the designated official at the time set in this Notice to Bidders shall be considered. Bids submitted by telephone, telegraph, or fax, will not be considered.

The District reserves the right to award the contract on the basis of the alternative which appears most advantageous to the District, to reject any or all bids, to waive objections based on failure to comply with formalities, and to allow the correction of obvious or patent errors. Bidders are expressly advised to review Section C-3 of the General Conditions of the proposed contract as to the causes which may lead to the disqualification of a bidder and/or the rejection of a bid proposal. Unless all bids are rejected, Owner agrees to give Notice of Award of contract to the successful bidder within ninety (90) days from the date of the bid opening.

Bidders for the construction work must submit a satisfactory cashier’s or certified check, or bidder’s bond having a minimum **Best’s Rating A** according to Best’s Key Rating Guide Latest Edition from a surety duly authorized and licensed in the State of Texas, payable without recourse to the order of the Webb County Drainage District, in an amount not less than five percent (5%) of the total bid based on the bid which check or bond shall be submitted as a guarantee that the bidder will enter into a contract, and execute performance and payment bonds within ten (10) days after Notice of Award of contract is given to him for contracts in excess of \$25,000.00. Bids without the required check or bond will NOT be considered.

The successful bidder for the construction of the improvements must furnish a Certificate of Insurance, and a satisfactory Performance Bond in the amount of 100% of the total contract price, and a satisfactory Payment Bond in such amount, duly executed by such bidder as principal and by a corporate surety duly authorized so to act under the laws of the State of Texas. The successful bidder will be required to provide Performance and Payment Bonds issued by an insurance company which meets the minimum State requirements and is licensed in the State of Texas, and has a Best’s Key according to Best’s Key Rating Guide Latest Edition as follows:

<u>Construction Contract</u>	<u>Minimum Best’s Rating</u>
25,001 – 250,000	A
250,000 – 1,000,000	A
Over 1,000,000	A

All lump sum and unit prices must be stated in both script and figures.

Bidders are expected to inspect the site of the work and to inform themselves regarding all local conditions.

Copies of the plans and specifications may be reviewed free of charge at the office of the Crane Engineering, 1310 Junction Drive, Suite B, Laredo, Texas, 78041, or copies may be obtained upon deposit of **\$100.00** for each set of documents. The entire amount of deposit will be refunded if the plans and specifications are returned in good order within five (5) working days after the bid opening.

Bid proposals over \$25,000.00 shall comply with all conditions of the bid documents.

In the event the base bid amount is \$25,000.00 or LESS than \$25,000.00, a Payment Bond and Performance Bond will NOT BE REQUIRED. A Bid Guarantee in the form of a Cashier’s or Certified Check or Bid Bond and the Certificate of Insurance however, WILL BE REQUIRED. Under the above conditions, the successful bidder for the Project 2024-001 Lago Dam Conversion to Regional Detention Pond project is hereby advised that the total contract price will be paid in ONE PAYMENT upon completion and acceptance of the project by the Webb County Drainage District. Cashier’s checks are

not to be released until a contract for the project has been approved by and signed by the District.

Any other division or section of this project's specifications having reference to Bid Guarantee, Cashier's or Certified Check, Bid Bond, Payment Bond, or Performance Bond, or having mention at all, to the requirements of bonds, is hereby amended to concur with the above conditions ONLY when the base bid is LESS THAN \$25,000.00.

Bidders are advised to contact the Crane Engineering office, 1310 Junction Drive, Suite B, Laredo, Texas, 78041, telephone number (956) 712-1996, for visits to project site, and for any additional information required on the project.

Contractor's attention is directed to Special Provision 000-6233, "Important Notice to Contractors" and "Statement of Materials and Other Charges" which will be included in all projects, beginning with the September 1991 letting. These establish the procedures whereby the Contractor will be permitted to obtain an exemption from the sales tax on certain materials. See Comptroller's Rule 2.291 and Texas Tax Code Chapter 151, as amended by House Bill Number 11, Acts 1991, 72nd Legislature, First called Session. The Contractor will be required to separate the charges for materials from all other charges and will be furnished an Exemption Certificate for each contract. Also, the Contractor must issue resale certificates to suppliers. Sales tax permit applications and information regarding resale certificates may also be obtained by calling the State Comptroller's toll-free number 1-800-252-5555.

A pre-bid conference with prospective bidders will be held on Wednesday, December 18, 2024 at 4:00 P.M. at Crane Engineering, 1310 Junction Drive, Suite B, Laredo, Texas, 78041.

**SECTION A-3
ADVICE TO BIDDERS**

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

The Contractor's attention is directed to the State of Texas Comptroller of Public Accounts Limited Sales Excise and Use Tax Rules and Regulations, Paragraph 3 of Ruling No. 9. Repairmen and Contractors (amended April 3, 1972). Reference Article 20.01 (T). Upon compliance with certain conditions, this ruling provides for exemption from this tax of materials incorporated into work done for an exempt agency under a Contract. The District is an exempt agency.

Any Bidder may elect to exclude this sales tax from his bid. If the Bidder submitting the lowest acceptable bid for performing the work on this project elects to comply with the above ruling on any bid item included in this Contract by obtaining any necessary permit or permits from the State Comptroller allowing the purchase of material for incorporation into this project without having to pay the Limited Sales, Excise and Use Tax at the time of purchase, he shall upon Award of Contract submit a statement in satisfactory form in which his bid prices to the District for materials are listed separately from all other charges, either by bid item or by total as required by the comptroller. This statement shall be included in and made part of the Contract.

The District will furnish the Contractor with its exemption certificate for those materials incorporated in the project for which the above required statement is submitted.

The District will make no further allowance for and will make no price adjustment above or below the originally bid unit price on account of this tax. It shall be the Contractor's sole responsibility, if he elects to exclude the sales tax from his bid, to comply with the aforementioned Ruling No. 9 and with any other applicable rules, regulation, or laws pertaining to the Texas Limited Sales, Excise and Use Tax which may now or at any time during the performance of this Contract be in effect, and the District shall have no responsibility for any sales or use tax which the Contractor may be required to pass as a result of his failure or the District's failure to comply with said rules, regulations or laws, or as the result of the performance of the Contract or any part thereof by the Contractor.

Bidders are cautioned that materials which are not permanently incorporated into the work are not eligible for exemption and are not to be included in the statements as "Materials" (example: fuel, lubricants, tools, forming materials, etc.).

**SECTION A-4
INFORMATION TO CONTRACTORS**

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

The Contractor's attention is directed to Special Provision 000-6233, "Important Notice to Contractors", and "Statement of Materials and Other Charges" which will be included in all projects, beginning with the September, 1991 letting. These establish the procedures whereby the Contractor will be permitted to obtain an exemption from the sales tax on certain materials. See Comptroller's Rule 3.291 and Texas Tax Code, Chapter 151, as amended by House Bill Number 11, acts 1991, 72nd Legislature, First Called Session. The Contractor will be required to separate the charges for materials from all other charges and will be furnished an Exemption Certificate for each contract by the Department. Also the Contractor must issue resale certificates to suppliers. Sales tax permit applications and information regarding resale certificates may be obtained by calling the State Comptrollers' toll free number 1-800-252-5555.

SPECIAL PROVISION

No. 000-6233

IMPORTANT NOTICE TO CONTRACTORS

The Contractor's attention is directed to Rule 3.291, paragraphs (a) (1), defining separated contracts, subsection (b) (3) discussing separated contracts, and subsection (c) discussing exempt contracts. Reference: Texas Tax Code, Chapter 151.

Contractors should note those organizations in subsection (c) that the rule shows as being exempt no longer qualify for the exemption. The rule states that contractors improving realty for organizations listed in Texas Tax Code 151.309 and 151.310 are exempt from tax. **THIS IS NO LONGER TRUE EFFECTIVE WITH CONTRACTS SIGNED ON OR AFTER AUGUST 15, 1991.**

Only those contracts with school districts and nonprofit hospitals qualify for the exemption discussed in subsection (c) of Rule 3.291.

The Comptroller is amending the rule to reflect this change.

If the low bidder elects to operate under a separated contract as defined by Rule 3.291, by obtaining the necessary permits from the State Comptroller's office allowing the purchase of materials for incorporation in this project without having to pay the Limited Sales and Use Tax at the time of purchase, the low bidder shall identify separately from all other charges the total agreed contract price for materials incorporated into the project. This form shall be filled out by the low bidder in each of the two bound copies of the contract. Total materials shall only include materials physically incorporated into the realty.

If the Contractor operates under a "separated contract", the Department will furnish the Contractor with an exemption certificate for the applicable materials.

In order to comply with the requirements of Rule 3.291, as mentioned above, it will be necessary for the Contractor to obtain a sales tax permit.

It will also be necessary that the contractor issue resale certificates to his suppliers.

Sales tax application for a sales tax permit and information regarding resale certificates may be obtained by writing to:

Comptroller of Public Accounts
Capital Station
Austin, Texas 78774

The Contractor may also receive information or request sales tax permit applications by calling the State Comptrollers' toll free number 1-800-252-5555.

Subcontractors are eligible for sales tax exemption if the subcontract is made in such manner that the charges for materials are separated from all other charges. The procedure described above will effect a satisfactory separation. When subcontractors are handled in this manner, the Contractor must issue a resale certificate to the subcontractor and the subcontractor, in turn, must issue a resale certificate to his supplier.

STATEMENT OF MATERIALS AND OTHER CHARGES

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

MATERIALS INCORPORATED INTO THE PROJECT: \$ _____

ALL OTHER CHARGES: \$ _____

*TOTAL \$ _____

*This total must agree with the total figure shown in the Item and Quantity Sheets in the bound contract.

For purposes of complying with the Texas Tax Code, the Contractor agrees that the charges for any material incorporated into the project in excess of the estimated quantity provided for herein will be no less than the invoice price for such material to the Contractor.

NOTE: ONLY THE COPY OF THIS FORM IN THE BOUND CONTRACTS IS TO BE FILLED OUT.

**SECTION A-5
PROPOSAL**

To: Webb County Drainage District

**Margie Arce, Drainage District
President**

From: _____
Contractor

Address: _____

Phone: _____

Email address: _____

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

Pursuant to Notice to Bidders, the undersigned bidder hereby proposes to furnish the labor, materials, and equipment in accordance with the plans and specifications, general conditions of the agreement, special provisions of the Agreement, and Addenda, if any. The bidder binds himself upon acceptance of his proposal to execute a contract and bonds accompanying form of performing and completing the said work within the time stated as required by the detailed specifications at the following unit prices. The quantities shown below are based on the Engineer's estimate of quantities and it is agreed that the quantities may be increased or decreased, and may be considered necessary in the opinion of the District to complete the work fully as planned and contemplated, and that all quantities of work, either increased or decreased, are to be performed at the unit prices set forth below (except as provided in the General Conditions of the Agreement or the specifications, the contract documents).

Acknowledgement of Addenda: (Please initial and date)

Addendum No. 1: _____

Addendum No. 2: _____

Addendum No. 3: _____

Addendum No. 4: _____

Addendum No. 5: _____

Acknowledgement of other documents: (Please initial and date)

Wage Determination: _____

Labor Provisions: _____

Affirmative Action Program: _____

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

Form of Non-Collusive Affidavit

A F F I D A V I T

STATE OF TEXAS { }

COUNTY OF WEBB { }

_____ being first duly sworn, deposes and says

That he is _____
(a Partner or Officer of the firm of, etc.)

the party making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or sham; that said Bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any Bidder or Person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price or affiant or of any other Bidder or to fix any overhead, profit or cost element of said bid price, or of that of any other Bidder, or to secure any advantage against the District or any person interested in the proposed Contract; and that all statements in said proposal or bid are true.

Signature of

Bidder, if the Bidder is an individual
Partner, if the Bidder is a Partnership
Officer, if the Bidder is a Corporation

Subscribed and sworn before me this _____ day of _____, 20____.

Notary Public

My Commission expires

**INFORMATION FROM BIDDERS
MUST BE COMPLETED AND SUBMITTED WITH BID PROPOSAL**

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

1. Statement of Qualifications & References:
(List similar Projects completed by Bidder)

- 1) Name of Project: _____
Value of Contract: _____
Date Completed: _____
Contact Information: _____

- 2) Name of Project: _____
Value of Contract: _____
Date Completed: _____
Contact Information: _____

- 3) Name of Project: _____
Value of Contract: _____
Date Completed: _____
Contact Information: _____

2. Statement of Qualifications & References:
(List similar Projects completed by Bidder within 100-year floodplain)

- 1) Name of Project: _____
Value of Contract: _____
Date Completed: _____
Contact Information: _____

- 2) Name of Project: _____
Value of Contract: _____
Date Completed: _____
Contact Information: _____

- 3) Name of Project: _____
Value of Contract: _____
Date Completed: _____
Contact Information: _____

3. Current Workload: (List Current Projects, Value, and % complete)

1) Name of Project: _____

Value of Contract: _____

% Complete: _____

Project Engineer: _____

2) Name of Project: _____

Value of Contract: _____

% Complete: _____

Project Engineer: _____

3) Name of Project: _____

Value of Contract: _____

% Complete: _____

Project Engineer: _____

4. Have you had liquidated damages assessed against you on any project within the last 10 years? If yes, please explain.

Experience Data: (Include name and experience record of the Superintendent)

Financial Status: A confidential financial statement will be submitted by the apparent successful low Bidder only if the Owner deems it necessary.

**NOTE: TO BE SUBMITTED UPON REQUEST
IS NOT AN ACCEPTABLE ANSWER.**

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

Proposed Progress Schedules:

Data on Equipment to be used on the Work:
(Include the number of machines, the type, capacity, age and conditions, and location.
Provide photographs of machines)

Subcontractors:
Submit a list of proposed Subcontractors and work they will complete. Provide
experience record of subcontractors and any certifications.

Work to be completed by Bidder _____ % (0% to 100%)

Work to be completed by Subcontractors _____ % (0% to 100%)

Total: 100% (Must equal 100%)

List sources, types and manufacturers of proposed materials

**NOTE: TO BE SUBMITTED UPON REQUEST
IS NOT AN ACCEPTABLE ANSWER.**

BID SCHEDULE NOTES

1. Refer to Section 402 for Clearing and Grubbing description. Clearing and grubbing to be limited to defined project limits. Engineer to mark this in the field before construction. Any trees to remain to be pruned with pruning paint applied at all tree cuts;
2. Refer to Section 128 for description on disposal of waste material and salvageable material. This is not a pay item but subsidiary to project;
3. Contractor to provide a unit price for 57 Stone under Additive Alternate #2. This item will be utilized if ground water is encountered to stabilize exposed subgrade;
4. See Note #8 on Sheet 2A "Basis of Estimate and Construction Notes" stating contractor is responsible for dewatering of work area should ground water be encountered. Additionally, refer to Sheet 13 "Spillway Section View and Details" for trench backfill detail specific to areas groundwater is encountered;
5. Right of Entry forms must be secured if using private property to access site or for temporary yard;
6. Additive Alternate #1 pertains to all work outside of base bid area. Base bid is concentrated to work associated with outlet structure and maintenance access drive;
7. Additional dirt left over from cut to remain on site. Contractor to coordinate with Engineer for stockpile location.

BID SCHEDULE

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

I. Base Bid – Outlet Structure and Maintenance Access Road

Item #	Name of Pay Item with Unit Bid Price Written in Words	Estimated Quantity	Unit	Unit Price	Extended
1	Clearing and Grubbing, complete in place at, _____ _____ per unit.	2.00	AC	\$	\$
2	Pond / Berm Cut (Compacted Measure), complete in place at, _____ _____ per unit.	5,500	CY	\$	\$
3	Pond / Berm Fill (Compacted Measure), complete in place at, _____ _____ per unit.	2,120	CY	\$	\$
4	48" Diameter HDPE, complete in place at, _____ _____ per unit.	414	LF	\$	\$
5	4" 3,000 psi Concrete Slab for Spillway Structure, complete in place at, _____ _____ per unit.	20,680	SF	\$	\$
6	Rock Lined Channel with Concrete Slurry, complete in place at, _____ _____ per unit.	3,105	SF	\$	\$
7	Stilling Basin / Filtration Pond (Typ.), complete in place at, _____ _____ per unit.	85	SY	\$	\$
8	7" 3,000 PSI Concrete Pavement, complete in place at, _____ _____ per unit.	1,635	SF	\$	\$
9	Saw Cut existing Curb & Gutter, complete in place at, _____ _____ per unit.	17	LF	\$	\$
10	Remove / Dispose Existing 5' Drainage Slotted Inlet Top, complete in place at, _____ _____ per unit.	1	EA	\$	\$
11	Remove / Dispose Existing 4' wide Sidewalk, complete in place at, _____ _____ per unit.	45	SF	\$	\$

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**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

I. Base Bid – Outlet Structure and Maintenance Access Road (Cont'd)

Item #	Name of Pay Item with Unit Bid Price Written in Words	Estimated Quantity	Unit	Unit Price	Extended
12	8" Flexible Base Type B Grade 1-2, complete in place at, _____ _____ per unit.	80	SY	\$	\$
13	Traffic Rated Grate Inlet Top for Existing 5' Slotted Inlet, complete in place at, _____ _____ per unit.	1	EA	\$	\$
14	Vehicle Swinging Access Gate with 4' Pedestrian Opening, complete in place at, _____ _____ per unit.	1	EA	\$	\$
Total Base Bid - Outlet Structure and Maintenance Access Road				\$	

SUMMARY		
I.	Base Bid – Outlet Structure & Maintenance Access Road	\$

Total Written _____
in words _____

II. Additive Alternate #1

Item #	Name of Pay Item with Unit Bid Price Written in Words	Estimated Quantity	Unit	Unit Price	Extended
Demolition and Detention Pond / Berm Grading					
15	Remove / Dispose Existing Vegetation, complete in place at, _____ _____ per unit.	2.30	AC	\$	\$
16	Selective Demolition / Tree Trimming, complete in place at, _____ _____ per unit.	3.40	AC	\$	\$
17	Pond / Berm Cut (Compacted Measure), complete in place at, _____ _____ per unit.	27,505	CY	\$	\$
18	Pond / Berm Fill (Compacted Measure), complete in place at, _____ _____ per unit.	10,650	CY	\$	\$
19	Remove / Dispose Existing Headwall (24" Pipe), complete in place at, _____ _____ per unit.	2	EA	\$	\$

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**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

II. Additive Alternate #1

Item #	Name of Pay Item with Unit Bid Price Written in Words	Estimated Quantity	Unit	Unit Price	Extended
20	Remove / Dispose Existing 24" RCP, complete in place at, _____ _____ per unit.	36	LF	\$	\$
Total Demolition Improvements				\$	
Stormwater Pollution Prevention Plan (SW3P)					
21	North American Green VMAX P550 Erosion Control Blanket with Hydromulch, complete in place at, _____ _____ per unit.	6,925	SY	\$	\$
22	Rock Bedding, complete in place at, _____ _____ per unit.	290	CY	\$	\$
22	Silt Fence, complete in place at, _____ _____ per unit.	1,180	LF	\$	\$
24	Rock Gravel Filter Berm, complete in place at, _____ _____ per unit.	3	EA	\$	\$
25	Stabilized Construction Entrance, complete in place at, _____ _____ per unit.	1	EA	\$	\$
26	Concrete Wash Pit, complete in place at, _____ _____ per unit.	1	EA	\$	\$
Total Stormwater Pollution Prevention Plan Improvements				\$	
Storm Management Improvements					
27	4' x 4' Junction Box, complete in place at, _____ _____ per unit.	1	EA	\$	\$
28	4' x 4' Junction Box with Grate Inlet Top, complete in place at, _____ _____ per unit.	1	EA	\$	\$
29	24" Diameter HDPE, complete in place at, _____ _____ per unit.	88	LF	\$	\$
30	30" Diameter HDPE, complete in place at, _____ _____ per unit.	100	LF	\$	\$

Item #	Name of Pay Item with Unit Bid Price Written in Words	Estimated Quantity	Unit	Unit Price	Extended
31	Rock Safety End Treatment, complete in place at, _____ _____ per unit.	2	EA	\$	\$
Total Storm Management Improvements				\$	

II. Additive Alternate #1	
Demolition and Detention Pond / Berm Grading	\$ _____
Stormwater Pollution Prev. Plan Improvements	\$ _____
Storm Management Improvements	\$ _____
Total Additive Alternate #1	\$ _____
Total Base Bid + Additive Alternate #1	
	\$ _____

Total Written _____
in words _____

III. Additive Alternate #2 – 57 Stone

Item #	Name of Pay Item with Unit Bid Price Written in Words	Estimated Quantity	Unit	Unit Price	Extended
32	6" Layer of 57 Stone to address water table, if encountered, complete in place at, _____ _____ per unit.	525	CY	\$	\$
Total 57 Stone				\$	

III. Additive Alternate #2	
Total Additive Alternate #2 - 57 Stone	
	\$ _____
Total Base Bid + Additive Alternate #2	
	\$ _____

Total Written _____
in words _____

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The undersigned bidder certifies that he has currently checked the bid prices contained herein and is entirely satisfied that they are correct and final.

BIDDER: _____

SIGNATURE: _____

BY: _____

TITLE: _____

ADDRESS: _____

CITY: _____ STATE: _____

ZIP: _____ PHONE: _____

NOTE #1 – PAY ITEMS: All items shall consist of furnishing all materials, labor, equipment, superintendence, and all necessary work to undertake and complete the pay item without any further compensation, adjustment, or consideration.

NOTE #2 – GENERAL NOTE: All bid items will be paid for when complete, in place, tested, and accepted by the District.

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BID BOND

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned

as Principal, and _____ as

Surety, are hereby held and firmly bound unto

_____ as Owner in the penal sum of _____

for payment of which, well and truly to be made, we hereby jointly and severally bid ourselves, our heirs, executors, administrations, successors and assigns.

Signed, this _____ day of _____, 20__.

The condition of the above obligation is such that whereas the Principal has submitted to _____ a certain Bid, attached hereto and hereby made a part hereof to enter into a Contract in writing for the

NOW, THEREFORE,

- (a) If said Bid shall be rejected, or in the alternate,
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a Contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the Agreement created by the acceptance of said Bid,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that he obligations of said Surety, and its bonds shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth herein.

(L.S.)

Principal

Surety

By: _____

{THIS SPACE INTENTIONALLY LEFT BLANK}

**SECTION A-6
CHECKLIST FOR BIDDERS**

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

All information required by the terms of the Bid Documents must be furnished. **MISTAKES OR OMISSIONS CAN BE COSTLY AND CAN RESULT IN THE REJECTION OF YOUR BID.** Important items for you to check are included in but not limited to, those listed below. This checklist is furnished only to assist you in submitting a proper bid. Check as you read. **DO NOT INCLUDE THIS CHECKLIST WITH YOUR BID.**

- [] Have you acknowledged receipt of all addenda to the plans and specifications?
- [] Is your bid properly signed? (Refer to Bid Documents)
- [] If a bid guarantee is required, is it included in your bid? (A late bid guarantee is treated the same as a late bid)
- [] Is your bid guarantee in the proper amount? (Usually 5% of total bid price)
- [] Your bid guarantee must be in the form of a Bidder's Bond, a Certified Check or Cashier's Check.
- [] If your bid guarantee is in the form of a Bidder's Bond, is the bond properly signed by both the bidder and surety and are all required seals affixed?
- [] Is the surety company qualified and licensed by the State of Texas as required by the provisions of the bid documents?
- [] Is the name in which you submitted the bid the same on your bid proposal as on the Bidder's Bond?
- [] If required have you entered a unit price for each bid item?
- [] If required have you entered the unit price or lump sum price in both words and figures? (Unit Price or Lump Sum price in words govern)
- [] Are decimals in unit prices in the proper places? Are your figures legible?
- [] Are the extensions of your unit prices, and your total bid price correct?
- [] Is proposal being submitted complete together with Information from Bidders?

- Are all erasures or corrections initialized by the person signing the bid or by an authorized representative of the person signing the bid.
- Do not restrict your bid by altering any provisions of the Bid Document or by attaching any documents to the Proposal that takes exception to the Bid Documents.
- Have you included all pages of the Proposal with your bid? Are all blanks in the Proposal properly completed (equipment brands, alternate materials, etc.)?
- Is the envelope containing your bid properly identified that it is a sealed bid and does it contain the correct project name and bid opening date?
- Will your bid arrive on time? Late bids will not be considered.

**SECTION A-7
CONSTRUCTION CONTRACT**

STATE OF TEXAS
COUNTY OF WEBB

Agenda Item: _____

THIS AGREEMENT, made this _____ day of _____, 20____ by and between the Webb County Drainage District, acting by and through its duly authorized Drainage District President hereinafter termed the Owner, and _____ of the City of Laredo, County of Webb, State of Texas, his/their executors, administrators, heirs, successors, or assigns, hereinafter termed the Contractor.

WHEREAS, the Owner desired to enter into Contract for the **Project 2024-001 Lago Dam Conversion to Regional Detention Pond** in accordance with the provisions of the Invitation for Bids, the Specifications and Plans titled as above, and published by Crane Engineering, 1310 Junction Drive, Suite B, Laredo, Texas, 78041 all of which are a part thereof; and,

WHEREAS, the Contractor has been engaged in and now does such work and represents that he is fully equipped, competent and capable to perform the above desired and outlined work, and is ready and willing to perform the work in accordance with the provisions of the Invitation for Bids, the Specifications and Plans, titled, "Webb County Drainage District No. 1 Project 2024-001 Lago Dam Conversion to Regional Detention Pond."

WITNESS:

THAT for and in consideration of the payments and agreements hereinafter mentioned to be made and performed by the Owner, the Contractor hereby agrees at the unit price set forth in his Bid, made a part thereof totaling the sum of _____ (\$_____) based on the Engineer's estimate of quantities, payable in the manner set out in Division C, Section 9, General Provisions of the contractual Documents to commence and complete all necessary materials, machinery, equipment, labor, superintendence, and all other services and appurtenances required the modification of an existing dam and installation of a multiple pipe outlet structure with concrete and rock rip-rap. Additional improvements include drainage extensions, and SW3P improvements for the Lago Dam Conversion to Regional Detention Pond area within the Webb County Drainage District No. 1 boundary, in accordance with Instructions to Bidders, Special Provisions, General Provisions, Technical Provisions, and all other requirements of the contractual Documents, and in accordance with the Specifications and Plans (including all maps, plats, blueprints, and other drawings and printed or written explanatory matter thereof) prepared by the Owner's Engineer, a part thereof and collectively, together with this Agreement constitute the entire Contract; and the Contractor agrees to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, bonds, insurance and other accessories and services, and whatever else may be necessary to complete the said construction in accordance with said specifications, plans, and other contractual documents including such proposal.

Further, on federally funded projects, contractor must comply with the Federal Labor Standards Provision, Davis Bacon Act, Equal Opportunity Clause, Wage Determination and HUD and Urban Development Federal Requirements especially as it regards payrolls and basic records herewith attached.

Said Contractor further agrees to begin the work on or before the tenth day following the date set by the Owner in the written notice to proceed and to complete the work within _____.

The Contractor further agrees to pay the sum of \$_____ for each consecutive day there-in-after as herein provided in **Division B, Section 1.**

And the Owner in consideration of the full and true performance of the said work by said Contractor hereby agrees to and binds itself to pay the said Contractor the unit price set forth in the attached Bid, and in the manner provided in the Specifications.

IN WITNESS WHEREOF, the OWNER AND THE CONTRACTOR have hereunto set their hand this _____ day of _____, 20_____.

WITNESS:

Contractor/Firm

Name

Name

Address

Signature

City/State/Zip

Title

Phone number

Address

City/State/Zip

Phone number

Fax number

WEBB COUNTY DRAINAGE DISTRICT

Margie Arce
Drainage District President

**SECTION A-8
PERFORMANCE BOND**

(As required by Chapter 2253, Texas Government Code)

THE STATE OF {}
COUNTY OF {}

KNOW ALL MEN BY THESE PRESENTS: That we (1) _____

_____ a (2) _____ of _____ hereafter called Principal and (3) _____ of _____, State of _____, hereinafter called the Surety, are held and firmly bound unto (4) _____ of _____ hereinafter called Owner, in the penal sum of _____ (\$_____) Dollars in lawful money of the United States, to be paid in (5) WEBB COUNTY, TEXAS for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain Contract with (6) _____ the Owner, dated the ____ day of _____, 20____ a copy of which is hereto attached and made a part hereof for the Construction of:

PROJECT

(hereinafter called the "Work")

Date of Bond must not be prior to Date of Contract.

These notes refer to the numbers in body of Contract above:

- (1) Correct name of Contractor.
- (2) A Corporation, or Partnership or an Individual, as case may be.
- (3) Correct name of Surety.
- (4) Correct name of Owner.
- (5) County and State.
- (6) Owner.

NOW THEREFORE, if the Principals shall well, truly and faithfully perform the work in accordance with the Plans, Specifications and Contract Documents during the original term thereof, and any extensions thereof which may be granted by the Owner with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that if any legal action be filed upon this Bond, venue shall lie WEBB County, State of Texas, and that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed hereunder or the Specifications accompanying the same shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications.

IN WITNESS WHEREOF, this Instrument is executed in six counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20_____.

ATTEST:

(Principal) Secretary

PRINCIPAL

(SEAL)

By

Address

Witness as to Principal

City/State/Zip Code

Address

Phone number

City/State/Zip Code

ATTEST:

Secretary

(SEAL)

(Surety) Secretary

(SEAL)

Witness as to Surety

Address

City/State/Zip Code

SURETY

By

Address

City/State/Zip Code

Phone number

PAYMENT BOND

(As required by Chapter 2253, Texas Government Code)

THE STATE OF {}
COUNTY OF {}

KNOW ALL MEN BY THESE PRESENTS: That we (1) _____

_____ a (2) _____ of _____ hereafter called Principal and (3) _____ of _____, State of _____, hereinafter called the Surety, are held and firmly bound unto (4) _____ of _____ hereinafter called Owner, and unto all Persons, Firms, and Corporations who may furnish materials for, or perform labor upon the building or improvements hereinafter referred to in the penal sum of _____ (\$ _____) Dollars in lawful money of the United States, to be paid in (5) WEBB COUNTY, TEXAS for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain Contract with (6) _____ the Owner, dated the _____ day of _____, 20____ a copy of which is hereto attached and made a part hereof for the construction of:

PROJECT

(hereinafter called the "Work")

Date of Bond must not be prior to Date of Contract.

These footnotes refer to the numbers in body of contract above:

- (1) Correct name of Contractor.
- (2) A Corporation, or Partnership or an Individual, as case may be.
- (3) Correct name of Surety.
- (4) Correct name of Owner.
- (5) County and State.
- (6) Owner.

NOW THEREFORE, if the Principals shall well, truly and faithfully perform the work in accordance with the Plans, Specifications and Contract Documents during the original term thereof, and any extensions thereof which may be granted by the Owner with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such Contract, then this obligation shall be null and void; otherwise to remain in full force and effect.

This Bond is made and entered into solely for the protection of all claimants supplying labor and material in the prosecution of the work provided for in said Contract, and all such claimants shall have a direct right of action under the Bond as provided in Section 2253.073, Texas Government Code.

PROVIDED FURTHER, that if any legal action be filed upon this Bond, venue shall lie WEBB County, State of Texas, and that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications.

PROVIDED FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in six counterparts, each one of which shall be deemed an original, this the _____ day of _____.

ATTEST:

(Principal) Secretary

PRINCIPAL

(SEAL)

By

Address

Witness as to Principal

City/State/Zip Code

Address

Phone number

City/State/Zip Code

ATTEST:

(Surety) Secretary

(SEAL)

By

Address

City/State/Zip Code

Phone number

NOTE: If Contractor is Partnership, all Partners should execute Bond.

PERFORMANCE - PAYMENT BOND FORM

M-24, 25, Attach. Sa

_____(Seal)
Individual Principal

Address

Business – Address

City/State/Zip Code

City/State/Zip Code

Phone number

Phone number

ATTEST:

Corporate Principal

Address

Business Address Name

City/State/Zip Code

Phone number

(Affix corporate seal)

ATTEST:

By

Surety

Address

City/State/Zip Code

Corporate

Business Address

City/State/Zip Code

Phone number

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____, Secretary of the Corporation named as Principal in the within Bond; that _____ who signed the said Bond on behalf of the Principal was then _____, of said Corporation; that I know his signature thereof is genuine; and that said Bond was duly signed, sealed, an attested for and in behalf of said Corporation by authority of its governing body.

Title

(Affix Corporate Seal)

Date

Phone number

The rate of premium on this Bond is _____ per thousand. Total of premium charge

\$ _____

NOTE:

The above must be filled in by Corporate Surety. Power-of-Attorney of person signed for Surety company must be attached.

SECTION A-9
CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE

MINIMUM INSURANCE PROVISIONS AND LIMITS FOR CONSTRUCTION, REPAIR, INSTALLATION, AND MAINTENANCE CONTRACTS

Contractor shall provide and continuously maintain the minimum insurance coverages set forth below during the term of its agreement with the District; and Contractor shall require its subcontractors to purchase the same types and amounts of insurance, at a minimum, as set forth below with respect to statutory workers' compensation and liability insurance.

1. Standard ISO commercial general liability insurance at minimum combined single limits of \$1,000,000 per-occurrence and \$2,000,000 general aggregate for bodily injury and property damage, which coverage shall include: products/completed operations (\$2,000,000 products/completed operations aggregate); XCU (explosion, collapse, underground) hazards; and contractual liability. Without limitation, the commercial general liability coverage must cover all operations required in the contract, as well as contractual liability for the indemnity obligations assumed by the Contractor in the contract. Coverage must be written on an occurrence form.
2. Workers' compensation insurance at statutory limits, including employers liability coverage at minimum limits of \$1,000,000 each-occurrence, each accident/\$1,000,000 by disease each-occurrence/\$1,000,000 by disease aggregate.
3. Commercial automobile liability insurance at a minimum combined single limit of \$1,000,000 per-occurrence for bodily injury and property damage, including non-owned and hired car coverage and owned vehicles if any are owned.
4. Umbrella liability or following-form excess liability at minimum limits of \$ (See Pg. 4) each-occurrence/\$ (See Pg. 4) aggregate where applicable in any underlying coverage. Coverage must be at least as broad as the underlying commercial general liability, auto liability, and employer's liability.
5. Pollution Legal Liability
 - a) Project costs of \$1,000,000 to \$10,000,000 and over \$10,000,000
 - b) Contractors Pollution Liability:
 - \$ (See Pg. 4) per-claim/ \$ (See Pg. 4) aggregate (applies to operations that include the use, application, or consumption of pollutants)
 - Retro date shall not be later than the inception date of contract
 - Contractual liability coverage to be included in contractor's pollution liability coverage
 - c) Environmental Liability (Asbestos and removal of other hazardous materials and/or repair, maintenance, installation, construction operations that are high hazard)
 - \$5,000,000 per-claim/\$10,000,000 aggregate minimum
 - Retro date shall not be later than the inception date of contract
 - Contractual liability coverage to be included in contractor's pollution liability coverage
 - At a minimum, coverage must apply to on-premises and transit operations
6. Professional liability for design build contractors, engineers, and architects at minimum limits of \$ (See Pg. 4) per-claim/\$ (See Pg. 4) aggregate. The retro date shall not be later than the inception date of the contract.

7. Builders Risk

- a) "All-risk" including collapse, flood, and earthquake, to be written on completed value form.
- b) Coverage to include limits of at least \$250,000 for off-premises storage and transit of construction materials. Soft costs to be included at a minimum limit of \$500,000.
- c) Thirty (30)-day occupancy clause to apply.
- d) No testing exclusion should apply.

The District reserves the right to purchase the builder's risk coverage at its sole discretion.

With reference to the foregoing insurance requirements, Contractor shall specifically endorse applicable insurance policies as follows:

1. The District shall be named as an additional insured on a primary and non-contributory basis, regardless of the application of other insurance, with respect to all liability coverages, except for the professional liability and workers' compensation.
2. All liability policies shall contain no cross-liability exclusions or insured versus insured restrictions.
3. A waiver of subrogation in favor of the District shall be contained in all policies.
4. All insurance policies shall be endorsed to require the insurer to immediately notify the District of any material change in the insurance coverage.
5. All insurance policies shall be endorsed to the effect that the District will receive at least thirty (30) days' notice prior to cancellation or non-renewal of the insurance.
6. The additional insured coverage in the CGL policy in favor of the District must apply to the ongoing operations of Contractor for contract costs or up to \$1,000,000 and expanded to include products/completed operation for contract costs in excess of \$1,000,000.
7. Required limits may be satisfied by any combination of primary and umbrella/excess liability insurances.
8. Contractor may maintain reasonable and customary deductibles, subject to approval by the District.
9. Insurance must be purchased from insurers that are financially acceptable to the District with a minimum *A.M. Best* financial rating of A-:VII.
10. Coverage for commercial general liability, professional liability, and pollution legal liability must be maintained for at least one (1) to two (2) years after the project is completed.
11. For projects in excess of \$10,000,000 in cost, a per-project aggregate limit must be included in the commercial general liability.

All insurance must be written on standard ISO or equivalent forms. Certificates of insurance shall be prepared and executed by the insurance company, or its authorized agent, shall be furnished to the District within five (5) business days of being notified of the award of the contract, and shall contain provisions representing and warranting the following:

- Shall set forth all endorsements and insurance coverages according to requirements and instructions contained herein.
- Shall specifically set forth the notice-of-cancellation or termination provisions to the District.
- Copies of all required endorsements must be attached to the certificate of insurance. The certificates of insurance must be updated and resubmitted to the District to show renewal coverages, as applicable, at least thirty (30) days prior to expiration of any one or more policies.

Upon request, Contractor shall furnish the District with certified copies of all insurance policies.

**BONDS
(APPLIES TO MAJOR CONSTRUCTION CONTRACTS)**

Bonds are required for public works contracts under the following circumstance:

1. Payment and Performance Bond and Labor and Material Payment Bond, each in a personal sum equal to 100% of the contract cost.
2. A Bid Bond is also required in the amount of the bid submitted to the District.

All of the above requirements are minimum, as referenced, and may be modified at the sole discretion of the District.

Webb County Drainage District (WCDD) Recommended Insurance Provisions for Construction, Repair, Installation, and Maintenance Contractors

CONTRACT COST	TYPE OF INSURANCE	LIMITS
Less than \$1,000,000	Umbrella Liability	Not Required
	Professional Liability	\$1,000,000 Per-Claim / \$2,000,000 Aggregate
\$1,000,000 to \$5,000,000	Umbrella Liability	\$4,000,000 Per-Occurrence
	Professional Liability	\$1,500,000 Per-Claim / \$3,000,000 Aggregate
\$5,000,000 to \$10,000,000	Umbrella Liability	\$9,000,000 to \$10,000,000 Per-Occurrence
	Professional Liability	\$1,500,000 Per-Claim / \$3,000,000 Aggregate to \$2,000,000 Per Claim / \$4,000,000 Aggregate
Over \$10,000,000	Umbrella Liability	\$10,000,000 or Higher
	Professional Liability	\$2,000,000 Per-Claim / \$4,000,000 Aggregate or Higher
\$1,000,000 to \$10,000,000	Contractor's Pollution Liability	\$1,000,000 Per-Claim / \$2,000,000 Aggregate
Over \$10,000,000	Contractor's Pollution Liability	\$2,000,000 Per-Claim / \$4,000,000 Aggregate
TAIL COVERAGE		
\$1,000,000 to \$5,000,000	CGL, PL, and PLL	One (1) Year
Over \$5,000,000	CGL, PL and PLL	Two (2) Years
Any Contract Size	Hazardous Environmental Work	Two (2) Years

**SECTION A-10
NOTICE OF AWARD**

To: _____

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

The Webb County Drainage District has considered the bids submitted for the above described project in response to its advertisement for bids dated _____, 20____, and _____, 20____, and related information to Bidders.

You are hereby notified that your bid in the net amount of \$_____ has been favorable considered for the project by the District at its regular board meeting on _____, 20____. Pursuant to the information to Bidders you are asked to sign the proposed Contract (in five duplicate originals) and to return the same, along with the required Certificate of Insurance, and Payment Bond and Performance Bond within ten (10) days of your receipt of this Notice, for the approval and signature of the by the District.

For the purpose of effective date of the required Certificate of Insurance, and the Performance Bond and the Payment Bond, the date of _____, 2014, may be considered the date of the contract, if the Documents are approved by the District President.

If you fail to submit the signed Contract Performance and Payment Bonds, and the Certificate of Insurance within ten (10) working days from your receipt of this Notice, your bid will be considered as withdrawn and your bid bond will be forfeited, unless an extension for submittals has been requested in writing and approved by the District.

The Construction Contract time of _____ (____) working/calendar days is to be strictly adhered to per Division B Section 1 and contractor agrees to pay liquidated damages for late completion an amount of \$_____ for each consecutive day exceeding the contract time allotted.

You are asked to acknowledge receipt of this Notice by signing in the appropriate place below.

Dated this the _____ day of _____ of 20____.

Receipt of this Notice is hereby acknowledged Webb County Drainage District

Authorized Signature

Margie Arce
President

Title

**SECTION A-11
NOTICE TO PROCEED**

Date: _____

To: _____

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

In accordance with the construction contract dated _____, you are hereby authorized to proceed on _____.

Contract time is _____ (_____) calendar/working days.

Completion date for the project is approximately _____

Webb County Drainage District

Margie Arce
District President

The above NOTICE TO PROCEED is hereby acknowledged by

on this _____ day of _____, 20____.

Authorized Signature

Name

Title

**SECTION A-12
CERTIFICATE OF OWNER'S ATTORNEY**

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

Awarded by the District: ____ day of _____, 20____.

I, the undersigned, Angela Moorman, esq., District Attorney the duly authorized and acting legal representative of THE WEBB COUNTY DRAINAGE DISTRICT, do hereby certify as follows:

I have examined the attached Contract(s) and Surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid Agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said Agreements on behalf of the respective parties named thereon; and that the foregoing Agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions, and provisions thereof.

Angela Moorman, esq.
District Attorney

Date

SECTION A-13

NOTICE FROM THE TEXAS ETHICS COMMISSION

OVERVIEW

In 2015, the Texas Legislature adopted House Bill 1295, which added Section 2252.908 of the Government Code. The law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency. The law applies only to a contract of a governmental entity or state agency that either (1) requires an action or vote by the governing body of the entity or agency before the contract may be signed or (2) has a value of at least \$1 million. The disclosure requirement applies to a contract entered into on or after January 1, 2016.

The Texas Ethics Commission was required to adopt rules necessary to implement that law, prescribe the disclosure of interested parties form, and post a copy of the form on the Commission's website. (See attached Rules.) The Commission adopted the Certificate of Interested Parties form (Form 1295) on October 5, 2015. The Commission also adopted new rules (Chapter 46) on November 30, 2015, to implement the law.

Filing Process:

By January 1, 2016, the commission will make available on its website a new filing application that must be used to file Form 1295. A business entity must use the application to enter the required information on Form 1295 and 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 with the governmental body or state agency with which the business entity is entering into the contract.

The governmental entity or state agency must notify the commission, using the commission's filing application, of the receipt of the filed Form 1295 with the certification of filing not later than the 30th day after the date the contract binds all parties to the contract. The commission will post the completed Form 1295 to its website within seven business days after receiving notice from the governmental entity or state agency.

Information regarding how to use the filing application will be available on this site by January 1, 2016.

FREQUENTLY ASKED QUESTIONS FOR DISCLOSURE OF INTERESTED PARTIES (FORM 1295)

1. WHO IS REQUIRED TO FILE FORM 1295?

In 2015, the Texas Legislature adopted House Bill 1295, which added section 2252.908 of the Government Code. The law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties (Form 1295) to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency. The Texas Ethics Commission has adopted rules requiring the business entity to file Form 1295 electronically with the Commission.

2. WHAT CONTRACTS DOES FORM 1295 APPLY TO?

The law applies only to a contract of a governmental entity or state agency that either:

- (1) requires an action or vote by the governing body of the entity or agency before the contract may be signed; or
- (2) has a value of at least \$1 million.

Gov't Code § 2252.908. The disclosure requirement applies to a contract entered into on or after January 1, 2016.

A contract does not require an action or vote by the governing body of a governmental entity or state agency if:

- (1) the governing body has legal authority to delegate to its staff the authority to execute the contract;
- (2) the governing body has delegated to its staff the authority to execute the contract; and
- (3) the governing body does not participate in the selection of the business entity with which the contract is entered into.

1 T.A.C. § 46.1(c).

3. CAN I FILE FORM 1295 ON PAPER?

No. A business entity must file Form 1295 electronically with the Texas Ethics Commission using the online filing application. See Question #4 for information about logging in to the online filing application.

4. HOW DO I LOGIN TO THE FILING APPLICATION?

If this is your first time logging in, you will need to create an account in order to register and receive a password. Once you have registered, you will receive an email containing a password setup link. Click on the link to set your password. After you have established an account, you will use your email address, password, and user type (either "Business Entity" or "Governmental Entity/State Agency") to log in to the filing application. Watch our short videos on "Logging In The First Time" on the Form 1295 File Reports Electronically web page.

5. IS THERE A MOBILE VERSION?

The mobile version is not complete at this time, but will be available soon.

6. HELP! I FORGOT MY PASSWORD.

If you forgot your password, you can reset your password by clicking the "Forgot Password?" link on the filing application login screen. Once you enter your email address and filer type and successfully answer the security questions, you will receive an email containing a password reset link. If you cannot successfully answer your security questions, you will need to call the Texas Ethics Commission at (512)463-5800.

7. CAN I HAVE MULTIPLE ACCOUNTS?

You can have a separate account associated with each unique email address. However, once an account is established, there is no way to combine it with another account. You can only view those certificates created under your own unique email address. If you want to view all your certificates together in one account, we highly encourage you to setup a specific email address to register your account and use that email address each time you login to the filing application.

8. HOW MUCH TIME DO I HAVE TO ACKNOWLEDGE A FORM 1295?

A state agency or other governmental entity must acknowledge the receipt of the filed Form 1295 not later than the 30th day after the date the contract binds all parties to the contract. Once a Form 1295 is acknowledged, it will be posted to the Texas Ethics Commission's website within seven business days.

9. DO I SEND A COPY OF THE NOTARIZED FORM 1295 TO THE TEXAS ETHICS COMMISSION?

No. Do not send a paper copy of the notarized Form 1295 to the Texas Ethics Commission. If you are with a state agency or other governmental entity, you will login to the filing application and acknowledge receipt of Form 1295 electronically. See Question #4 for more information about logging into the filing application.

10. WHAT IF I ACCIDENTALLY ACKNOWLEDGE THE WRONG FORM 1295?

Before you acknowledge a Form 1295, you should double check that you are acknowledging the correct one. If you acknowledge a Form 1295 in error, you cannot undo the certification. Contact the Texas Ethics Commission at 512-463-5800 and ask to speak with Technical Support.

11. THE FILING APPLICATION SAYS THIS FORM 1295 HAS ALREADY BEEN ACKNOWLEDGED. WHAT DO I DO NOW?

First, you should double check that you are entering the correct certification number. If you still receive an error, contact the Texas Ethics Commission at 512-463-5800 and ask to speak to technical support.

12. I SUBMITTED A FORM 1295 AND REALIZED THERE IS AN ERROR. CAN I STILL EDIT IT?

No. Once a Form 1295 has been submitted by the business entity, it can no longer be edited. If you found an error, you will need to start a new certificate and re-enter all the required information.

13. WHAT IF THE CONTRACT ASSOCIATED WITH THE FORM 1295 IS NEVER FULFILLED?

All certificates that are filed with the Texas Ethics Commission and acknowledged by a governmental entity will be posted to the Commission's website regardless of the eventual outcome of the contract associated with the certificate.

14. WHY AM I NOT RECEIVING EMAIL MESSAGES FROM THE TEXAS ETHICS COMMISSION?

All password reset links will be sent to the email address you provided when you registered. This should be an email address that is current and that you check often. You can verify and update your email address right after you log in. Also, be sure to "whitelist" or mark as "safe" emails that come from "do-not-reply@ethics.state.tx.us" and be sure to check your Spam or Junk folder for any missing messages.

DIVISION B
SPECIAL PROVISIONS

**SECTION B-1
CONTRACT TIME & LIQUIDATED DAMAGES**

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

The Contract Performance for this project shall be **Two Hundred Forty (240) calendar** days defined in the Specifications under General Provisions, Division C, Section 1.

The time set forth in the proposal for the completion of the work is an essential element of the Contract. For each day under the conditions described in the preceding Paragraph that any work shall remain uncompleted after the expiration of the days specified in the Contract, together with any additional days allowed, the amount per day given in the following schedule will be deducted from the money due or to become due to the Contractor, as liquidated damages for late completion of the specified work.

FOR AMOUNT OF CONTRACT		
From More Than	To and Including	Amount of Penalty Per Day over Contract Time
\$0	\$100,000	\$200
100,000	500,000	400
500,000	1,000,000	550
1,000,000	2,000,000	700
2,000,000	5,000,000	850
5,000,000	10,000,000	1,200
10,000,000	15,000,000	1,500
15,000,000	20,000,000	1,700
20,000,000	Over 20,000,000	2,500

**SECTION B-2
EQUAL OPPORTUNITY CLAUSE**

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

1. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex or natural origin. The Contractor will take Affirmative action to insure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color or national origin. Such action shall include, but not limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of the non-discrimination clause.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or natural origin.
3. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or worker's representative of the Contractor's commitments under Section 202 of Executive Order No. 11246, as amended (3CFR 169 (1974) and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The Contractor will comply with all provisions of Executive Order No. 11246, as amended, and of the rules, regulations and relevant orders of the Secretary of Labor.
5. The Contractor will furnish all information and reports required by Executive Order No. 11246, as amended, and by the rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.
6. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246, as

amended, and such other sanctions may be imposed and remedies invoke as provided in Executive Order No. 11246, as amended or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.

7. The Contractor will include the Provisions of Paragraph 1 through 7 in every Subcontract or purchase order unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246, as amended, so that such provisions will be binding upon each Subcontractor or Vendor. The Contractor will take such action with respect to any Subcontract or Purchase Order, as the contracting may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a Subcontractor or Vendor as a result of such direction by the contracting agency, the Contractor may request the United States to enter into such litigation to protect the interest of the United States.

**SECTION B-3
INSPECTION BY DISTRICT**

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

The work covered by these Specifications shall at all times be subject to inspection by the Webb County Drainage District Engineer (Engineer) authorized inspectors.

The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether the work performed is substandard and deviates from the requirements of the plans and specifications. The Engineer shall have the authority to halt the construction of any portion of the work not meeting requirements until such time as said work has been corrected to the satisfaction of the Engineer.

Engineer's normal working hours are Monday through Friday, **not including Saturdays, Sundays, or legal holidays** from 8:30 A.M. to 5:00 P.M. The contractor shall notify the Engineer at least twenty-four (24) hours in advance for any work that is to be scheduled beyond the limits of the Engineer's working hours, and the Contractor shall not begin any such work scheduled unless proper inspection and/or testing has been pre-arranged with the Engineer, with the cost for such inspection beyond the Engineer's working hours borne by the Contractor. **However, should the Engineer opt to expedite a project and chooses a calendar day contract for such endeavor, the Engineer will bear the 8:30 A.M. to 5:00 P.M. inspection cost only, and the contractor pays for time beyond the Engineer's working hours limit.**


**SECTION B-4
PROJECT SIGN**

The general contractor shall erect two (2) signs, unless otherwise noted by the District Engineer, at the project site identifying the project and indicating that the Webb County Drainage District No. 1 is participating in the development of the project.

The project sign shall be substantially in accordance with the drawing printed on the following page and shall be made from $\frac{3}{4}$ inch plywood, placed in a prominent location and maintained in good condition until completion of project.

THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE PROJECT CONSTRUCTION SIGNS WHEN THE WORK HAS BEEN COMPLETED.

**SECTION B-4
PROJECT SIGN**

	10"	WEBB COUNTY DRAINAGE DISTRICT No. 1 } 3" "Project 2024-001 Lago Dam Conversion } 2 1/2" to Regional Detention Pond"
		Margie Arce Drainage District President
1 3/4"	{ Sara Sanchez Boardmember	
1 3/4"	{ CRANE ENGINEERING CORP. }-BOLD 1310 Junction Dr., Suite B Laredo, Texas 78041 Telephone: (956) 712-1996 Fax: (956) 712-2378	Contractor's Name Address City, State, Zip Code Telephone Number Fax Number

NOTE: Signs are to be installed in ground on 4' x 4' posts
 Blue borders
 White background
 Red letter
 Two (2) project signs are required - 4' x 8'

CONTRACTOR TO REMOVE SIGNS UPON COMPLETION OF PROJECT

**SECTION B-5
CONSTRUCTION PROGRESS SCHEDULE**

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

The Contractor shall submit to the District for review five (5) working days prior to the Preconstruction conference an initial work plan or Construction Progress Schedule based only on working days for the **Webb County Drainage District – Project 2024-001 Lago Dam Conversion to Regional Detention Pond**.

This plan shall show complete sequence of construction activity, identifying work of separate phases and other logically grouped activities. The schedule shall identify the first work day of each week.

All submittal for products to be used in the construction shall also be submitted with this schedule.

If required by the District, or its representative, the Construction Progress Schedule shall be revised and resubmitted.

The Construction Progress Schedule shall be submitted periodically to show actual progress of each stage by percentage against the initial revised schedule.

SECTION B-6 ILLEGAL DUMPING

The general contractor shall not dispose of any material whatsoever taken from the project site, onto any areas not considered to be legal dump sites. Materials such as broken concrete, asphalt, rebar, trash, etc. are to be disposed of properly, i.e. at the City Landfill or as directed by the District Engineer. Unless otherwise noted, no material, including dirt, is to be dumped or placed into an existing creek or channel.

The general contractor is hereby instructed to contact District Engineer for additional information on illegal dumping city ordinances.

*Building construction debris should be hauled to the Landfill only by a **franchised hauler**.

DIVISION C
GENERAL PROVISIONS

SECTION C-1 DEFINITION OF TERMS

C-1.01 DEFINITION OF TERMS:

Whenever the terms defined herein occur on the Plans, in any other documents or instrument herein contemplated or to which the Specifications apply, the intent and meaning shall be as follows:

C-1.02 OWNER: (Or Party of the First Party):

The individual, firm corporation or the political subdivision for whom the facilities covered by these Plans and Specifications are to be constructed.

C-1.03 CONTRACTOR: (Or Party of the Second Part):

The individual, firm or corporation with whom the Contract is made by the Owner.

C-1.04 ENGINEER:

District Engineer employed by the Owner, or such other Engineer, or Supervisor authorized by the District Engineer or the Owner to act on their behalf.

C-1.05 CONSULTANT:

Licensed Engineer or Architect employed by the Owner, and authorized by the District Engineer or the Owner to act on their behalf. The decisions by the District Engineer are final.

C-1.06 BIDDER:

An individual, firm or corporation submitting a proposal.

C-1.07 SUPERINTENDENT:

An authorized representative of the Contractor.

C-1.08 INSPECTOR:

An authorized representative of the Owner and Engineer

C-1.09 LABORATORY:

A testing laboratory approved by the Owner and Engineer.

C-1.10 CONTRACT:

The Agreement between the Owner and the Contractor covering the furnishing of all materials and labor necessary to complete the work and consisting of the Plans and Specifications, together with such supplemental agreements as may be made from time to time.

C-1.11 WORKING DAY:

A "Working Day" is defined as any day not including Saturdays, Sundays, or any legal holidays, in which weather or other conditions, not under the control of the

Contractor, will permit construction of the principal units of work for a continuous period of not less than seven (7) hours. If the contractor opts to work on Saturday, Sunday, or legal holiday requiring construction inspection, said days are considered working days and charged to the contract time, **and the cost for such inspection borne by the contractor.**

C-1.12 WORK:

All structures, services, machinery, equipment, or other facilities that are described in the Plans and Specifications together with such additions or modifications as may be ordered by the Owner from time to time.

C-1.13 WORK ORDER, OR NOTICE TO PROCEED:

A document authorized by the Owner and issued by the Engineer directing the Contractor to proceed on all or part of the work and a specified date.

C-1.14 CHANGE ORDER:

A supplemental agreement adding to or modifying the Contract, including such additional Plans and Specifications as necessary to properly describe the required change.

C-1.15 SURETY:

The corporate body which is bound with the Contractor for the faithful performance of the work covered by the Contract.

C-1.16 PLANS:

The drawings published by the Engineer showing the locations, character, dimensions and details of the work which are part of the Contract.

C-1.17 SPECIFICATIONS:

The directions, provisions and requirements contained herein pertaining to the method and manner of performing the work, or to the quantities, or to the qualities of materials to be furnished under the Contract. The term "Specifications" shall be deemed to include the Contract Documents, the Special Provisions, the General Provision, and the Technical Provisions as contained herein, together with all supplemental agreements and change orders. Specifications are part of the Contract. Plans take precedence over Specifications if in conflict.

C-1.18 CALENDAR DAYS:

A "Calendar Day" is defined as any day of the week inclusive of Saturdays, Sundays, and legal holidays.

C-1.19 INSPECTION:

The periodic on site review of the progress of project construction, may be referred to as progress, pre-final, or final inspection, but in each case of

inspection a “punch-list” of items requiring varying degrees of further work is prepared.

C-1.20 PROJECT ACCEPTANCE:

Condition resulting when all items of construction are complete, inspected for completion by inspector and engineering staff and approved by Webb County Drainage District.

SECTION C-2 DEFINITION OF ABBREVIATIONS

Whenever the abbreviations defined herein occur on the Plans, in the Specifications, Contract, Bond, advertisement, Proposal, or in any other Instrument herein contemplated or to which the Specifications apply or may apply, the intent and meaning shall be as follows:

A.S.H.O	American Association of State Highways Official
HP	Horsepower
K.W.	Kilowatt
Am. or Amp.	Ampere
KVA	Kilovolt
A.S.T.M	American Society for Testing Materials
In. or "	Inch or Inches
Lin.	Linear
Asph.	Asphalt
Lb. or #	Pound
Ave.	Avenue
A.W.W.A.	American Waterworks Association
Max.	Maximum
Min.	Minimum
MH	Manhole
I.P.	Iron Pin
B & S.	Bell and Spigot
Mono.	Monolithic
Blvd.	Boulevard
No.	Number
B.T.U.	British Thermal Unit
%	Percent
B.M.	Bench Mark
PL	Property Line
C.I.	Cast Iron
R.	Radius
C.C.C.	Center to Center
Rein.	Reinforced or reinforcing
C/G	Curb & Gutter
C.L.	Center Line
V.G.	Valley Gutter
Con. or Conc.	Concrete
Rem.	Remove
C.S.P.	Concrete Sewer Pipe
Rep.	Replace
C.M.	Circular Mil
R.C.S.D.P.	Reinforced Concrete Storm Drain Pipe
C.F.M.	Cubic Feet per Minute

C.O.	Cleanout
R.P.M.	Revolutions per minute
Cond.	Conduit Minute
Corr.	Corrugated
ROW or R of W	Right of Way
Cu.	Cubic
Vol.	Volume
Culv.	Culvert
S.S.	Sanitary Sewer
Dia.	Diameter
S.D.	Storm Drain
D.S.	Double Strength
Sq.	Square
Dr.	Driveway
Std.	Standard
Elev. or El.	Elevation
T.H.D.	Texas Highway Department
F.	Fahrenheit
V.C.P.	Vitrified Clay Pipe
Ft. or '	Foot or Feet
V	Volt
Gal.	Gallon
Yd.	Yard
S.O.P.	Secretaria de Obras Publicas (Mexican Secretaries of Public Works)
Tex. D.O.T., or TxDOT	Texas Department of Transportation

SECTION C-3 INSTRUCTION TO BIDDERS

C-3.01 EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND SITE OF WORK:

Submission of a Proposal shall constitute prima facie evidence that the Bidder has carefully examined the site of the proposed work, the Proposal, Contract Forms, Plans and Specifications, and has satisfied himself as to the character, quality, and quantity of work to be performed, materials to be furnished, and as to the requirements of these Specifications, Special Provisions, and Contract.

Any information on the Plans or in the Specifications as to the soil, or material borings, or tests of existing materials, or location of existing utilities is for the convenience of the Bidder. The accuracy of the information is not guaranteed, and no claims for extra work or damages will be considered if it is found during construction that the actual conditions or locations vary from those indicated on the Plans or in the Specifications.

C-3.02 INTERPRETATION OF ESTIMATES:

Any estimate of quantities of work to be done and materials to be furnished in the proposal or on the Plans is given only as a basis of comparison of Proposals and the Award of the Contract. Such estimate is the result of careful calculation and is believed to be correct, but the Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith, nor shall the Bidder plead misunderstanding or deception because of such estimate of quantities, or of the character, location or other conditions pertaining to the work. Payment to the Contractor under unit price contracts will be made only for the actual quantities of work performed or materials furnished in accordance with the Plans and Specifications, and it is understood that the quantities may be increased or diminished as hereinafter provided without in any way invalidating the unit bid prices.

C-3.03 PREPARATION OF PROPOSAL:

The Bidder shall submit his proposal on the forms furnished by the Owner. All blank space in the proposal form shall be filled in for each and every item for which quantity is given, and the Bidder shall state the price (typed, or written in ink, both in words and numerals for which he proposed to do each item of work. In case of conflict between words and numerals, the words will govern.

The Proposal shall be signed in ink by the person or persons making, or authorized to make the bid. If the Proposal is offered by an individual, his name and post office address shall be given. If the proposal is offered by a firm or partnership, the name and post office address of each member of the firm or partnership shall be given. If the Proposal is offered by a corporation, the name and title of the person signing the Proposal, and the post office address of the corporation shall be given.

Any person signing a Proposal as agent must file with the Owner legal evidence that he has the authority to do so, and that the signature is binding upon the firm or corporation.

C-3.04 REJECTION OF PROPOSAL:

A Proposal showing any alterations or of words or figures, erasures, additions not called for, alternate bids not called for, incomplete bids, lack of sufficient prior work experience, condition bids, or proposals not accompanied by proposal guaranty as required, will be considered as an irregular bid and may be rejected. The Owner reserves the right to waive technicalities as to changes, alterations, or reservations, and to make the award to the best interest of the Owner.

C-3.05 PROPOSAL GUARANTY:

Each Proposal shall be accompanied a certified check, cashier's check or bid bond in the amount of five (5%) percent of the total amount bid. Checks shall be made payable unconditionally to the Owner.

C-3.06 DELIVERY OF PROPOSAL:

Each Proposal must be an original and must be sealed, together with the proposal guaranty, in an envelope plainly marked with the name of the project as shown on the Notice to Bidders, and the name and address of the Bidder. When submitted by mail, this envelope shall be placed in another envelope addressed as indicated in the Notice to Bidders.

Only those proposals actually in the hands of the designated official at the time set in the Notice to Bidders shall be considered. Proposals submitted by telephone, telegraph or fax, will **NOT** be considered.

C-3.07 WITHDRAWAL OF PROPOSAL:

A Bidder may withdraw his proposal provided he submits to the official designated to receive bids his request in writing to do so prior to the time set for opening of proposals.

C-3.08 PUBLIC OPENING OF PROPOSALS:

Proposals will be publicly opened and read aloud at the time and place set in the Notice to Bidders.

C-3.09 COMPETENCY OF BIDDERS:

Before any Contract is awarded, the Owner may require the Bidder to furnish a complete statement of his financial resources. His experience in similar work, his equipment available for the work proposed, resumes of key employees or any other information necessary to establish his competency and reliability as a Contractor.

C-3.10 DISQUALIFICATION OF BIDDER:

Any of the following causes may be considered as sufficient for the disqualification of the Bidder and the rejection of his Proposal:

- More than one proposal for the same work from an individual or corporation under the same or different name.
- Evidence of collusion among Bidders.

- An unbalanced Proposal.
- Failure to submit a unit price for each item of work shown on the Proposal.
- Lack of competency as revealed by the financial statement, experience record, or plant and equipment statement furnished.
- Lack of responsibility as shown by past work judged from the standpoint of workmanship and progress.
- Uncompleted work which, in the judgment of the Owner, might hinder or prevent the prompt completion of additional work if awarded.
- Being in arrears on existing Contracts.
- Having defaulted on a previous Contract or assessed liquidated damages.

C-3.11 MATERIALS GUARANTY:

Before any Contract is awarded, the Owner may require the Bidder to furnish a complete statement of the origin, composition or manufacturer of any and all materials proposed to be used in the work, together with samples, which may be subjected to tests to determined their quality and fitness for the work.

SECTION C-4
AWARD AND EXECUTION OF CONTRACT

C-4.01 CONSIDERATION OF PROPOSALS:

For the purpose of award, after the proposals are opened and read, the bids considered the most advantageous to the Owner will be carefully studied. The bids will then be compared and the results made public. Until the award of the Contract is made, the Owner reserves the right to reject any or all proposals, to waive technicalities, to advertise for new proposals, or to proceed to do the work otherwise when the best interests of the Owner will be thereby promoted.

C-4.02 AWARD TO CONTRACT:

Contract will not be awarded until the necessary investigations as to the competency of the low bidder are made. Award of Contract will be made by the Owner, upon recommendation by the Engineer, to the lowest responsible bidder meeting the requirements of the Owner. Award of Contract will be made within ninety (90) days after the opening of proposals, unless stated otherwise in the Notice to Bidders.

C-4.03 RETURN OF PROPOSAL GUARANTIES:

As soon as the proposal price has been compared the Engineer may, at his discretion, return the proposal guaranties accompanying in those proposals which, in his judgment, will not be considered in making the award. When award is made, the successful bidder's proposal guaranty only will be retained until after Contract and Bond have been executed.

C-4.04 PERFORMANCE AND PAYMENT BOND:

With ten (10) days after Notification of Award of Contract, the successful bidder shall execute and file with the Owner a separate surety and payment bond as required by Chapter 93 of the Acts of the Regular Session of the 56th Legislature of Texas, in the full amount of the contract price as a guarantee of the faithful performance of the Contract and payment of all obligations which may be incurred for material and labor used in the work. Bonds shall be executed by a surety company authorized to do business in the State of Texas on the bond forms provided in these Documents. Any surety shall be subject to the approval of the Owner.

C-4.05 EXECUTION OF CONTRACT:

Within ten (10) days after Notification of Award of contract, the successful bidder shall sign and place in the hands of the Owner the necessary agreement entering into a Contract with the Owner.

C-4.06 NOTICE TO PROCEED:

The Notice to Proceed shall be issued within ten (10) days of the execution of the Agreement by the District provided that the Contractor has properly executed and submitted all Documents required by the Webb County Drainage District within

the same period of time. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement between the District and Contractor. If the Contractor has submitted all Documents required and the Notice to Proceed has not been issued within the ten (10) day period or within the time extension, the Contractor may terminate the Agreement without further liability on the part of either party. Furthermore, should the Contractor fail to execute all the requirements within this same ten (10) days period or within the time extension, the District may terminate the Agreement.

C-4.07 INVESTIGATIONS:

The Webb County Drainage District may make such investigations as he deems necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the District all such information and data for this purpose as the District may request.

C-4.08 APPROVAL OF CONTRACT:

No Contract shall be binding upon the Owner until it has been signed by the Owner and returned to the Contractor.

C-4.09 FAILURE TO EXECUTE CONTRACT:

Failure to comply with any of the requirements of these Specifications, to execute Contract within ten (10) days after notification of work, or to furnish surety as required, shall be just cause for the annulment of the award. In case of annulment of award, the proposal guaranty shall become the property of the Owner, not as penalty, but as a liquidated damage.

C-4.10 DISTRIBUTION OF PLANS

After the Notice to Proceed is issued, the Owner shall provide the Contractor with three (3) complete sets of Plans and Specifications for Contractor's use during construction. In the case that additional sets are required, the Contractor shall make arrangements to obtain the extra sets at his own expense.

C-4.11 RESPONSE TIME DURING THE PROSECUTION OF THE PROJECT:

The contractor shall furnish the owner with three (3) local telephone numbers where contractor or a responsible representative of contractor can be reached at any and all time during the prosecution of this project, and especially during weekends or holidays. Failure of contractor to respond to any such emergency which causes outside personnel, equipment and materials to be used in such emergency will result in the contractor being charged an amount which shall be twice the cost incurred by the District in using personnel, equipment and materials to handle such emergency due to failure of the contractor to do so, and, in addition, the contractor will be charged a penalty of \$500.00 for each emergency to which it does not respond. In this connection, "failure to respond" means the failure of the contractor to respond to telephone calls from the relevant staff or owner.

SECTION C-5 SCOPE OF WORK

C-5.01 INTENT OF PLANS AND SPECIFICATIONS:

It is the intent of the Plans and Specifications to describe the complete work to be performed under the Contract. Except as provided on the Plans or in the Specifications, it is also the intent that the Contractor shall furnish all materials, supplies, tools, equipment, labor and incidentals necessary to complete the work.

C-5.02 CHANGES AND INCREASED OR DECREASED QUANTITIES OF WORK:

The Owner has the right to make such changes and alterations in the Plans or in the quantities of work as he may consider necessary or desirable, and such changes and alterations shall not be considered as a waiver of any condition of the Contract, nor shall they invalidate any provision thereof. The Contractor shall perform the work as increased or decreased, and no allowance will be made for anticipated profits.

Payment to the contractor will be made for the actual quantities of work done and materials furnished at the unit prices as set forth in the Contract, except as follows:

When the total cost of work to be done, or of materials to be furnished, is more than one hundred and twenty-five (125) percent of the total contract price for the item stated in the Proposal, then either party to the Contract, upon demand, shall be entitled to a revised consideration on that portion of the work above one hundred and twenty-five (125%) percent of the total contract price stated in the Proposal.

When the total cost of work to be done, or of materials to be furnished, is less than seventy-five (75%) percent on the total contract price for the item stated in the Proposal, then either party to the Contract, upon demand, shall be entitled to a revised consideration on the work actually done.

Revised consideration shall be determined by supplemental agreement between the parties, which supplemental agreement shall be included with, and shall become a party of, the Contract.

C-5.03 OMITTED ITEMS:

The Owner may, in writing, order the omission from the work of any item found unnecessary to the project. Such omission shall be subject to all provisions of Par. C-5.02.

C-5.04 EXTRA WORK:

When the proper completion of the project requires work for which no quantities or prices were shown in the Proposal, such work shall be called "EXTRA WORK" and shall be performed by the Contractor when so directed in writing by the Owner. "EXTRA WORK" shall be performed in accordance with these Specifications and as may be directed by the Engineer.

Prices for extra work shall be itemized and covered by a supplement agreement submitted by the Contractor and approved by the Owner prior to the starting of such work.

Claims for extra work not authorized in writing by the Owner prior to the performance thereof will be rejected.

C-5.05 MAINTENANCE OF TRAFFIC:

When the work requires partial or complete closing of any driveway, alley, street, or roadway, the Contractor shall so schedule and prosecute his work that traffic will be hindered to a minimum.

C-5.06 REMOVAL AND DISPOSAL OF STRUCTURES AND OBSTRUCTIONS:

All structures and/or obstructions on the site of the work, which are not to remain in place or which are not to be used in the new construction shall be removed as directed by the Engineer. Such items of removal are not listed in the Proposal will not be paid for as separate items; the cost of doing such work shall be included in the unit price bid for other items.

C-5.07 TOOLS AND ACCESSORIES:

When special wrenches, gauges, or other special tools or accessories are required to properly maintain and operate any machine or equipment furnished under this Contract, the furnishing of such tools and accessories shall be deemed to have been included in the Contract and they shall be furnished by the Contractor without extra cost to the Owner.

C-5.08 GUARANTEES:

All structural, mechanical and electrical equipment or instrument shall be guaranteed against mechanical and physical defects, leakage, breakage, or other damage occurring during normal operation for a period of one (1) year after such equipment or instruments have been accepted by the Owner. The Contractor shall promptly repair or make good, at his own expense, any defect in such equipment or instruments.

C-5.09 GENERAL GUARANTEE:

All work included in the Contract shall be guaranteed against faulty material or workmanship for a period of one (1) year after the work has been accepted by the Owner.

Neither final acceptance of the work, nor final payment thereof, nor occupancy and use of the work by the Owner shall constitute a waiver of the Owner's right to require the Contractor to repair or make good any such faulty materials or workmanship.

C-5.10 FINAL CLEANING UP:

Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, tools, and materials and shall dispose of all rubbish, temporary structures, and surplus backfill. The site shall be left in a neat and presentable condition throughout. Any land area, driveway, sidewalk, alley, street or road (concrete or asphalt) which has been cut or disturbed during the prosecution of the work shall be repaired at the Contractor's expense to a condition at least as good or better as originally existed.

C-5.11 EXISTING STRUCTURES:

The Plans show the locations of all known surfaces and subsurface structures. However, the exact location of gas mains, water mains, conduits, sewer etc., is unknown and the Owner assumes no responsibility for failure to show any of these structures on the Plans or to show them in their exact location. It is mutually agreed such failure will not be considered sufficient basis for claims for additional compensation for extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as necessitates, or requires the building of special work, provision for which is not made in the Plans and Proposal, in which case the provisions in these Specifications for extra work shall apply.

SECTION C-6 CONTROL OF WORK AND MATERIALS

C-6.01 AUTHORITY OF ENGINEER:

The work will be observed, tested and inspected by the Engineer, and performed to his satisfaction, in accordance with the Contract, Plans and Specifications. The Engineer will decide all questions which may arise as to the quality and acceptability of materials furnished and work performed, as to the manner of performance and rate of progress of said work, as to the interpretation of the Plans or Specifications relating to the work, as to the fulfillment of the Contract on the part of the Contractor and to the rights of different Contractors on the project.

The decisions of the District Engineer will be final.

C-6.02 DISTRICT ENGINEER AS REFEREE:

The District Engineer will act as referee in all questions, arising under the terms of the Contract between the parties thereto, and his decisions shall be final and binding.

C-6.03 ADEQUACY OF DESIGN:

It is understood that the Owner selected the Engineer named herein to prepare the Plans and Specifications, and all supplements thereto, and it is agreed that the Owner will be responsible for the adequacy of the design, sufficiency of the Plans and Specifications, and safety of structures, provided the Contractor has complied with said Plans and Specifications, all modifications thereof, and additions and alterations thereto approved by the Engineer. The burden of proof shall be upon the contractor to show that he has fully complied with the Plans and Specifications, all modifications thereof, and all additions and alterations thereof.

C-6.04 PLANS:

Plans will show the lines, grades, cross sections, details and general features of the work. Where shop drawings or working drawings are required, they shall be furnished by the Contractor and approved by the Engineer. Authorized alterations to the Plans will be endorsed on approved copies of the Plans or shown on supplementary sheets.

The approval by the Engineer of the Contractor's shop drawings or working drawings will not relieve the Contractor of any responsibility under the Contract.

The Contractor shall furnish the Engineer with such blue print copies of shop drawings or working drawings as may be required for approval and for the purposes of supervision.

The contract price shall include the cost of furnishing all such prints.

C-6.05 CONFORMITY WITH PLANS:

The finished work shall conform with the lines, grades, cross sections, details and dimensions shown on the Plans. Such deviations from the Plans as may be required will, in all cases, be determined by the Engineer and authorized in wiring.

C-6.06 COORDINATION OF PLANS AND SPECIFICATIONS AND SUPPLEMENTAL AGREEMENTS:

The Plans, Specifications, and supplemental agreements are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. In case of disagreement, Plans shall govern over "Technical Provisions," and "Special Provisions" shall govern over "Technical Provisions." The Contractor shall not take advantage of any apparent error or omission on the Plans or Specifications. In the event the Contractor discovers any apparent error or discrepancy, he shall immediately call upon the Engineer for his interpretation and decision, and such decision shall be final.

C-6.07 COOPERATION OF CONTRACTOR:

The Contractor shall give the work the constant attention necessary to facilitate the progress thereof and shall cooperate with the Engineer and with other Contractors in every way possible.

The Contractor shall have on the work at all times, a satisfactory and competent English-speaking Superintendent, authorized to receive order, and act for him as his agent. The Contractor shall designate to the Engineer in writing the name of such Superintendent, and the designated Superintendent may not be removed from the work without the written permission of the Engineer.

C-6.08 CONSTRUCTION STAKES:

Construction staking will be provided by the Engineer. Contractor is to request staking one week prior.

Any missing construction stakes which have been destroyed by the different utility companies, vandals and/or the contractor at the time of construction will be replaced by the contractor at his own expense.

The Engineer may, at his option, make spot or complete checks on all construction alignment and grades to determine the accuracy of the contractor's survey work. These checks, however, will not relieve the Contractor of his responsibility of constructing the work to the lines and grades as shown on the plans or approved change orders. Computations, sketches, and other drawings used in the design and layout of this project will be made available to the Contractor, however these items will not relieve the contractor of his responsibility.

C-6.09 QUANTITIES OF MATERIALS:

It shall be the responsibility of the Contractor to verify all quantities of materials shown on the Plans before ordering such materials. Payment is provided for acceptable materials, and materials rejected due to improper fabrication or excess quantity or other reasons within the control of the Contractor will not be paid for regardless of the quantities or dimension shown on the Plans.

C-6.10 APPROVAL OF MATERIALS:

The sources of supply of materials shall be subject to the approval of the Engineer. Representative samples of materials proposed for use shall be submitted, if required, for examination and testing by an independent testing laboratory selected by the District.

Results obtained from testing such samples may be used for preliminary approval, but will not be used as final acceptance of materials. All materials proposed for use may be inspected or tested at any time during their preparation or use.

If at any time, it is found that sources of supply which have been approved do not furnish a product of uniform quality, or if the product becomes unacceptable at any time, the Contractor shall furnish approved material from another source.

Any material, which after approval has for any reason become unfit for use, shall not be incorporated into the work.

C-6.11 SAMPLES AND TESTS:

Samples and testing procedures shall conform to the requirements of appropriate designations of the American Association of State Highway Officials or the American Society for Testing Materials.

Test for determining the fitness of materials; tests for the purpose of obtaining preliminary approval of materials; tests for determining concrete mixes will be at the expense of the Contractor. Tests for the actual control of the work, such as soil compacting tests and concrete compressive strength test, will be at the expense of the Owner. Any and all retesting because of failure in soil compaction or concrete compressive strength tests shall be done at the expense of the Contractor. Tested and accepted subgrade shall be covered and protected with the flexible base within a maximum of seven (7) days. Tested and accepted flexible base shall be primed and cured a minimum of seventy two (72) hours and shall be cured with asphalt within seven (7) days. Failure to comply with the seven (7) days limitations may result in the need for re-testing at the Contractors expense depending on weather conditions and at the discretion of the Engineer. The Contractor shall provide such facilities as the Engineer may require for conducting field tests and collecting and forwarding samples. All sampling and testing shall be under the control of the Engineer and shall be done in laboratories approved by him.

C-6.12 STORAGE:

Materials shall be stored as to insure the preservation of the quality and fitness for the work. Material which is not, in the opinion of the Engineer, properly stored and protected will not be included as material in hand in the estimates.

C-6.13 AUTHORITY AND DUTIES OF INSPECTORS:

Inspectors employed by the Owner shall be authorized to inspect all work done in any part of the project and all preparation, fabrication, or manufacturer of the materials to be used.

The Inspector shall be authorized to call to the attention of the Contractor any failure of the work or materials to conform to the Specifications or the Plans. He will in no case act as foreman or perform other duties for the Contractor, nor shall he interfere with the management of the work. In the event the Contractor does not comply with the requirements of the Owner and the Engineer, he may stop all work until the non-compliance is corrected.

If the progress of the work becomes unduly delayed because of negligence on the part of the Contractor, the Inspector shall notify the Owner and the Engineer, who may require the Contractor to give reasons for the delay. If it is found that the Contractor is at fault, then it is the prerogative of the Owner to demand correction.

Inspection as provided herein shall not relieve the Contractor from any obligation to perform the work in conformity with the requirements of the Plan and Specifications. No Inspector shall be authorized to revoke, alter, enlarge or release any requirements of the Plans and Specifications, or to issue instructions contrary to the Plans and Specifications, or to approve or accept any portion of the work.

The Contractor shall furnish every reasonable facility for ascertaining whether or not the work is performed in accordance with the Plans and Specifications.

No backfill shall be made unless inspected by the Engineer or the District's representative designated in writing and verbal approval of field Engineer is given to such work; if the Contractor should backfill any work without such inspection and approval, the Contractor shall remove or uncover such portions of the finished work as may be directed. After examinations, the Contractor shall restore said portion of the work to the standard required by the Plans and Specifications. Should the work thus exposed and examined prove acceptable or unacceptable, the uncovering or removing and the replacing of the covering or making good of the parts removed shall be done at the Contractor's expense.

C-6.14 SUSPENSION OF WORK:

In case of any dispute arising between the Contractor and the Inspector as to materials furnished or the manner of performing the work, the Inspector shall

have authority to reject materials or suspend work until the question at issue can be referred to and decided by the Engineer.

If the Contractor refuses to suspend work on verbal order, the Inspector shall issue a written order to suspend work giving the reason for such suspension. After placing the order in the hands of the Contractor's man in charge, the Inspector shall immediately leave the job. Work done during the absence of the Inspector shall not be paid for.

C-6.15 REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK:

All work which has been rejected or condemned shall be repaired or removed and replaced as the Engineer may direct, at the expense of the Contractor. Materials not conforming to the requirements of the Plans and Specifications shall be removed immediately from the site of the work and replaced with satisfactory material at the expense of the Contractor.

Work done without lines and grades, work done beyond the lines and grade shown on the Plans, work done without inspection, or any extra or unclassified work done without written authority and prior agreement in writing as to the prices will be done at the Contractor's risk and will be considered unauthorized. At the option of the Engineer, such work may not be measured and paid for, or may be ordered removed and replaced at the expense of the Contractor.

Upon the failure of the Contractor to repair satisfactorily or to remove and replace rejected, unauthorized, or condemned work or materials immediately after receiving formal notice from the Engineer, the Owner may at his own option:

- a. Recover for such defective work or materials on the Contractor's bond, or;
- b. Recover from such defective work or materials by action in a court having proper jurisdiction in such matter, or;
- c. Employ labor and equipment and satisfactorily repair, or remove and replace, such defective work or materials and charge the cost of same to the Contractor, which cost will be deducted from any money due him.

C-6.16 DISPUTED CLAIMS FOR EXTRA WORK:

In case the Contractor deems extra compensation is due him for work or materials not clearly covered in the Contract, or not ordered by the Engineer as "EXTRA WORK", the Contractor shall notify the Engineer in writing of his intention to make claim for such extra compensation before he begins the work on which he bases the claim and shall afford the Engineer every facility for keeping actual cost of the work.

Failure on the part of the Contractor to give such notice or to afford the Engineer every facility for keeping account of actual cost of the work shall constitute waiver of the claim for extra compensation. The filing of such notice by the Contractor and the keeping of cost by the Engineer shall not in any way be construed to

prove the validity of the claim. Extra work of any kind should only be performed by Contractor upon receipt of an approved Change Order issued by Owner. When the work has been completed, the Contractor shall within ten (10) day file claim for extra compensation with the Engineer, who will present it to the Owner for consideration.

C-6.17 FINAL INSPECTION

Whenever the work provided for under the Contract has been satisfactorily completed and the final cleaning up performed, the Contractor shall notify the Engineer to make the "Final Inspection". Such inspection will be made within ten (10) days of such notification. After such final inspection, if the work is found to be satisfactory, the Contractor will be notified in writing of the acceptance of same. No time charge will be made against the Contractor between the date of notification of the Engineer and the date of the final inspection.

SECTION C-7
LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

C-7.01 LAWS TO BE OBSERVED:

The Contractor shall make himself familiar with and shall observe and comply with, all Federal, State, and local laws, ordinances and regulations which in any manner affect the conduct of the work, and shall indemnify and save harmless the Owner and the Owner's representative against any claim arising from the violation of any such law, ordinance, or regulation whether by himself or by his employees.

C-7.02 PERMITS AND LICENSES:

The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices necessary to the due and lawful prosecution of the work.

C-7.03 PATENTED DEVICES, MATERIALS AND PROCESSES:

If the Contractor is required or desires, to use any design, device, material or process covered by letters, patent, or copyright, he shall provide for such use by suitable legal agreement with the patentee or Owner of such patent. The Contractor and his surety shall indemnify and save harmless the Owner from any and all claims for infringement by reason of the use of any such patented design, device, material, or process, or any trademark or copyright in connection with the work agreed to be performed under this Contract, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay for reasons of any such infringement at any time during the prosecution, or after the completion of the work.

C-7.04 PUBLIC, SAFETY AND CONVENIENCE:

The safety of the public and the convenience of traffic shall be regarded as of prime importance during construction and provisions thereof, made necessary by the work, shall be the direct responsibility of the Contractor, and shall be performed at his own expense.

Where the Contractor is required to construct temporary crossings for streams, culverts, ditches or trenches, his responsibility for accidents shall include the approaches as well as the structures of such crossing.

C-7.05 SANITARY PROVISIONS:

The Contractor shall, at his own expense, provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements or the State Department of Health and of other authorities having jurisdiction.

C-7.06 BARRICADES AND WARNING SIGNS:

The Contractor shall furnish and maintain adequate barricades, warning and directing signs, red flags, lights and other traffic control devices as are necessary

to comply with the latest edition of the TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS.

All provisions of barricades and warning signs shall be considered an incidental and necessary part of the work and no direct payment will be made therefore. All costs of providing such safe guards shall be included in the prices bid for other parts of the work.

C-7.07 USE OF EXPLOSIVES:

When the use of explosives is necessary in the prosecution of the work, the Contractor shall use the utmost care not to endanger life or property. All explosives shall be stored in a secured manner and all storage places shall be marked clearly with the words "DANGEROUS EXPLOSIVES". The method of storing and handling explosives and highly inflammable materials shall conform to the requirements of Federal and State laws and regulations. The Contractor shall not use explosives until he has taken the legal precautions necessary to save harmless the Owner from any claims arising from such use of explosives.

C-7.08 PROTECTION AND RESTORATION OF PROPERTY:

The Contractor shall take all measures necessary to protect public or private property which might be injured by any process of construction, and in case of any injury or damage to said property, he shall restore at his own expense the damaged property to a condition similar or equal to the existing before such injury damage was done, or he shall make good such injury or damage in an acceptable manner.

Where the work involves excavation any public or private driveway, alley street or roadway, the Contractor shall do any work necessary to restore such driveway, alley, street or roadway to a condition similar or equal to that existing before such work was done. The Contractor shall be responsible for any subsidence of backfill or pavement failure due to such excavation, and shall promptly repair any such subsidence or failure.

C-7.09 PROTECTION OF EXISTING UTILITIES:

The Contractor shall contact the utility company for exact location prior to doing any work that might interfere with or damage present utilities.

The Contractor shall take all measures necessary to protect existing surface drains, seers, underdrains, conduits, utilities, or similar underground structures, and to provide temporary service when service in any of these is interrupted.

When such facilities are encountered, the Contractor shall notify the Engineer who will arrange for their removal, if necessary. Any utility lines cut or damaged shall be repaired and restored to working conditions as determined by the Engineer.

C-7.10 RESPONSIBILITY FOR DAMAGE CLAIMS:

The Contractor shall save harmless the Owner from all suits, action in or claims brought on account of any injuries or damages sustained by any person or property in consequence of any neglect in safeguarding the work by the Contractor; or on account of any claim or amount recovered for any infringement of patent or reward under the "Workmen's Compensation Laws" or any other laws. He shall be held responsible for all damage or injury to property of any character occurring during the prosecution of the work resulting from any omission, neglect, or misconduct on his part in the manner or method executing the work, or from defective work or materials.

C-7.11 RESPONSIBILITY FOR THE WORK:

Until acceptance of the work by the Engineer, in writing, it shall be under the charges and care of the Contractor. The Contractor shall rebuild and make good at his own expense all injuries and damage to the work occurring before its completion and acceptance. In case of suspension of work for any cause, the Contractor shall be responsible for all the preservation of all materials.

C-7.12 USE OF COMPLETED WORK:

Whenever, in the opinion of the Engineer, any portion of the work is in acceptable conditions, it may be entered upon and used by the Owner upon the written order of the Engineer. Such use shall be held an acceptance of that portion of the work, but not into be considered as a waiver of any of the provisions of these Specifications. Pending final completion and acceptance of the entire work, all necessary repairs and renewal of any part of the work so used, due to defective material or work, to natural causes other than wear and tear, or to the operations of the Contractor, shall be performed by the Contractor at his own expense.

C-7.13 NO WAIVER OF LEGAL RIGHT:

Inspection by the Engineer or by any of his duly representatives, any order, measurement, or certificate by the Engineer; any order by the Owner for the payment of money, any payment for or acceptance of any of work, or extension of time; or any possession taken by the Owner shall not operate as a wavier of any provision of the Contract, or any power therein preserved to the Owner, or of any right to damages therein provided. A waiver of any breach of the Contract shall not be held to be a waiver of any other or subsequent breach.

The Owner reserves the right to correct any error that may be discovered in any estimate that may have been paid, and to adjust that or any subsequent estimate to meet the requirements of the Contract. The Owner reserves the right to claim and recover sums as may be sufficient to correct any error or make good any deficit in the work resulting from error, dishonesty, or collusion in the work after the final payment has been made.

C-7.14 RESPONSIBILITIES OF PARTIES AS TO UTILITY WORK:

It shall be the responsibility of the Contractor to check and coordinate his work with the public and private utility companies which have authority from the City of Laredo to own and operate lines, pipes, conduits, or other means of conveyance within the streets Right-of-Way. The Contractor shall contact the Engineer concerning any and all utility relocation work needed, and it shall be the responsibility of the Contractor to advise the Engineer of any lines or utility poles to be relocated. The Engineer shall assist in coordinating the various utility relocation activities but shall not be responsible for any delays occasioned by this work, although appropriate allowance for additional contract time will be made by the Engineer if warranted. The Owner shall not be responsible for any acts of the Contractor or any damages resulting from work done by the Contractor relating to the removal, alteration, or other activity concerning utilities.

C-7.15 KEY POINTS OF PUBLIC RIGHT-OF-WAY ORDINANCE:

1. All projects in public R.O.W. must go through Utility Coordination Committee.
2. All Contractors must be registered at the Building Development Service Department to be able to work in public R.O.W. Registration Fee \$50/year.
3. All work done in Public R.O.W. requires a permit from the Building Development Services Department. Permit cost is \$50.00 plus inspection fee of \$200.00. Any additional inspections requested after normal working hours of 8 am to 5 pm are charged at \$40.00 per hour Monday to Friday. Saturday and Sunday and holidays inspection rates are \$70.00 per hour. Permits must be secured prior to pre-construction meeting.
4. All Work done in Public R.O.W. that impedes the flow of traffic or pedestrian path requires a traffic control plan or pedestrian accessibility.
5. Contractor must provide certificate of insurance. Insurance must be liability, workman compensation and performance bond.

SECTION C-8 PROSECUTION AND PROGRESS

C-8.01 RIGHT-OF-WAY:

The Owner will furnish all and or right-of-way necessary for the performance of the contract and will use due diligence in acquiring land or right-of-way. Should all necessary land or right-of-way not be acquired prior to the beginning of construction, the Contractor shall begin with work upon such land or right-of-way as the Owner may have acquired.

C-8.02 DELAYS DUE TO OWNER:

Should the Owner be prevented or enjoined from proceeding with the work or authorizing its prosecution, either before or after its commencement, by reason of any litigation or by reason of the Owner's inability to acquire necessary land or right-of-way, the Contractor shall not entitle to make or assert any claim for damage by reason of such delay, or to withdraw from the contract except by consent of Owner.

The time for completion of the work will be extended by such time as determined by the Engineer as will compensate for the time lost by reason of said delay.

C-8.03 SUBLETTING OR ASSIGNING OF CONTRACT:

The Webb County Drainage District does not allow, permit, negotiate, authorize nor approve any assignment of contract proceeds between the "District," the "Contractor", and/or with a bank, lending institution or any type of financial institution either before, during or after a contract award.

The "District" agrees to pay the "Contractor" for specified services as stated in the agreed contract. The "District" does not agree to pay any additional party either jointly or separately for the contract under discussion.

C-8.04 SUBCONTRACTING:

The Owner will not recognize any subcontractor on the work. The Contractor shall be fully responsible to the Owner for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them.

C-8.05 PROSECUTION OF WORK:

Prior to beginning of the work, the Contractor shall submit to the Engineer such schedules, charts, or briefs as may be required, outlining the manner of prosecution of the work. The contractor shall begin the work within ten (10) calendar days after the date set in the "Work Order" or notice to proceed and shall continuously prosecute same with such diligence as will enable him to complete the work within the time specified. Upon completion of work submit forms of Affidavit of Payment of Debts and Claims and Release of Liens and Letter for Certificate of Warranty.

The contractor shall notify the Engineer at least twenty-four (24) hours prior to the beginning at any point. He shall not begin new portions of the work to the detriment of portions already begun.

Owner's normal working hours are Monday through Friday from 8:30 AM to 5:00 PM. The Contractor shall notify the owner at least twenty-four (24) hours in advance for any work that is to be scheduled beyond the limits of the Owner's working hours, and he shall not begin any such work schedule unless proper inspection by the Contractor has been pre-arranged with the Owner, with the cost for such work beyond the Owner's working hours borne by the Contractor. For clarification, see Division B – Section 4 “Inspection by District”.

If at any time the methods, equipment, or sequence of operations used by the Contractor are found to be inadequate to secure the quality of the work or rate of progress required by the contract, the Engineer may in writing order such modifications in the Contractor's methods, equipment, or sequence of operations as he may deem necessary and the contractor shall comply with such order.

C-8.06 WORKMEN AND EQUIPMENT:

All workmen employed by the Contractor shall be skilled and competent. Any person employed by the Contractor who in the opinion of the Engineer does not perform his work in a proper and skillful manner or who is disrespectful, intemperate, disorderly, or otherwise objectionable shall at the written order of the Engineer be immediately removed from the work and shall not be employed again on any part of the work without written consent from the Engineer.

The Contractor shall furnish and use such suitable machinery and equipment as may be required in the opinion of the Engineer to properly prosecute the work. The Contractor shall at the written order of the Engineer remove from the work any equipment found unsuited to properly perform the work.

Upon failure of the Contractor remove the work any person or equipment as ordered by the Engineer, the Engineer may withhold all estimates which have or may become due, or may suspend the work until such orders are complied with.

C-8.07 TEMPORARY SUSPENSION OF WORK:

The Engineer shall have the authority to suspend the work wholly or in part for such period or periods as he may deem necessary due to unsuitable weather, or such other conditions as are considered unfavorable for the prosecution of the work or for such time as is necessary due to failure on the part of the Contractor to comply with orders given or to perform any or all provisions of the contract.

If work is stopped for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way, and he shall take every precaution to prevent damage or deterioration of the work performed.

The Contractor shall not suspend the work without written authority from the Engineer and shall proceed with the work promptly when notified by the Engineer to resume operations.

C-8.08 COMPUTATION OF CONTRACT TIME:

The Contractor shall complete the work within the number of days stated in the contract. The number of days used shall be the number of days from the first day of actual commencement of operations or the 10th day after the date set in the Work Order or Notice to Proceed whichever comes first, and counting that day as the first elapsed day of contract time.

If the completion of the contract requires unforeseen work, or work and materials in greater quantities than those set forth in the proposal, then additional days or suspension of time charge will be allowed the Contractor equal to the time which in the opinion of the Engineers the work as a whole is delayed.

C-8.09 FAILURE TO COMPLETE THE WORK ON TIME:

The time set forth in the proposal for the completion of the work is an essential element of the contract. If the contractor fails to complete the work in the number of working days specified, a time charge will be made for each day thereafter until the work has been satisfactorily completed.

Unless an amount per day is set forth in the "Special Provisions" to be deducted from the amount due the Contractor for each day charged in excess of the number specified, the time charge shall be based on the monetary loss suffered by the Owner as the result of such delay. Such deductions shall in no way be considered a penalty, but as compensation to the Owner for the added expense to him for engineering supervision and other costs.

C-8.10 ABANDONMENT OF WORK OR DEFAULT OF CONTRACT:

The Engineer may give notice in writing to the Contractor and his surety of delay, neglect, or default stating which if the Contractor:

- Fails to begin work within the time specified, or fails to perform the work with sufficient workmen and equipment;
- Fails to provide materials of sufficient quantity to insure the completion of the work within the contract time; or
- Performs the work unsuitable; or
- Neglects or refuses to remove materials or perform new work such as may have been rejected; or
- Discontinues the work without authority; or
- Refuses to suspend or resume operations when so directed by the Engineer; or
- Becomes insolvent or is declared bankrupt; or
- Commits any act of bankruptcy insolvency; or
- Makes an authorized assignment for the benefit of any creditor; or
- Fails from any other cause whatsoever to carry out the work in an acceptable manner.

The ten (10) days after such notice if given, if a satisfactory effort has not been made by the Contractor or his surety to correct such delay, neglect, or default,

the Owner may declare the work abandoned and so notify the Contractor and his surety.

After receiving such notification of abandonment, the Contractor shall not remove from the work any machinery, equipment, tools, materials or supplies then on the site. The Owner shall have the power and authority without violating the contract to take prosecution of the work out of the hands of the contractor and to appropriate or use any or all materials and equipment on the site as may be suitable and acceptable and enter into an agreement for the completion of the contract according to the terms and provisions thereof, or use such other methods as he may elect for the completion of the contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under the contract shall be deducted from any money due or which may become due to the contractor. In the case the cost to the Owner is less than the amount which would have been payable under the contract if it had been completed by the Contractor, then the Contractor shall be entitled to receive the difference. In case the cost to the Owner exceeds the amount which would have been payable under the contract, if it had been completed by the Contractor, the Contractor and his surety shall be liable and shall pay the Owner the amount of such excess.

SECTION C-9 MEASUREMENT AND PAYMENT

C-9.01 MEASUREMENT OF QUANTITIES:

All work completed under the Contract will be measured in United States standard measures. Linear and surface measurements will be taken horizontally unless otherwise shown on the Plans. Structures will be measured to the neat lines shown on the Plans.

When any material is cubic yards in the vehicle, such measurement will be made at the point of delivery. The capacity of each vehicle shall be plainly marked on said vehicle and the capacity of marking shall not be changed without written permission of the Engineer. The Engineer shall have authority to require all vehicles to have uniform capacity.

C-9.02 SCOPE OF PAYMENT:

The Contractor shall accept the payment as provided in this Contract as full compensation for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work and for performing all work contemplated and embraced under this contract, as full compensation for loss or damage arising from the nature of the work, or from action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the work; as full compensation for all expenses incurred in consequence of the suspension or discontinuance of the work; as full compensation for all expenses incurred in consequence of the suspension or discontinuance of the work herein specified; as full compensation for expenses incurred in any infringement of patent, trade-mark, or copyright; and as full compensation for completing the work in conformity with the requirements of the Plans and Specifications. Payment will be made only on items which are complete, in place, tested and accepted by the owner. Materials on hand shall be considered for payment ONLY when proper PAID invoices are submitted with Contractor's pay estimates. Materials on hand must be placed in a secured area designed for the project under this contract and be available for inspection by District Engineers at all times. The Contractor must provide an inventory of all materials on a form acceptable to the District Engineer and which must accompany each pay request. The payment of any partial or current estimate shall in no way affect the obligation of the Contractor at his own cost to repair or renew any defective parts of the construction or to replace any defective materials used in the construction and to be responsible for all damages due to such defects. Any items to complete the work indicated on plan shall be considered subsidiary to include positions of work and no further compensation will be made.

No monies payable under this contract, except the estimate for the first month or period, shall become due and payable until the Contractor shall satisfy the Owner that he has fully settled and paid for all materials and equipment used in or upon the work and labor done in connection therewith and the Owner may if he so

elects pay any or all bills wholly or in part, and deduct the amount or amounts paid from any estimate(s) except the first estimate.

In event the surety on any bond given by the Contractor becomes insolvent or is placed in the hands of a receiver or has its right to do business in the State revoked by Law, the Owner may if he so elects withhold payment of any or all estimates until the Contractor shall give a good and sufficient bond in lieu of the bond so executed by said surety.

C-9.03 PAYMENT FOR ALTERED QUANTITIES:

When alterations in the Plans or quantities of work not requiring supplemental agreements are ordered and performed, the Contractor shall accept payment in full at the contract price for the actual quantities of work done. No allowance for anticipated profits will be made. Increased or decreased work involving supplemental agreements will be paid for as stipulated in such agreements.

C-9.04 PAYMENT FOR OMITTED ITEMS:

When any item ordered omitted from the Contract, the Contractor shall accept payment in full at the contract price for any work actually performed on such item prior to the date of issuance of such order. No allowance will be made for anticipated profits on work ordered omitted. Acceptable materials ordered by the Contractor, or delivered on the work prior to the date of issuance of such order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner. The Contractor shall submit immediately certified statements covering all money expended in the preparation for any item ordered omitted and shall be entitled to reimbursement for any money expended in preparation for any items when such preparation is of no value to the remaining items of the Contract.

C-9.05 PAYMENT FOR EXTRA WORK:

Extra work performed under a supplemental agreement will be paid for according to the terms of such supplemental agreement.

Extra work if performed on a force account basis will be paid for as follows:

For all labor and foreman, the Contractor will receive the wage paid on the project for each hour that said labor and foremen are actually engaged on such work to which shall be added the actual cost of premiums for public liability and workmen's compensation insurance and social security taxes for the actual amount of such payroll.

For all materials used on such work the Contractor will receive the actual cost of such materials including freight charges.

For machinery and equipment used on such work the Contractor will receive an agreed rental price for each hour that such machinery and equipment is actually

used on such work. The agreed price shall include the cost of fuel, lubrication and repairs.

To the sum of the foregoing an amount equal to fifteen (15) percent thereof will be added, as compensation for the use of small tools, Superintendent's services, timekeeper's services.

Premium on bond and all other overhead expenses incurred in the prosecution of the extra work including Contractor's profit.

The sum of such payments provided for shall be accepted by the Contractor's as full compensation as provided in C-9.02.

C-9.06 PARTIAL PAYMENTS:

Once a month and within the thirty (30) days after submittal of a correct and complete estimate, the Owner shall make a progress payment to the basis of a duly certified and approved estimate of the work performed during the preceding calendar month under this Contract. To insure the proper performance of the Contract, the Owner shall retain ten (10) percent ** of the amount of each estimate until final completion and acceptance of all work covered by this Contract.

**NOTE Retainage for construction contracts over four hundred thousand (\$400,000) shall be five (5) percent.

In the event that the base bid is less than twenty-five thousand (\$25,000) the total contract price will be paid in one payment upon completion and acceptance of the project.

Should any defective material or work be discovered or should a reasonable doubt arise as to the integrity of any part of the work completed prior to final acceptance and payment, there will be deducted from the first estimate presented after the discovery of such work, an amount equal to the value of the defective or questionable work. Such defective work will be made from all subsequent estimates until the defects have been remedied or the cause for doubt removed.

C-9.07 TERMINATION OF THE CONTRACT BY THE CONTRACTOR:

If the work is stopped for a period of thirty (30) days under an order of any court of other public authority having jurisdiction, or as a result of an act of government, such as declaration of a national emergency making materials unavailable, through no act or fault of the Contractor or subcontractor or their agents or employees or any other persons performing any of the work under a Contract with the Contractor, or if the work should be stopped for a period of thirty (30) days by the Contractor because the Engineer has not issued a Certificate for payment as provided in C-9.06 or because the Owner has not

made payment within the ten(10) days after such stopping of work, then the Contractor may, upon seven (7) additional days written notice to the Owner and the Engineer, terminated the Contract and recover from the Owner payment for all work executed and for any proven loss sustained upon any materials, equipment, tools, construction equipment and machinery, including reasonable profit and damages.

C-9.08 TERMINATION OF THE CONTRACT BY THE OWNER:

If the Contractor is adjudged a bankrupt, or if he makes a general assignment for the benefit of his creditors, or if a receiver is appointed on account of his insolvency, or if he persistently or repeatedly refused or fails, except in cases for which extension of time is provided, to supply enough properly skilled workmen, or proper materials, or if he fails to make prompt payment to Subcontractors or for materials or labor, or persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, or otherwise is guilty of a substantial violation of a provision of the Contracts Documents, then the Owner, upon certification by the Engineer that sufficient cause exists to justify such action, may without prejudice to any right or remedy and after giving the Contractor and his surety, if any, seven (7) days written notice, terminate the employment of the Contractor and take possession of the site and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor and may finish the work by whatever method he may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the work is finished.

C-9.09 UNPAID BALANCE:

If the unpaid balance of the Contract Sum exceeds the costs of finishing the work, including compensation for the Engineer's additional services made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or to the Owner, as the case may be, shall be certified by the Engineer, upon application, and this obligation for payment shall survive the termination of the Contract.

C-9.10 ACCEPTANCE OF FINAL PAYMENT:

When the work provided for in the contract has been completed and the final inspection has been made by the Engineer, and all parts of the work have been approved and accepted, the final estimate showing all sums due the Contractor shall be prepared. All prior partial estimates and payments shall be subject to correction in the final estimate and payment. No payment on the final estimate will be made until the Contractor furnishes satisfactory evidence that all claims growing out of lawful demands of laborers, work, men, mechanics, subcontractors, material, men, furnishers of machinery and parts thereof, and suppliers of all kinds have been satisfied. Upon final payment the Contractor shall execute a certificate and release upon the Owner on the form specified.

C-9.11 AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS AND RELEASE OF LIENS:

Each and every pay estimate must be accompanied by an "Affidavit of Payment of Debts and Claims and Release of Liens" form (sample of which follows this Section).

C-9.12 MATERIALS ON HAND INVENTORY:

When materials on hand payment is requested, and "Inventory of Materials on Hand" is required and must be included with Contractor's Pay Estimate. Proof of payment for materials on hand is also to be included with the Materials Inventory. A sample form follows this section.

C-9.13 PHOTOGRAPHS:

The Contractor shall submit with each monthly progress pay estimate four (4) each 3 ½" x 5" color photographs depicting generally the work done during that month, and each photograph properly identified and dated.

Project Acceptance Requirements

Items required by the Webb County Drainage District for Acceptance of the project

Project: **Webb County Drainage District No. 1**
 Project 2024-001 Lago Dam Conversion to Regional Detention Pond

Consultant _____

Contractor _____

Date _____

REQUIRED ITEMS	SUBMITTED		RESUBMIT	COMMENTS
	YES	N/A		
Completion of Punch List				
Engineer/Architect Completion Reports				
Affidavit of Payments of Debts & Claims & Release of Liens from the Contractor				
Warranty Letter from the Contractor to the City of Laredo				
Warranty Statement Form				
Certificate of Occupancy from Building Development Services				
Legal Description & Physical Address				
Reproducible Record Drawings				
Electronic Record Drawings (CD with PDF files/ACAD)				
Final Payment Request				

WEBB COUNTY DRAINAGE DISTRICT
CONTRACTOR'S APPLICATION FOR PAYMENT

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

Estimate # _____	Date	From: _____
		To: _____
Original Contract: _____	Total Work to Date:	\$ _____
Change Orders: _____	Materials on Hand:	\$ _____
	10% Retainage:	\$ _____
Total to Date: _____	Previous Payments:	\$ _____
% Complete: _____	Amount Due:	\$ _____

CERTIFICATE OF CONTRACTOR:

I certify that all items and amounts shown on this request for partial payment are correct and that all work has been performed and/or materials supplied in full in accordance with the requirements on the contract documents.

(CONTRACTOR)

_____ Signature	_____ Date	_____ Print Name
--------------------	---------------	---------------------

CERTIFICATE OF FIELD REPRESENTATIVE:

I have checked this request for partial payment against the notes and reports of my inspections of the project and in my opinion the statement of work performed and/or material supplied is accurate and that the contractor is observing the requirements of the contract documents.

(INSPECTOR)

_____ Signature	_____ Date	_____ Print Name
--------------------	---------------	---------------------

CERTIFICATE OF ENGINEER:

I certify that I have checked and verified the above and foregoing request for partial payment and that it is a true and correct statement of work performed and/or material supplied by the contractor and that the same has been performed and/or supplied in full accordance with the requirements of the contract documents.

(ENGINEER)

_____ Signature	_____ Date	_____ Print Name
--------------------	---------------	---------------------

Recommended for Payment

Approved for Payment

District Engineer

Finance Department

AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS AND RELEASE OF LEINS

**TO: WEBB COUNTY DRAINAGE DISTRICT
WEBB COUNTY, TEXAS**

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

By this instrument the undersigned contractor engaged in the construction of the above project certifies that on this date, or anytime prior thereto, except listed below, contractor has paid in full or has otherwise satisfied all obligations for all materials and for all known indebtedness and claims against the project, its land, improvements and equipment of every kind.

The undersigned hereby certifies that he has received all payments currently due under his contract for work on the project above referred. Therefore, the undersigned does hereby waive and/or release any and all liens against the property, project and as of the _____ day of _____, _____.

Company Name

STATE OF TEXAS:

COUNTY OF _____:

Before me, the undersigned authority, on this day personally appeared _____, known to me to be the person whose name is subscribed to the foregoing instrument, and being first duly sworn, acknowledge to me that he executed the same for the purposes and consideration therein expressed and declared to me that the statements therein are true.

SWORN AND SUBSCRIBED TO before me this _____ day of _____, _____.

NOTARY PUBLIC

MY COMMISSION EXPIRES: _____

MATERIALS ON HAND INVENTORY

**Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

Contractor: _____

Estimate # _____ Dates From: _____ To: _____

#	Invoice #	Vendor	Balance Last Period	Received Current	Placed Current	Balance

FORM LETTER FOR CERTIFICATE OF WARRANTY

DATE:

Ms. Margie Arce, President
c/o Crane Engineering
1310 Junction Drive, Suite B
Laredo, Texas 78041

**Re: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

Dear Ms. Arce:

_____ guarantees all materials and workmanship on the above referred project to be free of defects for a period of one (1) year from the date of acceptance by the owner. Upon notice, any defective materials or faulty workmanship developing within this period, will be replace at no cost to the owner.

Sincerely,

Company Name

ACKNOWLEDGEMENT

STATE OF TEXAS

COUNTY OF _____

Before me, Notary Public for and in _____ County, State of _____ on this personally appeared _____ known to me to be person(s) whose name(s) subscribed to the foregoing affidavit and acknowledge to me that he executed the same for the purpose and consideration expressed therein.

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

Notary Public in and for
_____ County, State of _____
My Commission Expires:

FORM LETTER FOR ENGINEERING COMPLETION REPORT

DATE:

Ms. Margie Arce, President
c/o Crane Engineering
1310 Junction Drive, Suite B
Laredo, Texas 78041

**Re: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond**

Dear Ms. Arce:

In accordance with the contracts between _____
and The Webb County Drainage District, Webb County, Texas, and pursuant to the
specifications in the contract documents, I take this opportunity to file this Completion
Report with reference to the above mentioned project as follows:

STATE OF _____

COUNTY OF _____

This is to Certify that I, _____ Registered Professional
Engineer, have inspected the work accomplished by _____
and, under contract with The Webb County Drainage District, Webb County, Texas,
found that workmanship and materials supplied are in accordance with plans and
specifications for said project, and as amended by the "AS-BUILT" drawings.

SIGNED THIS THE _____ DAY OF _____, 2014.

_____, P.E.

P.E. SEAL

**SECTION C-10
WARRANTY STATEMENT FORM**

Project: Webb County Drainage District No. 1
Project 2024-001 Lago Dam Conversion to Regional Detention Pond

Project Information:

Location: _____ Start Date: _____

Cost: _____ Council Acceptance: _____

Contract/P.O. #: _____ Completion Date: _____

Contractor/Sub-Contractor/Vendor Information:

Name: _____ Address: _____

Contact #: _____ Email: _____

Warranty Information:

Coverage Type (Detail): _____

Required Maintenance (Detail): _____

Manuals Received (if applicable): _____ Expiration Date: _____

Copies Provided To: _____

Warranty Statement:

We are the _____ contractor for the above indicated project. We guarantee our workmanship, equipment, and materials to be free of defects for a period of _____ from the completion date.

Signature: _____ Date: _____

For Warranty Management Office Only:	
Entered into Warranty Tracker? _____	Entered by: _____
Date Entered: _____	Warrant Management Account # _____

DIVISION D
TECHNICAL PROVISIONS

SECTION 102

EXCAVATION AND BACKFILL FOR UTILITIES

D 102.01 SCOPE

This section shall govern all excavation and backfill which will be encountered during the work, and supplements those paragraphs pertaining to excavation in Sections titled "**Specifications for SDR 26-Gravity Sewer Piping**", "**Water Line Construction**", **AND** "**PVC Pipe Water Conduits & Installation**" of these specifications.

D 102.02 CLASSIFICATION

All excavation for this Project shall be considered unclassified. The Contractor is expected to determine the nature of the work and to make his bid prices reflective of the actual conditions which will be encountered. No claim for extra compensation shall be made by the Contractor due to rock, or other unfavorable excavation conditions encountered during the course of the work.

D 102.03 EXISTING UTILITIES

Before commencing excavation, the Contractor shall notify all utility companies with sufficient lead time, and confirm the location of existing underground lines and conduits in the work area by calling 811.

D 102.04 CLEARING

The Contractor shall do all clearing, grubbing, etc. necessary to complete the work.

D 102.05 DEWATERING

The Contractor shall provide and maintain adequate equipment to remove and dispose of all surface and ground-water entering excavations, trenches, or other parts of the work.

D 102.06 EXCAVATION

Unless otherwise ordered by the Engineer in writing, trench shall be as indicated in the Drawings, and trenching for water lines shall be excavated to a depth of five feet.

D 102.07 SHEETING AND SHORING

Where necessary to protect workmen, the work, or the existing structures, the Contractor shall sheet, brace, and shore the excavation to prevent caving or sliding. This item is further described in Division D, Section 802, titled "**Sheeting and Bracing**".

D 102.08 DISPOSAL OF EXCESS SOIL

Unless otherwise specified, the Contractor shall dispose of all unsuitable or excess excavation spoil daily. Disposal shall be made at a location and in a manner which is acceptable to the Owner.

D 102.09 PIPE ZONE

The "pipe zone" shall mean that portion of the trench which extends from 24" above the top of the pipe joints to the bottom of the excavation. "Above the pipe zone" shall mean that portion of the trench which shall extend from 24" above the top of the pipe joints to the top of the finished surface.

D 102.10 BLASTING

Shall be prohibited except where allowed in writing by the District Engineer. The Contractor shall take all necessary precautions as specified in the General Provisions of these Specifications. The Contractor shall be solely responsible for any damage incurred due to blasting.

D 102.11 OVER EXCAVATION

In the event of over-excavation, the over-excavated depth of the trench shall be filled with the appropriate bedding material.

D 102.12 STABILIZATION

Subgrades for pipe work shall be firm, dense, and thoroughly consolidated. The subgrade shall be free of mud, muck, loose material, and debris and shall remain firm and intact under the workmen's feet.

D 102.13 PIPE EMBEDMENT & PIPE ZONE BACKFILL

The first layer of backfill shall be sufficient to provide a compacted depth of one-half the outside diameter of the barrel. This layer shall be placed by hand and tamped with hand or pneumatic tampers. The rest of the pipe zone shall be placed in a similar manner in layers not to exceed 8" loose measure to the top of the pipe zone. Unless otherwise specified, the embedment and material in the pipe zone shall be zero P.I. sand or gravel material, as specified by the engineer. Select excavation material may be acceptable; however, the contractor shall be required to submit ample sieve analysis results from a reputable independent testing laboratory to the engineer in order to use such materials for embedment. Backfill material containing rock over 3" in any dimension shall not be used in trenches under paved areas. The pipe trench shall be backfilled in a manner so as to prevent future settlement for a period of one year after date of final payment. All secondary backfill material shall be as required on section D-102.14, 2.

Before leaving the work at night or any other time, the upper ends of all pipes shall be securely closed with a tight fitting plug and provisions shall be made to keep the line from floating out of place should the trench fill with water. Any damage to the lines from failure to follow these provisions shall be repaired at Contractor's expense.

Provisions must be made at all times to keep the interior of the pipe that has been laid free from dirt, silt, gravel, and any other foreign matter and any such material that is deposited within the pipe from any cause whatsoever must be removed as the work progresses.

D 102.14 BACKFILLING

All trenches and excavations shall be backfilled within 24 hours after pipes are installed therein unless other means of protecting the pipe is directed by the Engineer. At no times, however, shall any backfilling be done until the Engineer has inspected the pipe to be covered. Backfilling requirements:

Materials:

- 1) Initial (primary) backfill to a point of 12 inches above the top of pipe shall be done as follows:
 - a. Suitable excavated material placed in uniform lifts not more than 6 inches in depth and shall be compacted to the density specified herein. The maximum dry density and optimum moisture shall be determined as per TxDOT Tex-114-E. Test for in place density shall be in accordance with TxDOT Tex-115-E within 24 hours after compaction. Each lift shall be compacted to the required density and moisture as shown bellow, unless otherwise shown on the plans:

Subgrade Material	Density	Moisture Content
PI ≤ 20	≥ 95% of Max Dry Density	± 2% of Opt. or greater
PI > 20	≥ 95% of Max Dry Density	≥ Opt. Moisture

- b. Zero PI Sand. When shown on the plans, backfill the primary trench zone with zero PI sand. Non-plastic material meeting the specifications below will not be required to be tested for density.

**OPTION ZERO P.I.
SIEVE ANALYSIS**

Passing 3/8" sieve	95-100%
Passing 1/4" sieve	85-100%
Passing No.40 sieve	75-100%
Passing No.80 sieve	20- 90%
Passing No.200 sieve	00- 20%

The sand shall be placed in layers no to exceed 10 inches in depth and lightly tamped to consolidate the mass against pipe and earth surfaces.

There is no separate item for sand, unless shown on the plans as a separate pay item.

- c. Flowable Backfill. When shown on the plans, conform with Division D Section 134.
There is no separate item for sand, unless shown on the plans as a separate pay item.
- d. Select Fill or Flexible Base (gravel, caliche, crushed limestone).

Clean gravel approved by the engineer may be used for backfill from the bottom of the trench to the 12 inches above the top of pipe. The gravel shall be placed in layers no to exceed 10 inches in depth and lightly tamped to consolidate the mass against pipe and earth surfaces.

Flexible base material (caliche, crushed limestone) may be used from the bottom of the trench to 12 inches above the top of the pipe or to the bottom of the street base in lifts no to exceed 8 inches. Material shall contain the required moisture to obtain the density for each layer to no less of 95% of the maximum dry density. There is no separate item for sand, unless shown on the plans as a separate pay item.

- 2) Secondary Backfill. After the initial backfill has been completed at a point of 12 inches above the top of pipe, the material for secondary backfill shall be placed in uniform layers no more than 10 inches in depth (loose measurement) and shall be compacted to the required density specified herein. Excavation material used for secondary backfill shall comply with the following unless shown on the plans:

Secondary Backfill

Under Pavement		
SubgradeMat.	PI≤20	PI>20
Density	≥95%MaxDryDens.	≥95%MaxDryDens.
MoistureCont.	±2%ofOpt.or greater	≥Opt.Moisture

Within the R.O.W. or Easement		
SubgradeMat.	PI≤20	PI>20
Density	≥90%MaxDryDens.	≥90%MaxDryDens.
MoistureCont.	±2%ofOpt.or greater	≥Opt.Moisture

- a. Timing of backfill: All trenches and excavation shall be backfilled within twenty-four (24) hours after pipes are installed, unless other means of protecting pipe is directed by the Engineer. At no time, however, shall any backfilling be done until the Engineer has inspected the pipe to be covered. In the case the trench cannot be backfilled, steel plates shall be used to protect the public.
- b. Backfill placement: After the bedding has been prepared and the pipes installed as required by the pertinent specifications, selected materials from excavation or borrow shall be placed along both sides of the pipe equally in uniform layers not exceeding six (6) inches in depth (loose measurement) in the primary backfill zone and ten (10) inches in depth (loose measurement) in the secondary backfill zone, wetted if required, and thoroughly compacted so that on each side of the pipe there shall be a berm of thoroughly compacted material at least as wide as the external diameter of the pipe, except insofar as undisturbed material obtrudes into this area.
- c. Addition to backfill: Whenever excavation is made for installing pipe culverts or sewers across private property or beyond the limits of the embankment, the top soil removed in excavating the trench shall be kept separate and replaced, as nearly as feasible, in its original position, and the entire area involved in the construction operations shall be restored to a presentable condition.
- d. Earth trench: In earth trench, the pipe shall be placed on the natural, undisturbed earth foundation with the trench bottom flat or nearly so. Where rock, shale, or boulders are encountered in the trench, the same shall be removed to a depth of six (6) inches below the grade line and the trench shall be refilled with good, sound earth, gravel, or granular material up to original grade and tamped into place.
- e. Inspection: Prior to the final approval of the utility lines, the Engineer, accompanied by the Contractor's representative, shall make a thorough inspection by appropriate methods of the entire installation. Any indication of defects in material or workmanship or obstruction in the pipe due to the Contractor's negligence shall be corrected by the Contractor without additional compensation and in a manner as directed by the Engineer.
- f. Corrective Action: The Contractor shall be responsible for correcting any deficient condition identified as a result of inspection/testing at Contractor's expense. Retesting shall be performed to verify that any deficient condition has been successfully corrected at Contractor's expense.

① **GENERAL**: There are five (5) different conditions for backfill of proposed pipe. The plans indicate which condition shall prevail in each section or block of the "pipe route". If the plans do not indicate a backfill condition, Condition "A" shall prevail.

Please refer to the appendix for Utility Trench Backfill Methods.

D 102.15 WATER JETTING

Only in "Condition C" above, and for pipe diameters of 12" or less, and in trenches 8' or less, and only when authority is obtained in writing from the District Engineer, backfill may be compacted with water by use of the jetting method. When using the jetting method, backfill above the pipe zone shall be placed in lifts not to exceed 5 feet. Water jetting shall be delivered under sufficient volume and pressure through an approved jetting hose and pipe nozzle. The jetting hose shall have a minimum inside dimension of two inches (2"). The jetting hose shall be connected to an approved minimum two

inches (2") water pump capable of delivering water at the volume and pressure as required by the Engineer. The pipe nozzle shall be of sufficient length to introduce the water at a depth of not less than one foot (1') above the preceding lift. Points of trench jetting shall be staggered along the length of the trench and spaced at not more than three feet (3') on centers. Each five feet (5') lift shall be jetted initially at a depth of not more than one foot (1') above the preceding lift. Sufficient water shall be introduced into the secondary backfill to cause complete subsidence of the backfill and develop free standing water at the surface of each lift. After the final lift has been jetted as approved, twelve (12) hours shall be allowed for the reduction of the materials moisture content. When the backfill moisture content is acceptable for mechanical or pneumatic compaction, the surface shall be compacted to the satisfaction of the Engineer. The surface of the final lift of trenches subject to traffic shall be compacted by ditch tamping equipment.

D 102.16 SITE RESTORATION

The Contractor shall remove and dispose in an acceptable manner of all excess construction material, trash, debris, excess spoil material, etc., from the construction site. All pavement, fences, drainage structures, drainage ditches, and etc., shall be replaced to a condition as good as, or better than, the original structure as existed. The site shall be graded to a smooth well drained condition.

D 102.17 EXISTING GROUND WATER CONDITIONS

Where ground water conditions exist, the following shall apply inclusive of crushed stone or gravel backfilling. No pipe shall be laid in trench containing water. There will be no separate payment for trench dewatering or the materials, equipment, or labor required to reestablish wet trenches to the conditions and specifications required herein. Non-Storm Water Discharge Permit will need to be obtained from the Environmental Services Department.

D 102.18 DISPOSAL OF EXCAVATED MATERIALS

Excavated materials, so far as needed and of a suitable and acceptable character, shall be piled adjacent to the excavations to be used as backfill as required. All excavated material that is unsuitable for backfilling purposes or which is in excess of the amount required or needed to satisfactorily complete the backfill, shall be disposed of daily. The character and suitability of all backfill material shall meet the approval of the Engineer. Desirable top soil, or sod, etc., shall be carefully piled separately from the other excavated material so that it can be placed in this original position when required. Excavated material shall be handled at all times in such manner as to cause a minimum of inconvenience to public travel and to permit safe and convenient access to private and public properties adjacent to or along the line of the work. In parkways and easements, where it is necessary to deposit excavated materials on lawns during the progress of the work, care shall be taken to prevent damage to such lawns. Where damage is done to such lawns all expense of replacing the lawn shall be borne by the Contractor.

D 102.19 REMOVAL AND REPLACEMENT OF SOD, SHRUBBERY, PLANTS, ETC.

Where it is necessary to remove the sod, shrubbery, plants, etc., in order to make any excavation for this work, such areas as are backfilled shall have the same sod, shrubbery, plants, etc. replaced in good condition or if necessary to furnish new sod, shrubbery, or plants of the same kind and in good condition, same shall be furnished by the Contractor at his expense.

The sod, where removal is deemed necessary, shall be removed in squares cut out with a sharp spade or other satisfactory tool; the square shall be of such sizes that they may be conveniently handles without breaking. Such sod shall be removed in layers of not less than four inches (4") depth and shall be stored and given proper attention to protect sod from drying out, pending the time of replacement.

If trees and plants shall be removed, this work shall be done in the approved manner as to require protection of roots, branches, etc.; when backfilling is completed the trees and plants shall be replaced in their original position or as near such position as possible.

If irrigation system has to be removed and replaced, refer to Section 806.

D 102.20 PROTECTION OF TREES, PLANTS, SHRUBBERY, ETC.

In developed areas where trees, plants, shrubbery, etc., are adjacent to the line of work, the Contractor shall protect such trees, plants, or shrubbery by wooden boxes, frames, or guards of sufficient strength to prevent any injury from machinery, trucks, or workmen during the prosecution of the work.

D 102.21 PAYMENT

No pay item will be included in the proposal nor direct payment made for excavation and backfill. The cost for placing the material shall be included in the unit price bid for the specific work function.

SECTION 128
DISPOSAL OF WASTE MATERIAL AND SALVAGEABLE MATERIAL

D 128.01 GENERAL

Section includes disposal of waste material and salvageable material.

D 128.02 SUBMITTALS

- A. Obtain and submit disposal permits for proposed disposal sites if required by local ordinances, TCEQ and/or EPA.

- B. Submit a copy of written permission from a property owner, along with description of property prior to disposal of excess material adjacent to the Project. Submit a written and signed release from property owner upon completion of disposal work.

EXECUTION

D 128.03 SALVAGEABLE MATERIAL

Excavated Material: when indicated on plans, load haul, and deposit excavated material at a location or locations shown on plans outside the limits of project.

Base, Surface, and Bedding Material: Local shell, gravel, bituminous, or other base and surfacing material designated for salvage.

Pipe Culvert: Load culverts designated for salvage into designated trucks.

Other Salvageable Materials: Conform to requirements of individual specification section. Coordinate disposal of material with District Engineer.

D 128.04 EXCESS MATERIAL

- A. Vegetation, rubble, broken concrete, debris, asphaltic concrete pavement, excess soil, and other materials not designated for salvage, shall become property of the Contractor and shall be removed from the job site and legally disposed of.

- B. Excess soil may be deposited on private property adjacent to the project when written permission is obtained from property owner. See Paragraph 128.02B above.

- C. Waste materials shall be removed from the site on a daily basis, such that the site is maintained in a neat and orderly condition.

D 128.05 MEASUREMENT AND PAYMENT

There will be no separate payment for waste material disposal; all materials, manipulation, labor, tools, equipment, and incidentals necessary to complete the work shall be included in the various bid items involved.

SECTION 134
FLOWABLE BACKFILL
(CONTROLLED LOW STRENGTH MATERIAL)

D 134.01 DESCRIPTION

Furnish and place flowable backfill for trench, hole, or other void without consolidation.

D 134.02 MATERIALS

- A. Cement: Furnish cement conforming to D 504.02
- B. Fine Aggregate: Provide fine aggregate that will stay in suspension in the mortar to the extent required for proper flow and that meets the gradation requirements of the aggregate gradation chart below.
Test fine aggregate gradation in accordance with Tex-401-A. Plasticity Index (PI) must not exceed 6 when tested in accordance with Tex-106-A.

Sieve Size	Percent Passing
3/4 in.	100
No. 200	0-30

- C. Mixing Water: Use mixing water conforming to the requirements of TxDOT Item 421, "Hydraulic Cement Concrete."

D 134.03 CONSTRUCTION

Submit a construction method and plan, including mix design and shrinkage characteristics of the mix, for approval. Provide a means of filling the entire void area, and be able to demonstrate that this has been accomplished. Prevent the movement of any inserted structure from its designated location. If voids are found in the fill or if any of the requirements are not met as shown on the plans, remove and replace or correct the problem without additional cost to the District. Unless otherwise shown on the plans, furnish a mix meeting the requirements of Sections 134.3.A, "Strength," and 134.3.B, "Consistency."

- A. Strength: The 28-day compressive strength range, when tested in accordance with Tex-418-A, must be between 80 psi and 150 psi unless otherwise directed. Two specimens are required for a strength test, and the compressive strength is defined as the average of the breaking strength of the 2 cylinders.
- B. Consistency: Design the mix to be placed without consolidation and to fill all intended voids. Fill an open-ended, 3-in.-diameter-by-6-in.-high cylinder to the top to test the consistency. Immediately pull the cylinder straight up. The correct consistency of the mix must produce a minimum 8-in.-diameter circular spread with no segregation.

When necessary, use specialty type admixtures to enhance the flowability, reduce shrinkage, and reduce segregation by maintaining solids in suspension.

Mix the flowable fill using a central-mixed concrete plant, ready-mix concrete truck, pug mill, or other approved method. Cure test specimens in accordance with Tex-447-A. The laboratory will sample, make, and test all specimens.

D 134.04 PLACEMENT

The controlled low strength material shall be placed directly into the excavation. The CLSM shall be placed in a uniform manner that will prevent voids in or segregation of the material. Foreign material which falls into the trench prior to and during placing of the CLSM shall be immediately removed. The CLSM shall have consistency, workability, plasticity, flow characteristics and pumpability (when required) such that the material when placed is self-compacting.

Mechanical compaction or vibration may be used to consolidate around structures, pipes, multiple conduits, etc. when directed by the engineer, otherwise no mechanical compaction or vibration shall be required.

When CLSM is used for backfill around water or sanitary sewer pipes install zero PI sand or gravel 12" above the top of the pipe. When CLSM is used for backfill around conduits, the CLSM shall be placed equally on both sides of conduit to prevent lateral displacement. Also, the CLSM shall be placed in lifts. The height of each lift shall not exceed the depth that will cause floating of the pipe or conduit. When placing the CLSM in greater lift depths, sufficient anchorage shall be provided so the pipe or conduit will not float.

The minimum clear distance between the outside of the pipe or conduit and the side of the excavation (each side) shall be 12 inches

When CLSM is used behind retaining walls, the depth of each lift shall be limited so it will not induce hydraulic loads greater than the design loads.

For long trenches or installations which require a large amount of CLSM, bulkheads of wood, dirt, sand bags, etc. can be used to control the material's flowability. The bulkhead shall be removed prior to the continuation the backfilling.

A minimum of 24 hours shall elapse prior to backfilling the remaining portion of the trench with other backfill material in accordance with Section 102, "Excavation and Backfill for Utilities".

D 134.05 MEASUREMENT

This item will be measured by the cubic yard of material placed when indicated as a separate pay item. Measurement will not include additional volume caused by slips, slides, or cave-ins resulting from contractor's operations.

D 134.06 PAYMENT

When indicated as a separate pay item, the materials furnished and work performed will be paid for at the unit price bid as measured. This price is full compensation for furnishing, hauling, placing the materials, equipment, tools, labor, and incidentals. When the Project Manual, plans or other specifications indicate the use of flowable backfill as incidental to another pay item, no direct payment for the material will be made.

SECTION 136 CEMENT STABILIZED BACKFILL

D 136.01 DESCRIPTION

When shown on the plans, backfill the excavation to the bottom of pavement base with cement-stabilized sand or caliche.

D 136.02 MATERIALS

- A. Cement: Cement shall consist of Type I Portland Cement conforming to ASTM C150
- B. Sand: Zero P.I. sand as aggregate for cement-stabilized backfill. Use only approved aggregate up to the bottom of existing pavement section base.
- C. Caliche
- D. Water: Water shall be clean and clear, free of oils, acids, alkalis, organic matter or other deleterious substances and shall conform to the requirements of ASTM C94.

D 136.03 EXECUTION

Sand/caliche-cement Mixture Product. The mixture shall consist of a minimum of two (2) sacks of Portland cement per cubic yard based on the dry weight of the aggregate. The mixture shall contain sufficient water to hydrate the cement (not flowable).

The cement, sand/caliche and water shall be mixed in a pugmill type mixer, which meets the approval of the Engineer. It shall be mixed for a minimum period of two minutes per batch. No mixing will be allowed on street surface.

D 136.04 PLACEMENT

Place cement-stabilized backfill equally along the sides of structures to prevent strain on or displacement of the structure. Fill voids when placing cement-stabilized backfill. Use hand operated tampers if necessary to fill voids.

The sand cement mixture shall be placed in maximum eight (8) inch thick lifts, loose measure, and thoroughly rodded and tamped around the pipe, boxes, structures, bridge approaches and paving sections. Placement and compaction shall be performed in a manner that will thoroughly fill all voids without placing undue strain on or displacement of the structure.

Cement stabilized sand backfill below the top of sewers, manholes, inlets or other structures shall be placed equally along all sides of the structure. Cement stabilized sand backfill/bedding shall be placed in a manner that will completely fill all voids in the trench. Should compaction be required to fill all voids in the areas described, hand operated tampers may be used.

Materials not placed and not compacted within four (4) hours after mixing shall be rejected.

Do not place or compact sand/caliche-cement mixtures in standing or free water.

D 136.05 PERFORMANCE

Random samples of the delivered product will be taken in the field at the direction of the Engineer and tested. A minimum of one (1) sample per week or job shall be taken at random to represent a production that is less than one hundred (100) tons per week. Two (2) samples per week shall be taken at random to represent a production greater than one hundred (100) tons per week. The Engineer shall have the option to obtain additional samples for testing.

D 136.06 MEASUREMENT

When specified or shown on the plans as a pay item will be measured by the cubic yard. Measurement will not include additional volume caused by slips, slides, or cave-ins resulting from contractor's operations

D 136.07 PAYMENT

When indicated as a separate pay item, the materials furnished and work performed will be paid for at the unit price bid as measured. This price is full compensation for furnishing, hauling, placing the materials, equipment, tools, labor, and incidentals. When the Project Manual, plans or other specifications indicate the use of cement stabilized sand as incidental to another pay item, no direct payment for the material will be made.

SECTION 220 MICROTUNNELING

D 220.01 DESCRIPTION

The trenchless installation of pipes below ground, by jacking the pipe behind a remotely-controlled, steerable, guided, articulated microtunnel boring machine (MTBM) which is connected to and shoved forward by the pipe being installed, generally precluding man entry. A geotechnical baseline report prepared by the engineer shall be made available prior to bidding for the project. If geotechnical report is not available, the contractor is responsible for contracting a geotechnical laboratory to do a subsurface exploration.

1. Permits

- 1.1 Contractor shall obtain a right of way use permit for the work from City of Laredo and any other agency.

2. Contractor Qualifications

- 2.1 The contractor shall be trained by the respective manufacturer of the microtunneling equipment in the use of the machinery. The contractor shall provide certification from the manufacturer that the contractor has been trained and is proficient in the use of equipment. Only the contractor's employee trained and certified by the manufacturer shall be allowed to operate the equipment during the project.
- 2.2 The contractor shall submit job history and reference list of equal or greater size projects successfully completed including the owner, engineer, addresses, phone numbers, and dates that said projects were completed.
- 2.3 All personnel shall be fully trained in their respective duties as part of the microtunneling crew and in safety. The Supervisor must have at least two years of microtunneling experience. A competent and experienced supervisor representing the Drilling Contractor shall be present at all times during the actual drilling operations. A responsible representative who is thoroughly familiar with the equipment and type work to be performed must be in direct charge and control of the operation at all times.

D 220.02 MATERIALS

1. Pipe

- a) Pipe shall be specifically designed and certified for microtunneling by the pipe manufacturer and shall comply with ASTM and ASCE (ASCE Standard Construction Guidelines for Microtunneling) Specifications for use in Microtunneling.
- b) All joints shall consist of an elastomeric sealing element, sleeve, and a compression cushion ring as required by applicable ASTM and ASCE standards.
- c) Allowable forces: The allowable jacking strength capacity of pipe shall be capable of withstanding the maximum jacking forces imposed by the operation.

2. Pipe Characteristics

- a) Steel pipe shall have a minimum wall thickness of ¼" or as specified in Section 126, whichever is larger. Likewise, concrete pipe shall have a minimum wall thickness as specified in Section 304.
- b) Pipe shall be round. Steel pipe shall have a roundness tolerance, so that the difference between the major and minor outside diameters shall not exceed 1% of the specified nominal outside diameter, or 0.25 inch, whichever is less. Likewise, concrete and other types of pipes shall have similar roundness tolerances.
- c) Pipe shall have square and machine beveled ends. The pipe end maximum out-of-square tolerance shall be 0.04 inch, (measured across the diameter).

- d) Pipe shall be straight. The maximum allowable straightness deviation over any 10 foot length of steel pipe is 1/8 inch.
- e) Pipe shall be without any significant dimensional or surface deformities. All pipes shall be free of visible cracks, holes, foreign material, foreign inclusions, blisters, or other deleterious or injurious faults or defects. Any section of the pipe with a gash, blister, abrasion, nick, scar, or other deleterious fault greater in depth than ten percent (10%) of the wall thickness, shall not be used.

3. Protective Coatings (Steel Pipe)

- a) A coating to provide a corrosion barrier as well as an abrasion barrier is required. The coating shall be bonded well to the pipe and have a hard smooth surface to resist soil stresses and reduce friction. A mill-applied fusion bonded epoxy coating is required for steel pipes (ASTM 972/972M).

4. Submittals

- a) Prior to beginning work, the Contractor shall submit to the Engineer a work plan detailing the procedure and schedule to be used to execute the project. The work plan shall include a description of all equipment to be used, down-hole tools, a list of personnel and their qualifications and experience (including back-up personnel in the event that an individual is unavailable), list of subcontractors, a schedule of work activity, a safety plan (including MSDS of any potentially hazardous substances to be used), traffic control plan (if applicable), an environmental protection plan and contingency plans for possible problems. Work plan shall be comprehensive, realistic and based on actual working conditions for the particular project. Plan shall document the thoughtful planning required to successfully complete the project.
- b) Specifications on material to be used shall be submitted to Engineer and material shall include the pipe, fittings, drilling mud, drilling additives and any other item, which is to be an installed component of the project or used during construction.

D 220.03 CONSTRUCTION

- o For street crossings, the crossing shall be as close to 90 degrees as practical.

1. Minimum Allowable Depths

- a) Minimum allowable depth of cover shall be as specified in the approved plans.

2. Method

- a) At completion of the MT operation, the installed pipe shall be inspected by means of a Closed Circuit Television (CCTV) camera and/or a pressure test. Damaged pipe shall be jacked through to the receiving shaft and be removed. Other methods of repairing the damaged conduit may be used, as recommended by the manufacturer and approved by the Engineer/ Inspector.
- b) Perform shaft and tunnel excavation in a manner that will minimize the movement of the ground in front of and surrounding the excavation and minimize subsidence of the surface, structures, and utilities above and in the vicinity of the excavation. Support the ground in a manner to prevent loss of ground and keep shafts stable. Support pit excavation by positive means and as necessary during all shutdown periods.
- c) The contractor shall continuously monitor and compare the actual volume of spoil recovered to the theoretical volume.
- d) If any damage is observed to any property, the work shall cease immediately until a plan of action to minimize further damage and restore the damaged property is submitted and approved by the Engineer/ Inspector.

- e) Pipe ends shall be temporarily sealed until the drive and receiving shafts are made permanent, or other manholes are installed, to prevent water or earth infiltration.
- f) The control equipment shall integrate the method of excavation, removal of soil, and simultaneous placement of pipe. Line and grade shall be controlled by a guidance system that relates the actual position of the MTBM to a design reference (e.g. by a laser beam transmitted from the drive shaft along the center line of the pipe to a target mounted in the shield). As each pipe section is jacked forward, the control system shall synchronize spoils removal, excavation, and jacking speeds. The MTBM display equipment shall continuously show and automatically record the position of the shield with respect to the project design line and grade.

3. Equipment

- a) The Microtunneling Boring Machine (MTBM) shall be mechanically articulated to enable steering of the shield and shall be capable of incremental adjustments to maintain face stability for the soil conditions encountered. A remotely controlled steering mechanism shall be provided that allows for the operation of the system without the need for personnel to enter the tunnel.
- b) The measuring and balancing of earth and groundwater pressure shall be achieved by use of a slurry system. The MTBM cutter face shall at all times be capable of supporting the full excavated area without the use of ground stabilization and have the capability of measuring the earth pressure at the face and setting a calculated earth balancing pressure.
- c) The MTBM shall be advanced by jacks mounted in a jacking frame and located in the drive shaft. The MTBM shall be moved forward by the jacks advancing a successive string of connected pipes toward a receiving shaft.
- d) The MTBM shall meet the following minimum performance requirements:
 - o Capable of providing positive face support regardless of the MTBM type.
 - o Articulated to enable controlled steering in both the vertical and horizontal direction to a tolerance of plus or minus 1 inch from design alignment.
 - o All functions are controlled remotely from a surface control unit.
 - o Capable of controlling rotation, using a bi-directional drive on the cutter head or by using anti-roll fins or grippers.
 - o Capable of injecting lubricant around the exterior of the pipe being jacked.
 - o Indication of steering direction.
 - o For slurry type MTBM, the following is also required:
 - Measurement of the volume of slurry flow in both the supply and return side of the slurry loop.
 - Indications of slurry bypass valve position.
 - Indication of pressure of the slurry in the slurry chamber.

4. Drive and Receiving Shafts

- a) Location - A minimum distance, from the edge of the paved shoulder or curb, to the face of any access pit, equipment, and supplies, shall be a minimum of 10 feet along arterials and a minimum of 5 feet along local streets. Any deviation from these distances shall require prior approval from the Engineer/Inspector.
- b) Sheet piling and Bracing -Sheet piling and bracing shall be required whenever any part of the access pit excavation is located within the roadbed influence area. Steel sheet piling shall be furnished and installed as indicated. An additional earth retention structure shall be required above and below the bore hole on the drilling face of all access pits to prevent loss of material during construction.
- c) Protection - Fencing barriers shall be installed adjacent to access pits, open excavations, equipment and supplies with suitable fencing and plastic drums to prohibit pedestrian access to the work site. Equipment shall not be used as fencing to protect access pits.
- d) Miscellaneous Items

- Thrust blocks should be designed to distribute loads into the ground in a uniform manner such that any deflection of the thrust block is uniform and does not impart excessive loads on the shaft itself or cause the jacking frame to become misaligned.
 - Entry and exit seals should be provided at shaft walls if needed to prevent inflows of groundwater and slurry.
5. **Over Cut Allowance** - Overcut is the annular space between the excavated bore and the outside diameter of the pipe. When using this method, the allowable overcut shall not exceed the outside pipe radius by more than one inch.
6. **Water Tight joints** - Water tight pipe joints are required to ensure the integrity of the roadbed. Pipe shall be constructed to prevent water leakage or earth infiltration throughout its entire length.
7. **Lubrication and Slurry Fluids**
- a) Lubrication shall be used to reduce necessary jacking forces in cohesive soil. The most common lubrication is bentonite.
 - b) The pumping rate, pressures, viscosity and density of the slurry shall be monitored to ensure adequate removal of spoil. The excess slurry at entry and exit points in pits shall be contained until they are recycled or removed from the site. All slurry fluids shall be disposed of or recycled in a manner acceptable to the appropriate local, state or federal regulatory agencies.
8. **Settlement/Heaving Monitoring**
- a) This method shall be performed in a manner that will minimize the movement of the ground in front of, above, and surrounding the boring operation; and will minimize subsidence of the surface above and in the vicinity of the boring.
 - b) Potential heave or settlement shall be monitored at each shoulder point, edge of pavement, the edge of each lane (or centerline for two lane roads), and otherwise at 50 foot intervals along the pipe centerline.
 - c) A survey shall be performed prior to initiating this operation at each required monitoring location. A similar survey shall then be performed at each location, on a daily basis, until the permitted activity has been completed. All survey readings shall be recorded to the nearest one-hundredth (0.01) of a foot. Digital photographs of the pavement conditions shall also be taken prior and after the pipe installation.
 - d) All operations shall stop immediately whenever monitored points indicate a vertical change in elevation of 1/2 inch or more, or any surface disruption is observed. The Contractor shall then immediately report the amount of settlement to the Engineer/ Inspector.
9. **Ground Water Control**
- a) Dewatering shall be conducted whenever there is a high ground water table level to prevent flooding and facilitate the operation. The water table elevation shall be maintained at least 2 feet below the bottom of the casing at all times. When needed, dewatering may be initiated prior to any excavation.
 - b) Minor water seepage or pockets of saturated soil may be effectively controlled through bailing or pumping. This control shall be accomplished without removing any adjacent soil that could weaken or undermine any access pit, its supports, or other nearby structure.
 - c) Larger volumes of ground water shall be controlled with one or more well points or with staged deep wells. Well points and staged deep well pumping systems shall be installed and operated without damage to property or structures, and without interference with the rights of the public, owners of private property, pedestrians, vehicular traffic, or the work of other contractors. Any pumping methods used for de-watering and control of ground water and seepage shall have properly designated filters to ensure that the adjacent soil is not pumped along with the water. Well diameter, well spacing and the pump's pumping rate, shall provide adequate draw down

of the water level. Wells shall be located to intercept ground water that otherwise would enter the access pit excavation and interfere with the work. Upon removal of a well, the hole shall be filled and grouted according to the specifications identified in as flowable fill, and Plugging Drill Holes as directed by the Engineer.

- d) Existing storm sewers shall only be used to discharge water from the dewatering operation in accordance with a permit obtained from the appropriate storm sewer owner. Filters or sediment control devices shall be required to ensure that the existing system is not adversely affected by construction debris or sediment.
- e) If grouting is used to prevent ground water from entering the area of the access pit, the grouting shall be installed without damage to property or structures and without interference with the rights of the public, owners of private property, pedestrians, vehicular traffic, or the work of other contractors. The material properties of the grout shall conform to the specifications identified in as flowable fill.

10. Failure

- a) Should anything prevent completion of this operation, the remainder of the pipe shall be constructed and/or abandoned by methods approved by the Engineer/Inspector and accepted by the District.
- b) Abandonment of any component of the installation shall only be allowed as approved by the Engineer/Inspector and accepted by the District.

D 220.04 CONTAMINATION

When an area of contaminated ground is encountered, all operations shall stop immediately, and shall not proceed until approved by the Engineer/Inspector. Any slurry shall be tested for contamination and disposed of in a manner, which meets Local, State and/or Federal requirements.

D 220.05 WORK SITE RESTORATION

- 1. Access pits and excavations shall be backfilled with suitable material, and in a method approved by the Engineer/Inspector.
- 2. The disturbed grass-surface area shall be top soiled, seeded, fertilized, mulched, and anchored.
- 3. Upon completion of the work, the contractor shall remove and properly dispose of all excess materials and equipment from the work site.

D 220.06 TELEVISION PIPE

In accordance to Section 226

D 220.07 MEASUREMENT

This Item will be measured by the linear foot. Such measurements will be made between the ends of the barrel along its flow line.

D 220.08 PAYMENT

Payment for the work in this section will be as per linear foot or as stipulated in the contract documents. The price for installing the pipe lines shall be full compensation for all materials, labor, equipment, cost of insertions and retrieval, pavement removal and replacement, testing, and incidentals required to complete the replacement process.

SECTION 226

PIPE CLEANING AND CCTV INSPECTION

D 226.01 DESCRIPTION

This Item shall govern the cleaning and Closed Circuit Television (CCTV) inspection of sanitary and storm sewer mains before assessment, rehabilitation and final acceptance of a system. The Contractor shall do the televising. The District reserves the right to re-televising any new sanitary sewer/storm drain work after the placement of pavement or permanent trench resurfacing, but before acceptance by the Engineer, to determine the existence and extent of any foreign material or obstructions such as, but not necessarily limited to, cement grout, wood, rocks, sand, concrete, or pieces of pipe, and any structural deficiencies or sags precipitated by the permanent resurfacing operations or other Contract Work.

The Contractor shall notify the Engineer and Utility Inspector five (5) working days in advance of the anticipated date of the televising. Five (5) working days shall be allowed for the Engineer to review each individual video recording of each and every storm drain documented on that particular recording. In the event that any deficiencies or sags are discovered by the Engineer, either by the Contractor's televising or the District's re-televising, five (5) working days shall be allowed for the Engineer to determine whether the deficiencies or sags are repairable in place. If the Engineer determines that the deficiencies or sags are not repairable in place, the affected portion(s) shall be reconstructed in accordance with these Specifications.

The Contractor shall not be entitled to any additional working days due to delays resulting from the correction of any deficiencies or sags, repairable or non-repairable in place, as determined by televised inspections and the Engineer.

D 226.02 GENERAL

The CCTV inspection work must be completed by a certified National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) trained operator(s) using established PACP coding and observations.

1. General Requirements:

- a. The video operator must have at least one (1) year of experience with a project of a similar nature.
- b. Video shall be submitted to the Municipality on DVDs with high quality color in a format reviewable by the Municipality.
- c. Video recordings that are out of focus shall be cause for rejection of the recordings and Contractor shall re-televising at no additional cost to the Owner.
- d. The Contractor shall notify the Engineer five (5) Municipal working days prior to televising.
- e. The Contractor shall turn over the original video recordings to the Engineer immediately after recording.
- f. Televising shall be done in one direction for the entire length between manholes; each section shall be isolated from the remainder of the pipe as required. Sufficient water shall be supplied to cause drainage within the isolated section prior to televising.
- g. Pipe must be clean and free of dirt, rock, gravel, debris, or any other material or obstruction that will hinder the CCTV inspection.
- h. For underground storm drain conduit installations, the maximum operation tolerance for a sag shall be one-hundredth foot (0.01') per inch of pipe diameter. No sag shall be longer than sixty feet (60'). When CCTV inspection is used to check for sag, a calibrated readable device acceptable to the Engineer shall be used to measure the depth of sag.
- i. The Contractor shall not be entitled to any additional working days due to delays in securing the CCTV services of a private vendor.

D 226.03 EQUIPMENT

1. CCTV inspection equipment shall consist of a monitoring unit and self-contained camera with pan, tilt and zoom capability. This equipment shall be specifically designed and constructed for such inspection purposes. The camera shall be mounted on a crawler or adjustable skids and have a height adjust to facilitate the inspection of different sizes of pipe and to allow for visual judgment of ovality by centering the camera within the pipe. The camera shall be self-operative in one hundred percent (100%) humidity conditions. Focal distance shall be adjustable through a range of from one inch (1”) to infinity. The camera shall be waterproof and shall have a remote controlled self-contained lighting system capable of producing effective illumination for all sizes of pipe. The lighting system shall be capable of lighting the entire periphery of the pipe. The remote reading footage counter shall be accurate to within one-half percent (0.5%) over measured distance of the particular section being inspected and shall be displayed on the television monitor. The equipment shall be capable of providing a clear digital recording of the interior of the pipes. An inclinometer which gives a profile of the pipeline must be used for all new pipe inspections or on existing pipe at the discretion of the Engineer. The camera, television monitor and other components of the video system shall be capable of producing a minimum three hundred and fifty (350) line resolution color video picture. The equipment shall be capable of televising the entire length in one direction. When televising storm drains the camera shall be capable of scanning the joints for three hundred and sixty degrees (360°).
2. High velocity pipe cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of nozzles capable of scouring the interior of the size range of pipe indicated on the plans.
3. Debris removal equipment shall consist of a vacuum tanker unit capable of removing typical sewage debris accumulated by the pipe cleaner at the manholes.
4. Solid debris cutting equipment shall be hydraulically driven by the sewer cleaner. The equipment must have circular saw-tooth blades in sizes consistent with the pipe being cleaned.

D 226.04 CCTV INSPECTION REPORTS

1. Audio and written documentation shall accompany all DVD(s) submitted to the Engineer. DVD(s) shall have printed labels with location information, date format information, and other descriptive information. The voice recording of the DVD(s) shall make brief but informative comments on data of significance, including, but not limited to, the locations of unusual conditions, type and size of connection, collapsed section, the presence of scale and corrosion, and other discernible features.

The DVD(s) shall include the following:

	Data View	Audio	Written
Report No. (including DVD number(s))	✓		✓
Date of CCTV inspection	✓	✓	✓
Current weather conditions	✓		✓
MQA Storm Drain Grid page number	✓		✓
Upstream and downstream manhole structure numbers, storm drain access point or station numbers.	✓	✓	✓
GPS coordinate locations for- upstream and downstream manholes and/or any other storm drain access points. GPS receivers shall provide sub-meter accuracy	✓		✓
Location, size, type, and length of pipe.	✓	✓	✓
Direction of flow and measurement (“From” manhole/storm drain access point/station number “To” manhole/storm drain access point/station number			✓
Tape Counter Footage (current distance along reach)	✓		✓

	Data View	Audio	Written
Sketch showing the street and cross streets where the TV inspection was made			✓
Description and location of each defect		✓	✓
Description and location of each connection		✓	✓

2. A digital video shall be provided accompanied by an inspection report. This report shall be in accordance with the NASSCO defect codes. A sample inspection report and corresponding digital data file shall be submitted for review prior to starting the project. The report shall be a record of the exact location of each leak or- fault discovered by the inspection - e.g. open joints, broken, cracked, deformed or collapsed pipe, and presence of grease, roots, debris, accumulation, obstruction, infiltration, water depth variations and other points of significance. The reference location for distance measurements shall be the centerline of the launch manhole (Station 0+000). If the inspection includes an intermediate manhole, station shall be reset to 0+000 in the center of the intermediate manhole.
3. All videos shall be in digital MPEG format that is compatible with the District inspection software. Recorded picture quality and definition shall be to the satisfaction of the District.
4. The report shall include the location of all service connections together with a statement of opinion as to whether or not the service connections are subject to joint infiltration. Intrusions of service connections into the main line shall be noted with reference to the degree of intrusion.
5. Photographs of sewer defects and service connections shall be taken. The photographs shall be coordinated with the written report by reference numbers. A minimum of one photograph per line or manhole-to-manhole segment shall be taken to show a representative view of the workmanship.
6. Each manhole-to-manhole section of pipe shall be located on the report form in such a way as to be readily identifiable. Identify such items as name of subdivision, street names, manhole numbers, type of pipe, joint length, direction of flows, pipe diameter, manhole depth, inspection date, names of the inspection technician, persons viewing, and video identification numbers. Lot and block numbers for all services shall be provided.
7. Two copies of the final CCTV report with corresponding video shall be provided to the District within two weeks after the completion of the inspection. Media submitted shall become the property of the District.
8. All digital media shall be numbered and cross-indexed to the written report. Video footage shall indicate the size of the sewer, the manhole-to-manhole segment being inspected, plus the street address or location.
9. To ensure photographic quality in reports, color printers shall be used.

D 226.05 EXECUTION

1. Pipe Cleaning
 - 1.1 Acceptance of pipe and manhole cleaning shall be made upon review of the corresponding video inspection.
 - 1.2 Block debris at downstream manhole to prevent contamination of the downstream mains. Sludge, dirt, sand and other debris resulting from the cleaning operations shall be removed from the downstream manhole of the section being cleaned. Passing material from the section being cleaned to the downstream pipe section shall not be permitted.

- 1.3 The liquid portion of material removed at the manholes shall be decanted back into the pipe. The solid and semi-solid material removed at the manholes shall be disposed of at a designated site as approved by the District.
2. Traffic Control
 - 2.1 Interference to the normal flow of traffic shall be kept to a minimum.
 - 2.2 Traffic control equipment shall conform to the TMUTCD Manual for Temporary Traffic Control.
3. Closed Circuit Television Inspection Procedures
 - 3.1 The CCTV inspection shall provide a full record of the condition of the pipes, manholes and appurtenances along the designated section of sewer. This shall include all installation and material defects. The CCTV inspection shall use inclinometer testing that is compatible to the District's software.
 - 3.2 For new construction, completely wet the pipe with clean water to fill any sags prior to inspection.
 - 3.3 The Contractor shall not attempt a CCTV inspection if water levels in the pipe obstruct the cameras view unless instructed by the District.
 - 3.4 Traveling speed of the camera in the pipeline to be as follows:
 - 3.4.1 0.33 ft/s for pipelines less than 8" diameter
 - 3.4.2 0.5 ft/s for 8" to 12" diameter
 - 3.4.3 0.66 ft/s for over 12" diameter or
 - 3.4.4 Will not exceed a traverse rate of 30 ft/min.
 - 3.5 Position camera lens centrally in the pipeline with a positioning tolerance of plus or minus 10% off the vertical centerline axis of the pipeline.
 - 3.6 During the inspection, the camera operator shall pan the camera to focus on observable deficiencies in the pipe that may be located off-center to the direction of camera travel. This shall include but not be limited to all services, joints to the top, left or right, cracks and fractures or surface deterioration of the pipe walls. Pan and tilt into each service connection.
 - 3.7 Upon completion the Contractor shall provide inspection reports and digital media as detailed in Section 3.0 above.
 - 3.8 Manual winches, power winches, TV cable and powered rewinds or other devices that do not obstruct the camera view or interface with proper documentation of the pipe conditions shall be used to move the camera through the pipe. If, during the televising operations, the television camera will not pass through an entire manhole section or access point section, the Contractor shall reset the equipment in a manner so that the inspection can continue opposite the obstruction. If the television camera encounters an obstruction within a section not accessible to a manhole or access point, the Contractor shall remove the obstruction by excavation or other appropriate means, replace whatever pipe is necessary, and re-televising the entire section.
 - 3.9 Whenever non-remote powered and controlled winches are used to pull the television camera through the line, telephones, radios, or other suitable means of communication shall be set up between the two manholes or access points of the section being inspected to ensure that adequate communications exist between members of the crew.
 - 3.10 The importance of accurate distance measurements is emphasized. Measurement for location of defects shall be above ground by means of a meter device Marking on the cable, or the like, which would require interpolation for depth of manhole or storm access points, is not acceptable. The accuracy of the measurement shall be checked daily by use of a walking meter, roll-a-tape, or other suitable device. Measurements shall be from center to center of each manhole or access point. Unless permission is

given by the Engineer to do otherwise. Distance shall be shown on the video data view at all times.

- 3.11 The District, or a District approved contractor, can excavate a pipe in order to free lodged camera equipment at the expense of the Contractor

D 226.06 MEASUREMENT

Measurement for all sizes of pipe shall be based on the horizontal distances and shall be from center to center of manholes, from the center of manholes to center of catch basins, from center of manholes to center of cleanout "wye", and from center of manhole to end of pipe including flared end sections. Televising pipe is considered incidental to the pay item and no separate payment shall be made.

SECTION 302

STRUCTURAL EXCAVATION AND BACKFILL

D 302.01 DESCRIPTION

This item shall consist of doing the excavation for the placing of structures; for the disposal of all material obtained from such excavation; for the backfilling around completed structures to the finished grade as called for on the plans. Work to be done shall include all the necessary pumping or bailing, sheeting, drainage, and the construction and removal of any required cofferdams. Unless otherwise provided, the work included herein shall provide for the removal of old structures or portions thereof, trees, and other obstructions necessary to the proposed construction.

D 302.02 DEFINITIONS

"Common Structural Excavation" shall include the removal of all materials regardless of its nature.

D 302.03 USE OF EXPLOSIVES

When the use of explosives is necessary for the prosecution of the work, the Contractor shall use the utmost care not to endanger life or property. All explosives shall be stored in a secure manner, and all storage places shall be marked clearly "DANGEROUS EXPLOSIVES". The method of storing and handling explosives and highly flammable materials shall conform to Federal and State laws and regulations. The Contractor shall not use explosives until he has taken the necessary legal precautions to save the Owner against any claims arising from such use of explosives.

CONSTRUCTION METHODS

D 302.04 EQUIPMENT

All equipment necessary and required for the proper construction of structures and appurtenances shall be on project site in first class working condition and shall be approved by the Engineer before construction is permitted to start.

The Contractor shall provide hand tamping devices and pneumatic tampers as may be necessary to obtain the proper compaction for the bed and backfill as specified.

D 302.05 COMMON EXCAVATION

Common excavation shall be done in accordance with the lines and depths indicated on the plans or as established by the Engineer. Unless written permission to the contrary is given by the Engineer, no excavation shall be made outside a vertical plan three feet from the footing lines and parallel thereto.

In order that the Engineer may judge the adequacy of a proposed foundation, the Contractor, if requested, shall make soundings to determine the character of the subgrade materials. The maximum depth of such soundings will not be required to exceed five (5) feet below the proposed footing grade; it is the intent of this provision that soundings shall be made at the time the excavation in each foundation is approximately complete.

The final elevation to which a foundation is to be constructed shall be as shown on the plans or as raised or lowered by written order of the Engineer when such alterations are judged proper to satisfactorily comply with the design requirements for the structure. Should it be found necessary in the judgment of the plans, the necessary alterations in the details of the structure shall be accomplished in a manner as directed by the Engineer.

When a structure is to rest on an excavated surface other than rock, special care shall be taken not to disturb the bottom of the excavation and the final removal of the foundation material to grade shall not be performed until just before the footing is placed.

D 302.06 ROCK EXCAVATION

All material encountered, regardless of its nature, shall be included as common structural excavation.

Unless written permission to the contrary is given by the Engineer, no excavation shall be made outside a vertical plane 3 (three) feet from the footing lines and parallel thereto.

Rock foundation material shall be freed from all loose material, cleaned and cut to a firm surface either level, stepped, or serrated as directed by the Engineer. All seams shall be cleaned out and filled out with concrete at the time the footing is placed.

D 302.07 EXCAVATED MATERIAL

Excavated material required to be used for backfill may be deposited by the Contractor in storage piles at points convenient for rehandling. The location of storage piles shall be subjected to the approval of the Engineer who may require that survey points or lines be kept free from any obstruction.

Excavated material not required for backfill shall be disposed of by the Contractor as directed by the Engineer or as specified herein. If, in the opinion of the Engineer, the bottom of the ditch consists of unstable soil, this soil shall be removed from the full width of the trench and replaced with a pit run gravel. Pit run gravel shall vary in size from 3/4" to 3 1/2". The material shall be free from large amounts of organic material such as grass, roots, etc. The Engineer shall determine the depth of removal or unstable soil and the amount of backfill necessary. The cost of removing this unstable soil and replacing it with approved material shall be covered by a supplemental agreement. The sides of the trench shall be vertical unless otherwise approved by the Engineer. The Contractor shall install such trench bracing and sheeting as is necessary to protect the excavation also as required for the safety and to conform with governing laws.

Unless otherwise provided, the bracing and sheeting shall be removed by the Contractor after the backfilling has been replaced to a point at least 12 (twelve) inches above the top of the structure. In no case shall any sheeting or bracing be removed until the backfilling conditions have been met. The cost of bracing and sheeting shall be included in the unit price per linear foot for the structures.

The Contractor shall take adequate precautions to prevent damage to all existing utilities. Any utility lines cut or damaged shall be repaired or restored to their former condition.

D 302.08 DEWATERING TRENCH

Removal of water may be accomplished by bailing, pumping, or by a well point installation as conditions warrant. Pumping or bailing from any excavation shall be done through or alongside any concrete being placed. No pumping or bailing will be permitted during the placing of concrete or for a period of at least 24 hours thereafter, unless it is done from a suitable sump separated from the concrete work by a watertight wall.

- 1) Minor water seepage or pockets of saturated soil may be effectively controlled through bailing or pumping. This control shall be accomplished without removing any adjacent soil that could weaken or undermine any access pit, its supports, or other nearby structure.
- 2) Larger volumes of ground water shall be controlled with one or more well points or with staged deep wells. Well points and staged deep well pumping systems shall be installed and operated without damage to property or structures and without interference with the rights of the public,

owners of private property, pedestrians, vehicular traffic, or the work of other contractors. Any pumping methods used for de-watering and control of ground water and seepage shall have properly designated filters to ensure that the adjacent soil is not pumped along with the water. Well diameter, well spacing and the pump's pumping rate, shall provide adequate draw down of the water level. Wells shall be located to intercept ground water that otherwise would enter the access pit excavation and interfere with the work. Upon removal of a well, the hole shall be filled and grouted according to the specifications identified as flowable fill, and plug drill holes as directed by the Engineer.

- 3) Existing storm sewers shall only be used to discharge water from the dewatering operation in accordance with a permit obtained from the appropriate storm sewer owner. Filters or sediment control devices shall be required to ensure that the existing system is not adversely affected by construction debris or sediment.
- 4) If grouting is used to prevent ground water from entering the area of the access pit, the grouting shall be installed without damage to property or structures and without interference with the rights of the public, owners of private property, pedestrians, vehicular traffic, or the work of other contractors. The material properties of the grout shall conform to the specifications identified as flowable fill.

D 302.09 BEDDING

The structure shall be bedded as shown on plans on fine granular materials over an earth foundation accurately shaped to fit the lower part of the structure exterior for at least 15% of its overall height. Selected material from excavation or borrow shall then be placed along both sides of the structure equally in layers not more than six (6) inches thick and compacted by mechanical tamps or rammers for the remainder of the lower 30% of the overall height of the structure.

D 302.10 BACKFILLING

As soon as practicable, all portions of excavation not occupied by the permanent structure shall be backfilled. Backfill material shall be free from large or frozen lumps, wood or other extraneous material, placed in successive layers of not more than 6" in depth (loose measurement) for the full width of the cross section. The material and the layers shall have the proper moisture content before tamping or rolling. Wetting or drying of the material and manipulations to secure uniform moisture content throughout the layer will be required. Should the material be too wet to permit proper compaction or rolling, all work on all positions of the fill thus affected shall be corrected. Unless otherwise provided by the plans or special provisions, hand tamping will not be accepted as an alternate for mechanical compaction.

As a general rule, material used in filling or backfilling the portions described in this paragraph shall be an earth free of any appreciable amount of gravel or stone particles more than 4 (four) inches in greatest dimension and of a gradation that permits thorough compaction. When, in the opinion of the Engineer, such material is not readily available, the use of rock or gravel mixed with earth will be permitted provided no particles larger than 12 (twelve) inches in the greatest and 6 (six) inches in the least dimensions may be used. The percentage of fines shall be sufficient to fill all voids and insure a uniform and thoroughly compacted mass of proper density. No backfill shall be placed adjacent to or over single and multiple boxes until the top slab has attained 500 psi flexural strength.

All backfill as specified above shall be compacted to not less than 95% of the maximum density at optimum moisture content as determined by procedures set out under TEX 113 E. This compaction shall extend to the entire depth of each layer and the backfill, when completed, shall be a homogenous and uniformly compacted mass. Water jetting in backfill operations will not be permitted.

D 302.11 CLEANING AND RESTORATION OF SITE

After the backfill is completed, the Contractor shall notify the Environmental Services Department before the disposal of all surplus material, dirt, and rubbish from the site and shall restore all disturbed areas to their original condition. After all work is completed, the Contractor shall remove all tools and other equipment used by him, leaving the entire site free, clear, and in good condition.

D 302.12 MEASUREMENT AND PAYMENT

No separate measurement or payment will be made under this item, but all such work done shall be deemed a subsidiary obligation of the Contractor, and as having been taken into account and included by him in the price bid for the complete job.

SECTION 304 REINFORCED CONCRETE STORM DRAIN PIPE

D 304.01 DESCRIPTION

This item shall consist of reinforced concrete storm drain pipe of types, sizes, and classes shown on the plans furnished and existing in the field. This specification also deals with existing, conflicting pipelines discovered during construction requiring replacement.

MATERIALS

D 304.02 REINFORCED CONCRETE STORM DRAIN PIPE

Reinforced concrete storm drain pipe shall be tongue and groove pipe and shall meet the requirements of ASTM Designation C76-59T, Class 3, with either Type A or Type B Wall, and 24" diameter minimum. Extra strength pipe shall meet the requirements of ASTM Designation C76-59T, Class 4, with either Type A or Type B Wall or latest ASTM Standards. Where pipe is installed with a cover of 12" or less, it shall be Class 4 with Type "A" Wall.

Causes for Rejection: Pipe shall be subject to rejection for failure to conform to any of the specification requirements. Individual sections of pipe may be rejected because of any of the following:

- Fractures or cracks passing through the shell, except for a single end crack that does not exceed the depth of the joint.
- Defects that indicate imperfect proportioning, mixing and molding.
- Surface defects indicating honeycombed or opened texture.
- Damaged ends, where such damage would prevent making a satisfactory joint.
- Pipe sections not installed in accordance to the lines and grades shown on the plans.

Repairs: Pipe may be repaired if necessary, because of occasional imperfections in manufacture or accidental injury during handling and will be acceptable if, in the opinion of the Engineer, the repairs are sound and properly finished and cured and the repaired pipe conforms to the requirements of the specifications.

Rejections: All rejected pipe shall be plainly marked by the Engineer/Inspector and shall be replaced by the Contractor with pipe which meets the requirements of these specifications. Such rejected pipe shall be removed immediately from the site of work.

D 304.03 JOINTS MATERIAL

Reinforced concrete drain pipe joints shall be constructed to Ram-Nek, rubber O-rings, or approved equal.

D 304.04 CONCRETE

Concrete used for pipe cradles shall meet the requirements of Class "C" concrete (3600 psi), as set out in the section titled "Concrete" of these specifications. This concrete shall be furnished by an approved transit mix concrete company and/or mixed on jobsite to specifications herein established.

CONSTRUCTION METHODS

D 304.05 EQUIPMENT

All equipment necessary and required for the proper construction of sewers and appurtenances shall be on project site in first class working condition and shall be approved by the Engineer before construction is permitted to start.

The Contractor shall provide such hand tamping devices and pneumatic tampers as may be necessary to obtain the proper compaction for the pipe and backfill as specified.

D 304.06 EXCAVATION

- 1) Common: Common excavation shall consist of all excavation and shall be carried out to neat lines as specified and shown on the plans. If the excavation is carried out to a point below the required depth, this portion of the trench shall be filled at the Contractor's expense with selected material approved by the Engineer and thoroughly compacted to the specified elevation of the pipe bed.
- 2) Rock: Rock excavation shall consist of the removal of boulders and detached rock 1/2 cubic yards in volume or greater, and all rock in ledges or masses which can be removed only by the use of bars, sledges, mechanical hammers, or by blasting.

The sides of the trenches shall be excavated to neat lines of the required width and no rock masses shall be allowed to extend into these lines. The bottom of the trench shall be excavated horizontally to a depth of at least one-half the diameter of the pipe, or a minimum of 6 (six) inches greater than the finished grade of the pipe bed. After removal of all broken material from the trench, this portion of the trench shall be filled with clean, dry sand, or an equivalent granular material to the elevation of the pipe bed.

When the use of explosives is necessary for the prosecution of the work, the Contractor shall use the utmost care not to endanger life or property. All explosives shall be stored in a secure manner and all storage places shall be clearly marked "DANGEROUS EXPLOSIVES". The method of storing and handling explosives and highly flammable materials shall conform to Federal, State, and local laws and regulations. The Contractor shall not store or use explosives until he has taken the necessary legal precautions to save the Owner against any claims arising from such possession or use of explosives, with permission secured from the Engineer.

- 3) General: Excavated material not required or acceptable for backfill shall be disposed of by the Contractor as directed by the Engineer, or as specified herein. If, in the opinion of the Engineer, the bottom of the ditch consists of unstable soil, this soil shall be removed from the full width of the trench and replaced with a pit run gravel or pipe cradles. Pipe cradles shall be constructed in accordance with Division D, Section 304, Paragraph D-304.11, "CRADLES", of these specifications. Pit run gravel shall vary in size from 3/4" to 3-1/2". The material shall be free from large amounts of organic material such as grass, roots, etc. The Engineer shall determine the depth of removal of unstable soil and the amount of backfill necessary. The cost of removing this unstable soil and replacing it with approved material shall be covered by supplemental agreement.

The sides of the trench shall be vertical unless otherwise approved by the Engineer. Spaces for the construction of pipe joints shall be excavated accurately to size so that the barrel supports the entire weight of the pipe and so that no less than 3/4 of the length of the barrel is in continuous contact with the bed. Joint holes shall be large enough to permit easy working under the bottom of the pipe. The bottom of the ditch shall be shaped as shown on the plans.

The Contractor shall install such trench bracing and sheeting as is necessary to protect the excavation, and as required for safety and to conform with governing laws. Such installations shall be governed by the requirements set forth under Division D, Section 802, "Sheeting and Bracing", and pursuant to the Trench Safety Law of the State of Texas.

Unless otherwise provided, the bracing and sheeting shall be removed by the Contractor after the backfilling has been replaced to a point at least 12 (twelve) inches above the top of the pipe. In no case shall any sheeting or bracing be removed until the backfilling conditions have been met. The cost of bracing and sheeting shall be included in the lump sum price per foot of pipe in the Trench Safety bid item.

The Contractor shall take adequate precautions to prevent damage to all existing utilities. Any utility lines cut or damaged shall be repaired and restored to their former condition as specified by the respective utility.

D 304.07 TUNNELING

If approved by District Engineer, refer to Division D, Section 220

D 304.08 EXCAVATION IN STREETS

Excavation in streets, together with the implementation and maintenance of the traffic control plan where specified and the restoration of the pavement riding surface shall be in accordance with plan details or as required by other specifications included in the contract.

Pavement shall be restored as per Division D, Section 522 and 534.

D 304.09 REMOVING OLD STRUCTURES

When old inlets or manholes are encountered and no plan provision is made for adjustments or connection to the new sewers, such manholes and inlets shall be removed completely to a depth one (1) foot below the bottom of the trench. In each instance, the bottom of the trench shall be restored to grade by backfilling and compacting by the methods provided hereinafter for backfill. Where the trench cuts through storm or sanitary sewers which are known to be abandoned, these sewers shall be cut flush with the side of the trench and blocked with a concrete plug in a manner satisfactory to the Engineer.

D 304.10 DEWATERING TRENCH

Sewers shall not be constructed or laid in a trench in the presence of water. All water shall be removed from the trench sufficiently prior to the sewer placing operation to insure a dry, firm bed on which to place the sewer, and the trench shall be maintained in such unwatered condition until all concrete and mortar is set. Removal of water may be accomplished by bailing, pumping, or by a well-point installation as conditions warrant.

In the event that a trench cannot be dewatered to the point where the pipe subgrade is free from mud, or it is difficult to keep the reinforcing steel clean in cast-in-place monolithic sewers, a seal shall be used in the bottom of the trench. Such seal shall consist of a lean concrete mixture (not less than three (3) sacks of cement per cubic yard), with a minimum depth of three (3) inches.

D 304.11 CRADLES

When, in the opinion of the Engineer, the natural fill material forming the bottom of the trench does not offer a suitable foundation for the pipe, he shall determine the location and dimensions of the necessary supporting cradles which must be added. These design details shall be shown on plans furnished to the Contractor, who will carry out the required work under the Engineer's direction. Payment for any additional work incurred in this operation shall be covered by Supplemental Agreement.

D 304.12 CONNECTIONS

When a pipe to pipe connection is proposed, the connecting pipe outside diameter in no case shall exceed one half the inside diameter of the main storm drain. All connections shall provide a suitable concrete collar as per details 304-1 thru 304-3. Connections that lay on a pipe joint will not be allowed.

D 304.13 INSTALLATION AND BACKFILL

- 1) Bedding material shall consist on granular material such as gravel, pea gravel and any other material approved by the engineer. Place bedding to the depths shown on the Standard details or project plans. The bedding shall be spread manually around the pipe to provide uniform bearing.
- 2) Pipe installation shall start at the outlet end unless otherwise authorized, with the spigot or tongue end pointing downstream, and precede towards the inlet end with the abutting sections properly matched, true to the established lines and grades. Lower sections of pipe into the trench without damaging the pipe or disturbing the bedding and sides of trench. Prevent the bedding material from entering the pipe as is laid. Carefully clean the ends of the pipe before the joint material is applied. Once the pipe is in place, fill the lift holes with the precast concrete plugs.

Lay multiple lines of reinforced concrete pipe with the center lines of individual barrels parallel. Unless otherwise shown on the plans, use the clear distances between outer surfaces of adjacent pipes shown on the table.

Minimum Clearance Distance between Pipes

Equivalent Diameter	Min. Clear Distance
24 in.	11 in.
30 in.	1 ft. 1 in.
36 in.	1ft. 3in.
42 in.	1ft. 5 in.
48 in.	1 ft. 7 in.
54 in.	1 ft. 11 in.
60 to 84 in.	2 ft.

- 3) Backfill
 - a. Trench shall not be backfilled until the installed pipe conforms to the requirements specified. Any trench improperly backfilled, or where settlements occurs, shall be reopened to the depth required for proper compaction, then refilled and compacted with the surface restored to the required grade and compaction. No trench more than 300 feet shall be kept open without backfill.
 - b. Initial (primary) backfill to a point of 12 inches above the top of pipe shall be done as follows:
 - i. Suitable excavated material placed in uniform lifts not more than 6 inches in depth and shall be compacted to the density specified herein. The maximum dry density and optimum moisture shall be determined as per TxDot Tex-114-E. Test for in place density shall be in accordance with TxDOT Tex-115-E within 24 hours after compaction. Each lift shall be compacted to the required density and moisture as shown bellow, unless otherwise shown on the plans:

Subgrade Material	Density	Moisture Content
PI ≤ 20	≥ 95 % of Max Dry Density	± 2% of Opt. or greater
PI > 20	≥ 95 % of Max Dry Density	≥ Opt. Moisture

- ii. Cement stabilized Sand. When shown on the plans, backfilled the excavation with cement stabilized sand backfill as per Division D Section 134. Prevent the pipe from being displaced during the placement and prevent the backfill from entering the pipes. There is no separate item for cement stabilized sand, unless shown on the plans as a separate pay item.
- iii. Flowable Backfill. When shown on the plans, conform with Division D Section 136. There is no separate item for cement stabilized sand, unless shown on the plans as a separate pay item.
- iv. Select Fill or Flexible Base (gravel, caliche, crushed limestone).

Clean gravel approved by the engineer may be used for backfill from the bottom of the trench to the top of the pipe. The gravel shall be placed no to exceed 10 inches in depth and lightly tamped to consolidate the mass against pipe and earth surfaces.

Flexible base material (caliche, crushed limestone) may be used from the bottom of the trench to 12 inches above the top of the pipe or to the bottom of the street base in lifts no to exceed 8 inches. Material shall contain the required moisture to obtain the density for each layer to no less of 95% of the maximum dry density.

- c. Secondary Backfill. After the initial backfill has been completed at a point of 12 inches above the top of pipe, the material for secondary backfill shall be placed in uniform layers no more than 10 inches in depth (loose measurement) and shall be compacted to the required density specified herein. Excavation material used for secondary backfill shall comply with the following unless shown on the plans:

Secondary Backfill

Under Pavement		
Subgrade Mat.	PI ≤ 20	PI > 20
Density	≥ 95% Max Dry Dens	≥ 95% Max Dry Dens.
Moisture Cont	± 2% of Opt. or greater	≥ Opt. Moisture

Within the R.O.W. or Easement		
Subgrade Mat.	PI ≤ 20	PI > 20
Density	≥ 90% Max Dry Dens	≥ 90% Max Dry Dens.
Moisture Cont	± 2% of Opt. or greater	≥ Opt. Moisture

- d. Water jetting in this backfill operation **will not be permitted.**

D 304.14 BACKFILL-UTILITIES

Cover between the top of a sanitary sewer pipe and the concrete pipe bottom shall be at least 2 feet unless otherwise shown on the plans.

D 304.15 TELEVISION PIPE

New storm drains up to 48" in diameter shall be inspected by closed circuit television (CCTV) after completion of trench backfill, all appurtenances, connections, and structures installed as well as finish grading, but prior to the placement of pavement or permanent trench resurfacing, to determine the existence and extent of any obstructions, structural deficiencies, joint installation or sags as per Division D, Section 226.

D 304.16 MEASUREMENT

The footage of pipe shall be paid for on a unit price basis and shall be the number of linear feet of pipe in place measured along the centerline of the pipe between the ends of the pipe or between the interior wall of manholes or junction boxes. The several sizes of pipe shall be measured separately. No separate measurement or payment shall be made for "rock excavation".

D 304.17 PAYMENT

The number of linear feet of pipe determined as provided in above paragraph shall be paid at the contract unit price for each linear foot of the various sizes. The price bid shall be considered to include all labor, materials, and equipment rentals necessary to complete the work as specified, as well as for excavation, hauling, backfill, testing, all barricades, lights, and other protective devices necessary to adequately preserve the safety of limb, life, and property, and incidentals necessary to complete the unit, as shown on the plans and as described in the specifications.

SECTION 308 HIGH DENSITY POLYETHYLENE STORM DRAIN PIPE

D 308.01 GENERAL

This item shall govern for the furnishing and installing of all thermoplastic pipe for constructing thermoplastic pipe culverts or thermoplastic storm sewer mains, laterals, and stubs. The pipes shall be of the sizes, types, design and dimensions shown on the plans and shall include all connections and joints to new or existing pipes, sewer, manholes, inlets, headwalls and other appurtenances as may be required to complete the work.

A private system using HDPE pipe up to the property line may enter the public right of way to connect with a public storm sewer at a structure. However, HDPE pipe is not allowed to be installed underneath public streets. Do not utilize HDPE pipe in closed storm sewers.

D 308.02 MATERIALS

Pipes within the R.O.W. shall be Type "S" with watertight joint and not to exceed 36" diam. unless otherwise specified on the plans or herein, thermoplastic pipe and joint fittings shall conform to the following:

- 1) High density polyethylene pipe and fittings shall meet the requirements as in AASHTO M 294.
- 2) Raw Materials: The pipes and the fittings shall be manufactured from virgin PE compounds, which conform to the requirements of cell class 335400C as defined and described in ASTM D 3350, except that carbon black content shall not exceed 5%. PE compounds shall meet the Environmental Stress Crack Resistance according to the SP-NCTL test set forth in AASHTO M 294.
- 3) Designation of Type: The HDPE pipes used for gravity flow drainage applications shall be of Type S (outer corrugated wall with smooth inner liner) or Type D (inner and outer smooth walls braced circumferentially or spirally with projections or ribs).
- 4) Section Properties: Minimum wall thickness of the inner walls of Type S pipe and inner and outer walls of Type D pipe shall be as specified in Section 7.2.2 of AASHTO M 294. The pipe stiffness at 5% deflection, when determined in accordance with ASTM designation D 2412, shall be as specified in Section 7.4 of AASHTO M 294.

D 308.03 JOINTS

Joints shall be installed such that the connection of pipe sections will form a continuous line free from irregularities in the flow line. Joints shall conform to the following:

Watertight Joints — Joints meeting the requirements of ASTM 3212.

D 308.04 END SECTIONS

Provide non flammable end sections of the minimum length shown in the table I for each exposed pipe end. Minimum length shown in the table refers to the portion of pipe completely embedded into the embankment or natural ground. All exposed and mitered pipe sections shall consist of the same non-flammable material.

Unless otherwise specified on the plans, non- flammable end sections shall be corrugated metal as described in Section 306, reinforced concrete as described in Section 304, or other non-flammable material deem acceptable by the District.

Table I
Minimum length of Non-flammable End Section

Normal Pipe Diameter	Minimum length of End Section
24"	4'
30"	5'
36"	6'

D 308.05 APRONS

Provide non-flammable aprons consisting of concrete rip-rap or other approved material at each exposed pipe end. Limits of apron shall be as Drawing No.

D 308.06 CONSTRUCTION METHODS

The location of private driveway and side road pipe shall be constructed at locations shown on the plans or as directed by the Engineer.

Only trench installation of thermoplastic pipe will be permitted. No portion of the pipe shall project above the existing ground level.

- 1) Excavation: All excavation shall be in accordance with the requirements of "Excavation and Backfill for Structures". The width of the trench for pipe installation shall be sufficient, but no greater than necessary, to ensure working room to properly and safely place and compact haunching and other embedment materials. The space between the pipe and trench wall must be wider than the compaction equipment used in the pipe zone.

When Type I backfill is used, the minimum trench width is the pipe outside diameter plus 12 inches.

When Type II or Type III backfill is used, the minimum trench width shall be as specified in Table II.

Table II
Minimum Trench Width

Normal Pipe Diameter	Minimum Trench Width
24"	54"
30"	66"
36"	78"

- 2) Installation in Embankment: If any portion of the pipe projects above the existing ground level, an embankment shall be constructed as shown in the plans or as directed by the Engineer for a distance outside each side of the pipe location of not less than five times the diameter and to a minimum elevation of 2 feet above the top of the pipe. The trench shall then be excavated to a width as specified above.
- 3) Shaping and Bedding: The pipe shall be bedded in a foundation of compacted cohesionless material, such as crushed stone, or pea gravel, with a maximum size not exceeding 3/8". This material shall extend a minimum of 6 inches below the outermost corrugations or ribs, and shall be carefully and accurately shaped to fit the lowest part of the pipe exterior for a least 10 percent of the overall height. When requested by the Engineer, the Contractor shall furnish a template for each size and shape of pipe to be placed for use in checking the shaping of the

bedding. The template shall consist of a thin plate or board cut to match the lower half of the cross section of the pipe.

- 4) Handling and Storage: Store pipe above ground on adequate blocking, keep pipe clean and fully drained at all times during storage. Handling and storage of thermoplastic pipe shall be in accordance with the pipe manufacturer's instructions. Proper facilities shall be provided for hoisting and lowering pipe into the trench without damaging the pipe or disturbing the bedding or the walls of the trench.
- 5) Laying Pipe: Unless otherwise authorized by the Engineer, the laying of pipes on the bedding shall be started at the outlet end with the separate sections firmly joined together. Proper facilities shall be provided for hoisting and lowering the section of pipe into the trench without damaging the pipe or disturbing the bedding and the sides of the trench. Any pipe which is not in alignment or which shows any undue settlement after laying shall be removed and relayed at the Contractor's expense.

Multiple installation of thermoplastic pipe shall be laid with the center lines of individual barrels parallel. Unless otherwise indicated on the plans, the following clear distances between outer surfaces of adjacent pipes shall be maintained:

Table III

Nominal Pipe Diameter	Min. Clear Distance Between Pipes
24"	17"
30"	20"
36"	23"

- 6) Reuse of Existing Appurtenance: When existing appurtenances are specified on the plans for reuse, the portion to be reused shall be severed from the existing culvert and moved to the new position previously prepared, by approved methods. Connections shall conform to the requirements for joining sections of pipes as indicated herein or as shown on the plans. Any headwalls and any aprons or pipe attached to the headwall that are damaged during moving operations shall be restored to their original condition at the Contractor's expense. The Contractor, if he so desires, may remove and dispose of the existing headwalls and aprons and construct new headwalls at his own expense, in accordance with the pertinent specifications and design indicated on the plans or as furnished by the Engineer.
- 7) Connections and Stub Ends: Connections of pipe sewer to existing sewers or sewer appurtenance shall be as shown on the plans or as directed by the Engineer. The bottom of the existing structure shall be mortared or concreted if necessary, to eliminate any drainage pockets created by the new connection. Where the sewer is connected into existing structures, which are to remain in service, any damage to the existing structure resulting from making the connection shall be restored by the Contractor to the satisfaction of the Engineer. Stub ends, for connections to future work not shown on the plans, shall be sealed by installing watertight plugs into the free end of the pipe.

D 308.07 BACKFILLING

Backfill from the pipe bedding up to 1 foot above the top of the pipe is critical for the successful performance of the pipe. Pipe backfill provides necessary structural support to the pipe and controls pipe deflection. Special emphasis is to be placed upon the need for obtaining uniform backfill material

and uniform compacted density throughout the length of the pipe, so that unequal pressure will be avoided. Care should be taken to insure proper backfill under the pipe in the haunch zone.

1) Primary backfill material shall meet the following specifications:

- Type I - Backfill shall consist of flowable fill in accordance with Division D Section 134, "Flowable Backfill". The flowable backfill shall be placed across the entire width of the trench and shall maintain a minimum depth of 12 inches above the pipe. A minimum of 24 hours shall elapse prior to backfilling the remaining portion of the trench with other backfill material.
- Type II - Backfill shall consist of cement stabilized backfill in accordance with Division D Section 136. Cement stabilized backfill shall be placed and compacted to ensure that all voids are filled completely.
- Type III - Backfill shall consist of hard, durable, clean granular material that is free of organic matter, clay lumps, and other deleterious matter. Such backfill shall meet the gradation requirements shown in Table II. The backfill material shall be placed along both sides of the completed structure(s) to a depth of 12 inches above the pipe. The backfill shall be placed in uniform layers not exceeding 6 inches in depth (loose measurement), wetted if required, and thoroughly compacted between adjacent structures and between the structure and the sides of the trench. Until a minimum cover of 12 inches is obtained, only hand operated tamping equipment will be allowed within vertical planes 2 feet beyond the horizontal projection of the outside surfaces of the structure.

Table IV
Gradation Requirements for Type III Backfill Material

Sieve Number	Percent Retained (cumulative)
1 inch	0 - 5
7/8 inch	0 - 35
1/2 inch	0 - 75
3/8 inch	0 - 95
No.4	35 - 100
No. 10	50 - 100
No. 200	90 - 100

If Type III backfill is utilized, filter fabric shall be placed between the native soil and the backfill. Filter fabric shall conform to the requirements of DMS-6200, Type 1.

2) Secondary backfill shall be in accordance with Division D Section 304.13

D 308.08 PROTECTION OF PIPE

Unless otherwise shown on the plans or permitted in writing by the Engineer, no heavy earth moving equipment will be permitted over the structure until a minimum of 4 feet of compacted fill (permanent or temporary) has been placed over the top of the structure. Prior to adding each new layer of loose backfill material, until a minimum of 12 inches of cover is obtained, an inspection will be made of the inside periphery of the structure for local or unequal deformation caused by improper construction methods. Evidence of such will be reason for such corrective measures as may be directed by the Engineer.

Pipe damaged by the Contractor shall be removed and replaced by the Contractor at no additional cost.

Maximum deflection (reduction of the barrel base inside diameter) is 5%. Time of measurement shall be not less than 30 days following completion of installation and backfill. Contractor shall notify the engineer for testing.

D 308.09 REINSTALLATION

Deflections in excess of 5% may require the pipe to be removed and new pipe installed.

D 308.10 FIELD QUALITY CONTROL & TESTING

- All storm sewer shall be inspected by District inspectors prior to backfilling the pipe.
- Mandrel testing (or other approved method) shall be required when visual inspection reveals excessive deflection as determined by the District. Testing shall be at the expense of the contractor.

D 306.11 TELEVISION PIPE

New storm drains up to 36" in diameter shall be inspected by closed circuit television (CCTV) after completion of trench backfill, all appurtenances, connections, and structures installed as well as finish grading, but prior to the placement of pavement or permanent trench resurfacing, to determine the existence and extent of any obstructions, structural deficiencies, or sags as per Division D, Section 226.

D 308.12 MEASUREMENT

This Item will be measured by the linear foot. Such measurements will be made between the ends of the barrel along its flow line, exclusive of safety end treatments. For multiple pipes, the measured length will be the sum of the lengths of the barrels, measured as prescribed above.

D 308.13 PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Thermoplastic Pipe" of the size, joint type and backfill type specified. This price shall be full compensation for furnishing, hauling, placing and joining of pipes; for all connections to new or existing structures; for moving and reusing headwalls where required; for removing and disposing of portions of existing structures as required; for cuffing of pipe ends on skew; and for all labor, tools, equipment and incidentals necessary to complete the work.

SECTION 312 MANHOLES AND INLETS

D 312.01 DESCRIPTION

This item shall consist of manholes and inlets, complete in place constructed of required materials in accordance with these specifications and at the locations and on conformity with the lines, grades, and dimensions shown on the plans or as required by the Engineer. Drainage junction boxes are classified as manholes.

MATERIALS

D 312.02 PRECAST RINGS, THROAT SECTIONS, AND THROAT RINGS

Precast manhole rings shall be a minimum of four feet in diameter and five inches thick and a maximum of six feet in diameter. Throat sections shall be five inches thick and 2.5 feet in length. Throat rings shall be two feet in diameter and five inches thick. Alternate designs other than precast are to be designed and sealed by a Texas licensed professional engineer.

D 312.03 MORTAR

The mortar for precast rings shall be composed of one part of Portland Cement and two parts mortar sand by volume. Portland cement shall conform to the requirements of ASTM Designation C-150, Type I. Sand shall conform to the requirements of AASHTO Specification M-45. The water shall be clean and free from injurious amounts of sewage, oil, acid, strong alkalis and other vegetable matter.

D 312.04 CONCRETE

Reinforced concrete used in manholes shall conform to the requirements of Class "A" Concrete, under the specification contained herein Division D Section 504 for "Concrete". Manholes may be either pre-cast or cast-in-place depending on the design, same requiring the approval of the District Engineer prior to installation.

D 312.05 CAST IRON FRAMES AND COVERS

All castings shall be true to form and dimensions and shall be free from inclusions of foreign matter, casting faults, injurious blow holes, cracks, sponginess, and other defects rendering them unsuitable.

Finished frames and covers shall have the bearing surfaces machined or ground so that there will be no variation that will permit rocking or rattling and the diameter of the cover will be such as to fit the frame without wedging. The machined sets of frames and covers shall be marked in such a way that they can be properly matched for assembly in the field.

Castings shall conform to AASHTO Designation M 306-89 (2000). Castings shall include labeling of manhole type on manhole covers, such as "STORM DRAIN". Manhole covers shall bear the "CITY OF LAREDO" name for all storm drain for proper identification. Casting covers and rings shall be as manufactured by East Jordan Iron Works or approved equal.

D 312.06 INLET UNITS

Inlet units shall be installed in conjunction with the construction of concrete curb and gutter. Prior to placing concrete for curb and gutter, the inlet units shall be set securely in position. Openings for the inlets and recesses in curb and gutter, as indicated on the plans, shall be formed in conjunction with the curb and gutter forms. Concrete for curb and gutter adjacent to the inlet shall be placed using care to secure thoroughly compacted concrete around the inlet and formed openings and recesses without displacement of the inlet units in the forms.

CONSTRUCTION METHODS

D 312.07 GENERAL

Construct manholes and inlets as soon as is practicable after pipe lines into or through the manhole or inlet locations are completed. All concrete work shall be performed in accordance with the requirements of the item, "Concrete Structures", unless otherwise specified. Forms will be required for all concrete walls except where the nature of the surrounding material may be trimmed to a smooth, vertical face (the outside form for concrete bases supporting brick walls may be omitted with the approval of the Engineer).

Care shall be taken when connecting to the manhole several pipes with an angle less than 90 degrees between them. Minimum clear distance between two wall penetrations shall be 12 i n. or half diameter of the smaller penetration, whichever is greater. See Detail No.

D 312.08 EXCAVATION

Excavation shall conform to Division D, Section 302. The Contractor shall do all excavation for structures to the lines, grades, and elevations shown on the plans or staked by the Engineer. The excavation shall be sufficient size to permit the placing of a full width and length of the structure shown, plus such additional sizes to allow for forms.

The Contractor shall do all bracing, sheeting, or shoring necessary to perform and protect the excavation in the structure or as required for safety to conform with governing laws. The cost of bracing, sheeting, and shoring shall be included in the unit price bid for this structure.

Unless otherwise provided, bracing, sheeting, or shoring involved in the construction of this item shall be removed by the Contractor after completion of the structure. The removal shall be performed in such a manner as not to disturb or mar finish or masonry. The cost of removal shall be included in the unit price bid for the structure.

After each excavation is completed, the Contractor shall notify the Engineer to that effect, and concrete and reinforcing steel shall be placed after the Engineer has approved the depth of excavation and the character of the foundation material.

D 312.09 CONCRETE STRUCTURES

Shall be in accordance with Division D Section 406

All invert channels shall be constructed and shaped accurately so as to be smooth, uniform, and cause minimum resistance to flow. The interior floor shall be sloped downward toward the outlet.

D 312.10 INLET AND OUTLET PIPES

Inlet and outlet pipes shall extend through the walls of the structures for sufficient distance beyond the outside of the surface to allow for connections, but shall be cut off flush with the wall on the inside surfaces unless otherwise directed. A concrete collar shall be placed around the pipe so as to prevent leakage and to form a neat connection. Detail No.

Care shall be taken when connecting a pipe in skew to an inlet box to avoid breaking the corners and top & bottom beams of the box.

D 312.11 INVERTS

The inverts passing out or through the manhole or inlet shall be shaped and routed across the floor of the manhole or inlet as shown on the plans. This may be accomplished by adding and shaping mortar or concrete after the base is cast or by placing the required additional material with the base.

D 312.12 THE PLACEMENT AND TREATMENT OF CASTING, FRAMES, AND FITTINGS

All castings, frames, and fittings shall be placed in positions indicated on plans, or as directed by the Engineer and shall be set in true to line and elevation. If frames or fittings are to be set in concrete or cement mortar, all anchors or anchor bolts shall be in place and position before the concrete or mortar is placed. The unit shall not be disturbed until all the mortar or concrete is set.

When frames or fittings are to be placed upon previously constructed masonry, the bearing surfaces of the masonry shall be brought true to line and grade and present an even bearing surface in order that the entire face or back of the unit will come in contact with the masonry. The unit shall be set in mortar beds or anchored to the masonry as indicated on the plans or as directed and approved by the Engineer. All units shall be set firm and secure.

When concrete structures are so located as to be within the paved areas of the street, the finish top of these structures shall match existing grades.

D 312.13 BACKFILLING

After a structure has been completed, the area around it shall be filled with approved material in accordance with the Division D, Section 302, "Structural Excavation and Backfill". Fill shall be made to the elevations shown on the plans or as directed by the Engineer.

No backfill material shall be placed against any structure until permission is given by the Engineer. In the case of the concrete, such permission preferably shall not be given until the concrete has been in place for 14 days and tested in a laboratory conforming to the requirements of ASTM Designation C-42. All water must be removed from excavation before backfilling is done unless otherwise directed by the Engineer.

Fill in place shall be deposited on all sides of the structure at the same time and to approximately the same elevation. Special care shall be taken to prevent any wedging action against the structure and all slopes, bounding or within the area to be backfilled, will be stepped or serrated to prevent wedge action.

All backfill shall be compacted as per Division D, Section 302.

Backfill shall not be measured for direct payment. Performance of this work is not payable directly but shall be considered a subsidiary obligation of the Contractor covered under the contract unit price for the structure involved.

D 312.14 CLEANING AND RESTORATION OF SITE

After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt shall be disposed of as ordered by the Engineer. The Contractor shall restore all disturbed areas to their original condition.

After all work is completed, the Contractor shall remove all tools and other equipment used by him, leaving the entire area free, clear, and in good condition. The performance of the work described in this section is not payable directly, but shall be considered as a subsidiary obligation of the Contractor, covered under the contract unit price for each manhole and inlet.

D 312.15 MEASUREMENT

The number, types and nominal sizes of manholes and inlets shown on the plans shall be measured per each unit complete in place and accepted by the Engineer.

D 312.16 PAYMENT

The number of units of manholes and inlets determined as provided in above paragraph shall be paid at the contract unit price for each of the various types and nominal sizes of manholes and inlets as called for on the Bid Schedule, which price and payment shall constitute full compensation for furnishing all materials, for placing and finishing, for all excavation and hauling, for all backfill, for setting and anchoring any frame, cover, for all labor, equipment, tools, and incidentals necessary to complete the unit, as shown on the plans and as described in the specifications.

SECTION 314
LAYING PROCEDURES – STORM SEWER

D 314.01 LAYING PROCEDURES

- 1) Classification: All excavation for this Project shall be considered unclassified. The Contractor is expected to determine the nature of the work and to make his/her bid prices reflective of the actual conditions which will be encountered. No claims for extra compensation shall be made by the Contractor due to rock or other unfavorable excavation conditions encountered during the course of the work.
- 2) Existing Utilities: Before commencing excavation, the Contractor shall notify all utility companies with sufficient lead time and confirm the location of existing underground lines and conduits in the work area.
- 3) Dewatering: The Contractor shall provide and maintain adequate equipment to remove and dispose of all surface and ground-water entering excavations, trenches, or other parts of the work.
- 4) Water-jetting: See Section 102

D 314.02 PREPARATION OF TRENCH

Except in water-bearing earth, mechanical excavation of trenches shall be limited to an elevation four inches (4") above the elevation of the invert of the pipe after placement in its final position. All additional excavation necessary for preparation of the trench bottom shall be made manually. Excess excavation below required level shall be backfilled with gravel which shall be thoroughly tamped. Engineer will determine the depth of removal, and replacement of unstable soil shall be at Contractor's expense. Contractor shall furnish pumps to keep excavation free of water.

Wherever the presence of incipient slides are noted during excavation, the trench walls shall be restrained with adequate sheeting and shoring.

When excavations are made adjacent to existing building or other structure, existing utility lines, or in paved streets, particular care shall be taken to adequately sheet, shore, and brace the sides of the excavation to prevent undermining of or settlement beneath the structures, utility lines, or pavement. Underpinning of adjacent structures or pavement shall be done by the Contractor at his/her own cost and expense, and in a manner satisfactory to the Engineer. When required by the Engineer, the pavement shall be removed, the void satisfactorily refilled, and the pavement replaced by the Contractor. The entire expense of such removal and subsequent replacement thereof shall be borne by the Contractor.

Should trenches be dry when the trench bottom is prepared, a continuous trough shall be prepared or excavated to receive the bottom quadrant of the pipe barrel. In addition, bell holes shall be excavated so that after placement, only the barrel of the pipe receives bearing pressure from the trench bottom.

Preparation of the trench bottom and placement of the pipe shall be carefully made so that, when in final position, the pipe is true to line and grade.

When sand, broken stone, or gravel is used to support the pipe, such material shall be placed in the trench bottom in sufficient quantity so that a trough shall be formed to support the bottom quadrant of the pipe barrel.

Trenches in which concrete cradles, cushions, or encasements for pipe are to be placed, may be excavated completely with mechanical equipment. Concrete cradles, cushions, and encasements, where required, shall be constructed as shown on the plans, or, where not shown on the plans, as directed by the Engineer. Where concrete cradles or cushions are constructed beneath the pipe, the subgrade shall be prepared to dimensions and form as shown on the plans. Concrete cushions, cradles, or encasements shall be placed in a dry trench unless, in the opinion of the Engineer, such a method is not practical. Where concrete is placed in wet trench, the work shall be done strictly as directed or approved by the Engineer. The pipe shall be firmly bedded in concrete to the proper grade. Concrete encasements placed over or on the pipe shall be so placed as not to damage or injure joints or displace the pipe. For pipe encasements, sufficient concrete shall be used so that the encasement is at least four inches (4") thick at all points. The concrete shall be wet enough during placement to permit its flow, without excessive prodding, to all required points around the pipe surface. The width of cradle shall be such as to completely fill the trench width. In the case of extremely wide trenches, the concrete cradle may be confined to a narrower width, but in no case shall it be less than twelve inches (12") greater than the diameter of the pipe at the outside of the socket.

D 314.03 PIPE LAYING

Pipe shall be protected during handling against impact shocks and free fall. Pipe shall be kept clean at all times, and no pipe shall be used in the work which does not conform to the appropriate ASTM Standard.

The laying of pipe in finished trenches shall be commenced at the lowest point, with the spigot ends pointing in the direction of the flow.

All pipe shall be laid with ends abutting and true to line and grade. They shall be carefully centered so that they will form a sewer with a uniform invert.

Pipe shall be set firmly according to line and grade, and preparatory to making pipe joints, all surfaces of the portion of the pipe to be joined shall be cleaned.

D 314.04 BACKFILLING TRENCHES

Refer to Section 102.

D 314.05 SHEETING AND SHORING

Whenever timber or other sheeting is driven to a depth below the elevation of the top of the pipe, that portion of the sheeting below the elevation of the top of the pipe shall not be disturbed or removed. Whenever timber or other sheeting is driven for the protection of trench walls in water bearing soil, no portion of such sheeting below a level four feet (4') over the top of pipe shall be removed.

SECTION 316
CONCRETE ENCASEMENT, CRADLES, SADDLES, AND COLLARS

D 316.01 DESCRIPTION

This Item shall govern for placing concrete encasement, cradles, saddles, and collars, when called for the Project plans or as directed by the Engineer.

D 316.02 MATERIALS

Concrete: All concrete shall be class "A" and conform to the provisions of Division D, Section 504 or shall be of the class noted on the plans.

D 316.03 CONSTRUCTION METHODS

- 1) Concrete Encasement: When concrete encasement is show on the plans or when directed by the Engineer, the trench shall be excavated and fine graded to a depth conforming with details and sections shown on the plans. The pipe shall be supported by precast concrete blocks of the same strength as the concrete for encasement and securely tied down to prevent floatation. Encasement shall then be placed to a depth and width conforming with details and sections shown on the plans.
- 2) Concrete Cradles: When concrete cradles are shown on the plans or when called for by the Engineer, the trench shall be prepared and the pipe supported in the same manner as described in this specification and shall be constructed in accordance with details and sections shown on the plans.
- 3) Concrete Saddles: When shown on the plans or when directed by the Engineer, pipe to receive concrete saddle shall be backfilled in accordance with Division D Section 302, "Structural Excavation, and Backfill" to the spring line and concrete placed for a depth and width conforming with details and sections shown on the plans.
- 4) Concrete Collars: When shown on the plans or when directed by the Engineer, concrete collars shall be constructed in accordance with details and sections shown on the plans. See details No.

D 316.04 MEASUREMENT

Will be measured by the cubic yard of accepted work calculated based on the lines and dimensions shown on the plans, complete in place. Reinforcing, if required, shall not be measured for payment.

D 316.05 PAYMENT

Will be paid for at the unit price bid per cubic yard, which price shall be full compensation for furnishing and placing all materials, manipulation, labor, tools, equipment, and incidentals necessary to complete the work.

SECTION 318

CHANNEL EXCAVATION AND EMBANKMENT

D 318.01 DESCRIPTION

Shall consist of required excavation for all channels proposed in the plans; the removal and proper utilization or disposal of all excavated materials; and constructing, shaping and finishing all earthwork involved in conformity with the required lines, grades and typical cross sections and in accordance with specifications requirements herein outlined.

D 318.02 METHODS

All suitable materials removed from the excavation shall be used, insofar as practicable, in the formation of embankments as required by the Item, "Embankment", or shall be otherwise utilized or satisfactorily disposed of as indicated on plans, or as directed, and completed work shall conform to the established alignment, grades and cross sections. During construction, the channel shall be kept and drained, insofar as practicable, and the work shall be prosecuted in a neat workmanlike manner.

Unsuitable channel excavation in excess of that needed for construction shall be as known as "WASTE" and shall become property of the Contractor to be disposed of by him outside the limits of the right of way.

Payment will not be allowed for excavation of any material which is used for purposes other than those designated, except as provided in the governing specifications under the item "Scope of Work."

D 318.03 MEASUREMENT

All channel excavation will be measured in its original position and the volume computed in cubic yards by the method of average in end areas.

D 318.04 PAYMENT

All work performed as required herein and in the Item, "Embankment" and measured as provided under "Measurement" will be paid for at the unit price bid under the following method:

Ordinary Compaction (for channel embankment) each layer shall not exceed one (1) foot of loose depth, and shall be compacted as per specifications. Each layer shall be brought to the moisture content ordered by the Engineer, and shall be kept leveled with suitable equipment to insure uniform compaction over the entire layer.

The prices bid for channel excavation or embankment shall each be full compensation for furnishing all labor, materials, tools, equipment and incidentals necessary to complete the work. Payment for unauthorized work will not be made.

All work required for disposing of waste, including haul, will not be paid for directly, but shall be considered subsidiary work pertaining to the various contract items, and such cost shall be included in the unit prices for these items.

When specified on the plans, and hauling of materials will not be paid directly, but shall be considered as subsidiary work pertaining to the various contract items, and such cost shall be included in the unit prices bid.

SECTION 402 CLEARING AND GRUBBING

D 402.01 DESCRIPTION

"Clearing and Grubbing" shall consist of the removal and disposal of trees, stumps, brush roots, vegetation, logs, rubbish, and other objectionable matter. Full compliance with NPDES (National Pollution Discharge Elimination System) permitting & Drainage Standard shall be maintained.

D 402.02 CONSTRUCTION METHODS

The right-of-way shall be cleared of stumps, brush, logs, rubbish, trees, and shrubs, except such trees and shrubs and certain areas designated by the Engineer for preservation. Those trees, shrubs, and other landscape features specifically designed by the Engineer for preservation shall be carefully protected from abuse, marring, or damage during construction operations. Continual parking and/or servicing of equipment under the branches of trees designated for preservation will not be permitted. Trees and shrubs designated for preservation that must be pruned shall be trimmed as directed and all exposed cuts over two (2) inches in diameter shall be treated with an approved material.

Areas required for embankment construction, for roadway, channel and structural excavation, and for borrow sites and material sources shall be cleared and grubbed. On areas required for roadway, channel, or structural excavation, all stumps, roots, etc., (except for designated trees and brush) shall be removed to a depth of at least two (2) feet below the existing ground surface. All holes remaining after clearing and grubbing shall be backfilled and tamped as directed by the Engineer and the entire area bladed to prevent ponding of water and to provide drainage, except, in areas to be immediately excavated, the Engineer may direct that the holes not be backfilled. When permitted by the plans, trees and stumps may be cut off as close to natural ground as practicable on areas which are to be covered by at least three (3) feet of embankment. On areas required for borrow sites and material sources, stumps, roots, etc., (except for designated trees and brush) shall be removed to the complete extent necessary to prevent such objectionable matter becoming mixed with the material to be used in construction.

All cleared and grubbed material shall be disposed of in a manner satisfactory to the Engineer. Unless otherwise provided, all merchantable timber removed as required above shall become the property of the Contractor.

D 402.03 MEASUREMENT

Payment will be made for this item as clearing and grubbing and the Contractor shall investigate the conditions as they exist in the field.

D 402.4 PAYMENT

Price shall be full compensation for placing removing, loading and disposing all materials, manipulation, labor, tools, equipment, dumping fees and details necessary to complete the work.

SECTION 404

GENERAL CONSTRUCTION AND PREPARATION OF SITE SPECIFICATIONS

D 404.01 INTENT OF PLANS AND SPECIFICATIONS

The intent of the plans and specifications is to prescribe a complete work or improvement which the Contractor undertakes to do so, in full compliance with the plans, specifications, special provisions, proposal, and contract. The Contractor shall do all work as provided in the plans, specifications, special provisions, proposal, and contract, and shall do such additional work as may be considered necessary to complete the work in a satisfactory and acceptable manner. The Contractor shall furnish all labor, tools, materials, machinery, equipment, and incidentals necessary to the prosecution of the work.

D 404.02 DESCRIPTION OF SITE

This item shall consist of the preparation of site for construction operations by the removal and disposal of all obstructions which are not otherwise provided for in the plans and specifications.

Such obstructions shall be considered to include removal of sections of existing utility lines (water, sewer, & force main), existing fences/gates, and other such materials as shown on the plans including concrete slabs.

This item shall include the removal of obstructions in accordance with the item "*Clearing and Grubbing*", Section 402. It is the intent of this item to provide for the disposal of all objectionable materials not specifically provided for elsewhere in the plans/specifications. All materials to be salvaged by the Owner shall be properly disposed of by the contractor as directed.

D 404.03 FINAL CLEAN-UP

Upon the completion of the work and before acceptance and final payment will be made, the Contractor shall clean and remove from the site of the work, surplus and discarded materials, temporary structures, and debris of every kind. Contractor shall leave the site of the work in a neat and orderly condition. Surplus and waste materials removed from the site of the work shall be disposed of at locations satisfactory to the Engineer. Grounds around any structures shall be dressed to final grade as shown on plans.

D 404.04 COORDINATION OF PROJECT

The plans, these specifications, the proposal, special provisions, and all supplementary documents are intended to describe a complete work and are essential parts of the contract. A requirement occurring in any of them is binding. In case of discrepancies, figured dimensions shall govern over specifications; and plans and quantities shown on the plans shall govern over those shown in the proposal. The Contractor shall not take advantage of any apparent error or omission in the plans and specifications, and the Engineer shall be permitted to make such corrections or interpretations as may be deemed necessary for the fulfillment of the intent of the plans and specifications. In the event the Contractor discovers an apparent error or discrepancy, Contractor shall immediately call this to the attention of the Engineer.

D 404.05 COOPERATION OF CONTRACTOR

The Contractor shall give to the work the consistent attention necessary to facilitate the progress thereof, and he shall cooperate with the Engineer, his inspectors, and with other contractors in every way possible.

D 404.06 MATERIALS – GENERAL

The materials shall be the best procurable, as required by the plans, specifications, and special provisions. The Contractor shall not start delivery of materials until the Engineer has approved the source of supply. Only materials conforming to these specifications shall be used in the work, and such materials shall be used only after approval has been given by the Engineer and only so long as the quality of said materials remains equal to the requirements of the specifications. The Contractor shall furnish approved materials from other sources, if for any reason the product from any source at any time before commencement or during the prosecution of the work proves unacceptable. After approval, any material which has become mixed with or coated with dirt or any other foreign substances during its delivery and handling will not be permitted to be used in the work.

D 404.07 MATERIALS – STORAGE

Any and all materials, such as cement, lime, mill work, or other materials or equipment subject to deterioration by exposure to weather or other factors, shall be stored in such a manner to protect them from deterioration or damage preceding the time they become a permanent part of final structure.

D 404.08 MEASUREMENT AND PAYMENT

All work performed will NOT be paid directly but shall be included in the unit price bid for other items of construction. Price shall be full compensation for furnishing and placing all materials, manipulation, labor, tools, equipment, and incidentals necessary to complete the work.

SECTION 406 CONCRETE STRUCTURES

D 406.01 GENERAL

This item shall consist of reinforced concrete structures built in accordance with the design requirements and details shown on the plans and in conformity with the requirements herein.

MATERIALS

D 406.02 CONCRETE

Concrete shall conform to the requirements of Section D-504. Unless otherwise specified on the plans or in the proposal.

D 406.03 REINFORCING STEEL

Reinforcing steel shall conform to the requirements of Section D-410. Wire mesh reinforcement shall conform to the requirements of ASTM Designation A185.

D 406.04 STRUCTURAL STEEL

Structural steel shall conform to the requirements of ASTM Designation A-36.

D 406.05 EXPANSION JOINT MATERIAL

- (a) Pre-molded expansion joint material shall conform to the requirements of Division D, Section 416, titled, EXPANSION JOINT MATERIALS.
- (b) Poured joint material shall conform to requirements of Federal Specifications SS-S-156, SS-S-159, or SS-S-164.

D 406.06 FORM MATERIAL

- (a) Form lumber for all exposed concrete surfaces shall be CM concrete form lumber, Southern Yellow Pine or approved equal, S4S, grade marked in accordance with the latest grading rules of the Southern Pine Association. Form lumber not otherwise specified shall be No. 2 Common Southern Yellow Pine, S4S.
- (b) Plywood form shall be of Douglas Fir Plywood, 5 ply, and at least 3/4" thick, conforming to the grading rules as required under State Department of Highways and Public Transportation Specifications.

CONSTRUCTION METHODS

D 406.07 REINFORCEMENT

- (a) Reinforcing shall be detailed, fabricated, and erected in accordance with Manual of Standard Practice for Detailing Reinforced Concrete Structures (ACT 315-57). Shop drawings shall be submitted in triplicate for engineering approval prior to fabrication. All reinforcement shall be entirely free from rust, scale, grease, or other coating which might destroy or reduce its bond with concrete.
- (b) Spacing: Unless otherwise indicated, the clear distance between parallel bars shall be not less than one and one-half times the diameter of round bars. In no case shall the distance between bars be smaller than the maximum size of the aggregates.

- (c) Protective Covering: Reinforcement shall be protected by the thickness of concrete indicated on the plans. Unless otherwise specified, the protective coverings over reinforcement shall not be less than the maximum size of aggregates.
- (d) Splicing and Lapping: As per section D-410
- (e) Supports: All reinforcement shall be secured in place true to the lines and grades, indicated by the use of metal supports, spacers, or ties approved by the Engineer. Such supports shall be of sufficient number and strength to maintain the reinforcement in place throughout the concreting operations. The use of pebbles, pieces of broken stones or brick, metal pipe and wooden blocks shall not be permitted.

D 406.08 FORMS

- (a) General: Forms shall conform to the shape, lines, and dimensions of the members of structures, as called for on the plans and shall be substantial and sufficiently tight to prevent leakage of mortar. All details of form construction shall be subject to the approval of the Engineer and permission to place concrete will not be given until all such work is complete to his satisfaction.
- (b) Braces and Ties: Forms shall be properly braced and tied together so as to maintain position and shape. Metal form of an approved type shall be used to hold forms in place. Such ties shall be of a type especially designed for use in connection with concrete work and shall have provision to permit easy removal of the metal to a depth of at least one-half inch from the surface of the concrete. The use of wire from ties will not be permitted except for minor or special form areas where the use of rigid type metal ties would be impracticable. Where wire ties are used, all wires upon removal of the forms shall be cut back at least one-half inch from the face of the concrete.
- (c) Curved Surface: In the case of exterior exposed curved surfaces, the Contractor shall use such forming as may be necessary to provide smooth forms of uniform curvature.
- (d) Coating: Plywood forms and plywood form lining shall be mill-oiled according to standard practice recommended by the Douglas Fir Plywood Association. Form lumber for all other exposed surfaces shall be coated with approved non-staining mineral oil which shall be applied shortly before the concrete is deposited. In general, all forms shall be thoroughly wetted before the concrete is placed.
- (e) Cleanouts: At the time of placing concrete, the forms shall be clean and entirely free from all chips, dirt, sawdust, and other extraneous matter. For narrow walls and other locations where access to the bottom of the forms is not readily obtainable otherwise, adequate cleanout openings shall be provided.
- (f) Chamfers: Unless otherwise shown on the plans, fill forms at all sharp corners and edges with triangular chamfer strips measuring $\frac{3}{4}$ " on the sides. Dress wood molding on all faces. Make molding for chamfers strips of materials of a grade that will not split when nailed and that can be maintain to true line without warping.

D 406.09 PLACING CONCRETE – GENERAL

- (a) Supervision: The Contractor shall give the Engineer sufficient notice before starting to place concrete in any unit of the structure to permit the inspection of forms, reinforcing steel, and preparation for placing. Concrete shall not be placed in footings until the character of the foundation has been approved by the Engineer and permission has been given to proceed. When footings can be placed in dry foundation pits, forms may be omitted, if desired by the Contractor and approved by the Engineer, and the entire excavation filled with concrete to the top of the footing.

Where this procedure is followed, no measurement for payment will be made for concrete placed outside of the footing dimensions shown on the plans.

- (b) **Placing:** Place concrete according to TxDOT item 420. All concrete shall be placed before its initial set has occurred. The operation of depositing and compacting the concrete shall be conducted so as to form a compact, dense, impervious mass of uniform texture which shall show smooth faces on all surfaces. Each part of the forms shall be filled by depositing the concrete directly as near its final position as possible. The coarse aggregate shall be worked back from the face and the concrete forced under and around the reinforcement bars without displacing them. Depositing large quantities at one point in the forms and running or working it along the forms will not be permitted. Concrete in columns shall be placed monolithically unless otherwise provided. An interval of not less than 4 hours shall elapse between the placing of concrete above the tops of the columns or walls to allow shrinkage. Concrete in walls, columns, and deep foundations shall be placed in a manner that will avoid separation of the aggregates or displacement of the reinforcement. Suitable chutes or vertical pipes shall be provided.
- (c) **Vibrating:** All concrete shall be placed with the aid of mechanical vibrating equipment unless otherwise directed. Vibration shall be transmitted directly to the concrete, and in no case shall it be transmitted through the forms of reinforcing steel. The duration of vibration shall at any location be held to the minimum necessary to produce thorough compaction. Vibration shall be supplemented by hand spading to insure the flushing of mortar to the surface of all forms.
- (d) **Construction Joints:** Construction joints shall be formed as shown on the plans. In all cases where they are not shown on the plans, they shall be formed as directed by the Engineer. Where indicated or required dowel rods shall be used. Before placing is resumed, all water and laitance shall be removed and the concrete shall be cut away, if necessary, to insure a strong dense concrete at the joint. In order to secure adequate bond, the surface of all concrete already in place shall be cleaned and roughened and shall then be spread with a 1/2 inch layer of mortar of the same sand-cement ratio as is used in the concrete immediately before the new concrete is deposited.

D 406.10 FINISHING EXPOSED SURFACES

An ordinary surface finish shall be applied to all concrete surfaces either as a final finish or preparatory to a higher grade or class of finish. Higher grades and classes of finish shall be in accordance with TxDOT Item 427, "Surface Finishes for Concrete". Where neither a grade nor class of finish is specified, an ordinary surface finish shall be provided as follows:

After form removal, all porous or honeycombed areas and spalled areas shall be corrected by chipping away all loose or broken material to sound concrete. Holes and spalls caused by removal of metal ties, etc., as required by TxDOT Item 420, shall be cleaned and filled with adhesive grout or epoxy grout. Exposed parts of metal chairs on surfaces to be finished by rubbing shall be chipped out to depth of one-half inch and the surface repaired.

All fins, runs, drips, or mortar shall be removed from surfaces which remain exposed. Form marks and chamfer edges shall be smoothed by grinding and/or rubbing.

Grease, oil, curing compound, etc., shall be removed from surfaces requiring a higher grade of finish. Discolorations resulting from spillage or splashing of asphalt, paint, or other similar material shall be removed. Repairs shall be dense, well bonded, and properly cured, and when made on surfaces which remain exposed and do not require a higher finish, shall be finished to blend with the surrounding concrete. Unless otherwise specified on the plans, ordinary surface finish shall be the final finish for the following exposed surfaces: Inlets, manholes, and sewer appurtenances.

D 406.11 FINISHING VERTICAL SURFACES (GENERAL)

After tie rods and bolts are removed, the holes shall be filled solid with cement mortar. Honeycomb and minor defects shall not be patched until approval has been given by the Engineer.

D 406.12 REMOVAL OF FORMS

- (a) Finished Concrete: Forms for surfaces required to be finished shall be removed when the concrete has aged not less than ½ nor more than 2 curing days after the concrete has been placed.
- (b) Unfinished Concrete: Forms and false work may be removed when the concrete has attained a compressive strength of not less than 65 percent of the design strength except that forms for walls, columns, and sides of beams may be removed after 48 hours.
- (c) Curing Day: The term "curing day" will be interpreted as any calendar day on which the temperature is above 50 F for at least 19 hours. In continued cold weather, the Engineer will determine when sufficient time has elapsed to permit the removal of forms and false work.

D 406.13 DEFECTIVE WORK

Any defective work discovered after the forms have been removed shall be repaired immediately. If the surface of the concrete is bulging, uneven, or shows excess honeycombing or form marks, which, in the opinion of the Engineer, cannot be repaired satisfactorily, the entire section shall be removed before the repair work is started. No extra compensation will be allowed for extra work or materials involved in repairing or replacing defective concrete.

D 406.14 CURING

Concrete shall be maintained in a moist condition for at least five (5) days after placement. Curing shall be commenced as soon as possible after the concrete has been finished. This shall be either by means of approved curing compound, sprinkling, or by damp curing by means of wet mats, sand, etc. Adequate protection shall be provided to prevent damage from extreme weather conditions shall they be either hot or cold temperatures, wind, or other conditions which would cause evaporation of moisture from the fresh concrete. The ACI recommendations for hot or cold weather shall be followed.

D 406.15 ADDITIONAL CONCRETE FINISH FOR EXPOSED SURFACES

Concrete shall be finished pursuant to 2014 TxDOT Specification Item 427 or latest revision.

D 406.16 CONCRETE STRUCTURE REPAIRS

For all repairs, provide materials suitable for the appropriate horizontal, vertical or overhead application. Approval from the engineer for any proposed repair is required unless a repair material type is indicated in the plans. Remove unsound concrete, repair spalled or delaminated concrete, and replace concrete with repair materials. All concrete repairs shall be as per TxDOT Item 429, 2004 edition or latest revision.

D 406.17 MEASUREMENT AND PAYMENT

No separate measurement or payment will be made under this item, but all such work done shall be deemed a subsidiary obligation of the Contractor, having been taken into account and included in price bid for the complete job.

SECTION 408 RIP RAP

D 408.01 GENERAL

This item shall govern the furnishing and placing of riprap.

D 408.02 MATERIALS

- 1) Concrete: Unless otherwise shown in the plans, concrete shall be Class "A". The riprap will consist of a minimum of 4-inch slab with a 6 x 6- W2.9 x W2.9 welded wire fabric or No. 3 or No. 4 reinforcing steel bars spaced at maximum 18-inch centers each way, and per requirements of specifications entitled, "CONCRETE", Division D, Section 504. Grout shall be in accordance with TxDot item 421.
- 2) Stone shall be as large as can be conveniently placed in a layer of the required depth. The stones, excepting small stones and spalls used to chink interstices shall weigh not less than 10 pounds and at least 50 percent of the stone shall weigh not less than 100 pounds.
- 3) Sacks shall be made of burlap not lighter than 10 ounce and shall be approximately 19 ½ inches by 36 inches measured inside the seams when the sack is laid flat. Sound reclaimed sacks may be used.

D 408.03 CONSTRUCTION METHODS

If the slopes and bottom of the trench for toe walls are dry and not consolidated properly, the Engineer may require the entire area to be sprinkled, or sprinkled and consolidated before the concrete is placed. All surfaces shall be moist when concrete is placed.

- 1) The concrete riprap shall have a toe ditch as specified on plans. Concrete slab shall be placed, finished, and cured in accordance with the item, "Concrete Structures" Division D, Section 406 of these specifications.
- 2) Stone: for plain and grouted riprap shall be sound and durable, free from seams and coatings, and of such characteristics that it will not disintegrate when subjected to the action of water. Stone shall be of shapes which will form a stable protection structure of the required depth. Rounded boulders or cobbles shall not be used on slopes steeper than 2 to 1 unless grouted. Angular shapes may be used on any slope. Flat or needle shapes will not be acceptable unless the thickness of the piece is more than 1/3 the length. Do not place grout when air temperature is below 35° F. Protect work for rapid drying for at least 3 days after placement. For non grouted rock riprap and when the voids are going to be filled only with spalls or small stones, use filter fabric with the length running up and down the slope with a minimum of 2 feet overlap. Non grouted rock riprap shall be constructed as per design and engineer's recommendations. Waste concrete may be used, if the pieces are sound free from coatings, steel and meet the size requirements specified for a stone.
- 3) Sacks: the capacity of each sack shall be 1.25 cubic feet. Each sack shall contain 1 cubic foot of concrete loosely placed so as to leave room for folding the open end, the fold just enough to retain the concrete at the time. The filled sacks are placed immediately after filling. The sacks shall be placed and lightly trampled to cause them to conform with the ground surface and with adjacent sacks in place.
- 4) Riprap other than concrete shall have a perimeter toewall of reinforced concrete a minimum of 18 inches deep and 9 inches wide placed adjacent to the existing or proposed finish grade.

D 408.04 MEASUREMENT

Riprap of any type shall be measured by the square foot as measured in the plan view, there shall be no separate measurement for toewalls.

D 408.05 PAYMENT

Riprap shall be paid for on a unit price basis as measured. The price bid shall be considered to include furnishing, hauling, and placing all materials and for labor, tools, equipment, and incidentals necessary to complete the work. There shall be no separate payment for toewalls.

SECTION 410 REINFORCING STEEL

D 410.01 DESCRIPTION

This item shall provide for the furnishing and placing of bar reinforcing steel of the size and quantity designated for use in structures and other concrete items that require reinforcing steel as shown on the plans and in accordance with these specifications.

D 410.02 MATERIALS

Reinforcing steel shall conform to the requirement of Item 440, "Reinforcing Steel" of the TxDOT latest Provisions. Reinforcing steel bars produced outside of the United States are acceptable if such bar reinforcement conforms to the requirements of the ASTM Designations.

D 410.03 PLACING REINFORCEMENT

All steel reinforcing shall be accurately placed in the position shown on the plans and firmly held during the placing and setting of concrete. All reinforcement shall be inspected and approved before placement to be free from dust, rust, mill scale, paint, oil, or foreign material. When stored, it shall not be in direct contact with the ground. Bars shall be tied at all intersections. Distances from forms shall be maintained by means of stays, precast blocks, ties, hangers, metal chairs, or other approved supports. Blocks for holding reinforcement from contact with the form shall be precast concrete blocks of approved shape and dimensions or other equally suitable devices. The use of pebbles, pieces of broken stones or brick, metal pipe and wooden blocks shall not be permitted. Reinforcement in any sections shall be placed and then inspected and approved by the Inspector before the placing of concrete begins.

D 410.04 SPLACING AND LAPPING

Unless otherwise indicated, all spliced bars shall be staggered. Laps shall be in accordance with Table No. 1.

Table 1
Minimum Lap Requirements for Bar Sizes through No. 11

Bar Size No. (in)	Bar size No. (mm)	Uncoated Lap Length	Coated Lap Length
3	10	1 ft 4 in	2 ft 0 in
4	13	1 ft 9 in	2 ft 8 in
5	16	2 ft 2 in	3 ft 3 in
6	19	2 ft 7 in	3 ft 11 in
7	22	3 ft 5 in	5 ft 2 in
8	25	4 ft 6 in	6 ft 9 in
9	29	5 ft 8 in	8 ft 6 in
10	32	7 ft 3 in	10 ft 11 in
11	36	8 ft 11 in	13 ft 5 in

Note: bar size numbers (in.) are based on the number of eighths of an inch included in the nominal diameter of the bar. Bar size numbers (mm) approximate the number of millimeters included in the nominal diameter of the bar.

D 410.05 MEASUREMENT AND PAYMENT

No separate measurement or payment will be made under this item, but all such work done shall be deemed a subsidiary obligation of the Contractor, having been taken into account and included by him in price bid for the complete job.

SECTION 412 WELDED WIRE FABRIC

D 412.01 DESCRIPTION

This item shall govern the furnishing and placing of the various sizes of welded wire fabric as indicated on the plans or as directed by the Engineer.

D 412.02 MATERIAL

All welded wire fabric used in construction shall conform to the requirements of ASTM Designation A-185. It shall be 6 x 6- W2.9 x W2.9 welded wire fabric, plain electric welded reinforcing fabric or as indicated on the plans.

D 412.03 CONSTRUCTION METHODS

All splices in the wire fabric shall overlap sufficiently to allow two (2) pairs or transverse wires to be tied together and no splices of less than six (6) inches will be permitted.

At the edge of the construction, the wire fabric shall not be less than one (1) inch nor more than three (3) inches from the edge of the concrete and shall have no wires projecting beyond the last member parallel to the edge of the concrete. The wire fabric shall be straightened to lie flat in place without bulges or excessive vertical displacement and shall be supported properly throughout to insure its proper position in the finished construction.

D 412.04 MEASUREMENT

No measurement of welded wire fabric will be made.

D 412.05 PAYMENT

No direct payment for furnishing and placing welded wire fabric will be made. All materials and labor required will be considered subsidiary to the item in which it is used and shall be included in the unit price bid for said item.

SECTION 414 REINFORCING FIBERGLASS

D 414.01 DESCRIPTION

This item shall govern for the furnishing and placing of concrete reinforced with fibrous mesh in accordance with these specifications and with details as shown on the plans.

D 414.02 MATERIALS

1. Concrete

All concrete shall conform to the requirements of Section 406 "Concrete for Structures". Unless otherwise shown on the plans or in the bid item, the concrete shall be Class A concrete.

2. Reinforced

Reinforcement shall be 100% virgin polypropylene fibrillated fibers specially manufactured for use as concrete reinforcement and meeting the requirements of ASTM C1116. The fibrous material shall not contain reprocessed olefin. Each container of fibrous material shall bear the manufacturer's name and/or trademark and the net weight of fibrous material in the package. The specific gravity of the fibrous material shall be 0.91 plus or minus .05. The tensile strength shall be 80 to 110 ksi. The lengths of the fibrous material shall be 1/2, 3/4, 1- 1/2 and 2 inches in the length. Unless otherwise shown on the plans, each cubic yard of concrete shall contain no less than 1- 1/2 pounds of fibrous material. The fibrous material shall be added to the concrete mix at the time the mix is batched. The fiber-reinforced concrete shall be furnished either by batch mixing or continuous mixing, and shall be free of fiber balls when delivered to the point designated by the purchaser.

D 414.03 EXCAVATION, PLACING OF CONCRETE, FINISHING, CURING AND BACKFILL

All excavation, placing of concrete, finishing, curing and backfilling shall be in accordance with Section 302 "Structural Excavation and Backfill" and Section 406 "Concrete Structures".

D 414.04 MEASUREMENT

No measurement of fiberglass will be made.

D 412.05 PAYMENT

No direct payment for furnishing and placing fiberglass will be made. All materials and labor required will be considered subsidiary to the item in which it is used and shall be included in the unit price bid for said item.

SECTION 416
EXPANSION JOINT MATERIALS

D 416.01 DESCRIPTION

This item shall govern for furnishing and placing of all expansion joint material as herein specified in the various items of these specifications or as shown on the plans or as directed by the Engineer.

D 416.02 MATERIAL

The material used for expansion joints shall conform to either of the following:

- 1) Preformed Bituminous Fiber Material shall be formed from cane or other suitable fibers of a cellular nature securely bound together and uniformly impregnated with a suitable asphaltic binder and shall meet the requirements of the Standard Specifications for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction, ASTM Designation D-1751.

- 2) Boards for expansion joints shall be obtained from Redwood or Cypress timber and shall be sound heartwood, free from sapwood, knots, clustered birds-eye, checks, and splits. Occasional sound or hollow birds-eye when not in clusters will be permitted provided the board is free from any other defects that will impair its usefulness as a joint filler.

- 3) All expansion joints to be capped with Greenstreak G-Seal #610 or approved equal. Provide product submittal for approval.

D 416.03 CONSTRUCTION METHODS

All materials used shall extend the full depth of the concrete and shall be perpendicular to the exposed face. All joints shall be shaped to conform to the contour of the finished section in which they are installed. All material shall be a minimum of one-half (1/2") inch thick.

D 416.04 MEASUREMENT

Expansion Joint Materials will not be measured for payment.

D 416.05 PAYMENT

No direct payment will be made for Expansion Joint Materials. All material supplied and installed as specified herein shall be considered subsidiary work to the various items of these specifications calling for Expansion Joint Materials.

SECTION 418 MEMBRANE CURING

D 418.01 DESCRIPTION

This item shall consist of curing by the impervious membrane method of all curbs, sidewalks, drive approaches, concrete riprap, concrete structures, and other concrete as specified in the various items of these specifications or as indicated on the plans.

D 418.02 MATERIALS

The membrane curing compound shall comply with the requirements as set forth under "Membrane Curing, Type 2, White Pigmented" of the TxDOT latest provisions.

Type 1-D (Resin Base Only) is required for bridge slabs and top slabs of direct traffic culverts and all other surfaces that required a higher grade of surface finish.

D 418.03 CONSTRUCTION METHODS

The membrane curing compound shall be applied after the surface finishing has been completed, and immediately after the free surface moisture has disappeared. The surface shall be completely sealed with a uniform coating of the curing compound applied at the rate of coverage recommended by the manufacturer or as directed by the Inspector.

Do not apply membrane curing compound on projections of reinforcing steel or concrete that will later form a construction joint.

Do not apply membrane curing to dry surfaces. Dampen formed surfaces and surfaces that have been given a first rub so that they are moist at the time of application of membrane.

The liquid-membrane forming compound must not disintegrate, check, peel, or crack during the required curing period. It must not peel or pick up under traffic and must disappear from the surface of the cured concrete by gradual disintegration.

D 418.04 MEASUREMENT

"Membrane Curing" will not be measured for payment.

D 418.05 PAYMENT

The work and materials prescribed herein will not be paid for directly, but shall be included in the unit price bid for the items of construction in which these materials are used.

**SECTION 420
CHAIN LINK FENCE**

D 420.01 DESCRIPTION

Work includes: providing chain link fence system where shown on the drawings, as specified herein, and as needed for a complete and proper installation.

D 420.02 PRODUCT

Dimensional Data

General: Pipe size indicated are commercial pipe sizes.

Galvanizing: On steel framework and appurtenances, provide galvanized finish with not less than the following weight of zinc per square foot.

- 1) Pipe: 1.8 oz., complying with ASTM A120.
- 2) Hardware and Accessories: Comply with Table 1 of ASTM A153.
- 3) Fabric: 1.2 oz, complying with Class I of ASTM A392.

Fabric:

- A. Provide number 9 gauge or 0.148" wires in two (2) mesh with top and bottom knuckled finish.
- B. Place fabric in one piece width.

Posts, Rails, and Associated Items:

- A. End, corner, slope, and pull posts: provide at least the following minimum sizes and weights:

Material and dimensions	lbs./ft.
Pipe: 2.875" outside dimension	5.79

- B. Line posts: provide minimum sizes and weights

Material and dimensions	lbs./ft.
Pipe: 1.900" outside dimension	2.75

- C. Gate posts: provide gate posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:

Material and dimensions	lbs./ft.
Pipe: 2.875" outside dimension	5.79

- D. Top rails:

Material and dimensions	lbs./ft.
Pipe: 1.660" outside dimension	1.80

- 1) Provide in manufacturer's longest lengths, with expansion type couplings approximately 6" long for each joint.
- 2) Provide means for attaching top rail securely to each gate, corner, pull, slope, and end posts.

- E. Post brace assemblies: Provide at end and gate posts, at both sides of corner, slope and pull posts, with the horizontal brace located at mid-height of the fabric.

Material and dimensions:	lbs./ft.
Pipe: 1.660" outside dimension	1.80
Use 3/8" diameter rod with turnbuckle for diagonal truss.	

- F. Tension wire: Provide number 9 gauge galvanized coiled spring wire at bottom of fabric.

G. Post tops:

- 1) Provide steel, wrought iron or malleable iron, designed as weathertight closure cap.
- 2) Provide one cap for each post.
- 3) Provide caps with openings to permit through passage of top rail.

H. Stretcher Bars:

- 1) Provide one-piece lengths equal to full height of fabric with a minimum cross section of 3/19" x 3/4".
- 2) Provide one stretcher bar for each gate and end post, and tow of each corner, slope and pull post, except where fabric is woven integrally into the post.

I. Stretcher Bar Bands:

- 1) Provide steel, wrought iron or malleable iron, spaced not over 15" on centers, to secure stretcher bars to end, corner, pull, slope, and gate posts.
- 2) Bands may be used also with special fittings for securing rails to end, corner, pull, slope, and gate posts.

D 420.03 GATES

A. General:

- 1) Provide additional horizontal and vertical member to assure proper operation of the gate, and for attachment of fabric hardware and accessories.
- 2) Space frame members not more than 8 feet apart.

Material and dimensions:	lbs./ft.
Pipe: 1.660" outside dimension	2.27

B. Gate Hardware: Provide the following for each gate:

- 1) Hinges:
 - a. Pressed or forged steel or malleable iron, to suit the gate size; non-lift-off type, offset to permit 180E opening.
 - b. Provide 1-11/2 pr. of hinges for each leaf over 6 feet in nominal height.
- 2) Latches:
 - a. Provide forked type or plunger-bar type to permit operation from either side of the gate.
 - b. Provide padlock eye as integral part of latch.
- 3) Keeper: Provide keeper for vehicle gates, which automatically engages the gate leaf and holds it in the open position until manually released.
- 4) Double gates:
 - a. Provide gate stops for double gates consisting of mushroom or flush plat with anchors.
 - b. Set in concrete to engage the center drop rod or plunger bar.
 - c. Provide locking device and padlock eyes as an integral part of the latch, requiring both gate leaves.

D 420.04 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Wire ties:
 - 1) For tying fabric topline posts, use number 9 gauge wire ties spaced 12" on centers.
 - 2) For tying fabric to rails and braces, use number 9 gauge wire ties spaced 24" on centers.
 - 3) For tying fabric to tension wire, use number 11 gauge hog rings spaced 24" on centers.
 - 4) Manufacturer's standard wire ties will be acceptable if of equal strength and durability.
- B. Concrete: Comply with provisions for 2500 psi concrete.

D 420.05 EXECUTION

Surface Conditions: Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

Installation:

- A. General:
 - 1) Install posts at a maximum spacing of 10 feet on centers.
 - 2) Install corner or slope posts where changes in line or grade exceed a 30° deflection.
- B. Excavating:
 - 1) Drill holes for post footings in firm, undisturbed or compacted soil, strictly adhering to the dimensions and spacing shown.
 - 2) Post hole dimensions.
 - a. Provide 30" deep by 8" diameter foundations for line post for 5 foot fabric height and less.
 - b. Provide 36" deep by 8" diameter foundations for line posts for fabric heights exceeding 5 feet.
 - c. Provide 35" deep by 12" diameter foundations for all other posts.
 - 3) Spread soil from excavations uniformly adjacent to the fence line, or on adjacent areas of the site if so directed.
- C. Setting Posts:
 - 1) Remove loose and foreign materials from sides and bottoms of holes, and moisten soil prior to placing concrete.
 - 2) Center and align post in holes.
 - 3) Place concrete around posts in a continuous pour, and vibrate and tamp for consolidation.
 - 4) Check each post for vertical and top alignment and hold in position during placement and finishing operations.
 - 5) Trowel tops of footings, and slope or dome to direct water away from posts.
 - 6) Extend footing for gate posts to the underside of bottom hinge.
 - 7) Set keeps, stops, sleeves, and other accessories into concrete as required.
 - 8) Keep exposed concrete surfaces cured with membrane curing material.
- D. Concrete Strength:
 - 1) Allow concrete to attain at least 75% of its minimum 28-day strength before rails, tension wires, and/or fabric is installed.
- E. Rails and Bracing:
 - 1) Install fence with top rail and bottom tension wire.

- 2) Install tip rails continuously through post caps or extension arms bending to radius for curved runs.
- 3) Provide expansion couplings as recommended by the fencing manufacturer.
- 4) Provide bracing to the midpoint of the nearest line post or posts at all end corners, slope, pull, and gate posts.
- 5) Install tension wires parallel to the line of fabric by weaving through the fabric and tying to each post with not less than number 6 gauge galvanized wire, or by securing the wire to the fabric.

F. Installing Fabric:

- 1) Leave approximately 2" between finish grade and bottom salvage.
- 2) Excavate high points in the ground to clear the bottom of the fence.
- 3) Place and compact fill to within 1" of the bottom of the fabric in depressions.
- 4) Pull fabric taut and tie to post, rails, and tension wires.
- 5) Install fabric on outward side fencing side of fence and anchor to framework so that the fabric remains in tension after pulling force is removed.
- 6) Install stretcher bars by threading through or clamping to fabric on 4" centers and secure to posts with metal bands spaced 15" on centers.

G. Installing Gates:

- 1) Install gates plumb, level, and secure for full opening without interference.
- 2) Install ground-set items in concrete for anchorage in accordance with the fence manufacturer's recommendations.
- 3) Lubricate and adjust the hardware for smooth operation.

H. Miscellaneous:

- 1) Use U-shaped tie wires, conforming to diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted at least two full turns.
- 2) Bend ends of wire to minimize hazards to persons and clothing.
- 3) Fasteners.
 - a. Install nuts for tension bank and hardware bolts on side of fence opposite fabric side.
 - b. Peen the ends of bolts to prevent the removal of nuts.
- 4) Repair coatings damaged in the shop or field erection, using a hot-applied repair compound applied in accordance with its manufacturer's recommendations.

D 420.06 MEASUREMENT AND PAYMENT

Measurement: Chain link fence of each height specified will be measured by the linear foot measured including gates. Gates will be measured as linear footage of fence complete in place.

Payment: The work performed and material furnished as prescribed by this Item, measured as provided under "Measurement" will be paid for at the unit price bid for "Chain Link Fence".

SECTION 424 RELOCATING WIRE FENCE

D 424.01 DESCRIPTION

This item shall consist of removing and relocating the wire fence(s) at the location(s) designated on the plans, and for furnishing and installing any additional materials required as specified by this item or as indicated on the plans.

D 424.02 MATERIALS

All materials furnished shall be equal to or better than the materials of the existing fence unless specifically designated otherwise on the plans.

D 424.03 CONSTRUCTION METHODS

Construction methods shall be equal to or better than existing type of wire fencing or conform to the Division D, Technical Provisions of Section 420, "Chain Link Fence", for the relocating of existing chain link wire fence.

D 424.04 MEASUREMENT

Accepted work as performed and prescribed by this item will be measured by the linear foot of fence relocated.

D 424.05 PAYMENT

The work performed and the materials furnished as prescribed by this Item will be paid for at the contract unit bid price per linear foot for "Relocating Wire Fence", which price shall be full compensation for removing and reinstalling the existing fence, and for furnishing all additional materials, for all labor, tools, equipment, and incidentals necessary to complete the work.

SECTION 426 RETAINING WALLS

D 426.01 GENERAL

Section includes furnishing the materials and constructing retaining walls as shown on the plans and required by this section. Spread footing retaining walls shall consist of reinforced concrete footings and reinforced concrete stems as shown on the plans.

D 426.02 MATERIALS

- A. All materials shall conform to the pertinent requirements of the following Sections:
 - Section 406 Concrete Structures
 - Section 410 Reinforcing Steel
 - Section 416 Expansion Joint Materials

- B. Unless otherwise shown on the plans, concrete for retaining wall shall conform to the following:
 - Cast-in-Place, Reinforced Class "C"
 - Cast-in-Place, Nonreinforced Class "A"

- C. All steel elements in contact with soil shall be galvanized or epoxy coated. Epoxy coating shall be in accordance with Section 410 - Reinforcing Steel, except that the coating thickness shall be a minimum of 18 mm.

- D. Joint fillers, pads, waterstops, and other incidental materials shall be as shown on the plans, or approved by the Engineer.

D 426.03 BACKFILL MATERIAL

Backfill for spread footing retaining walls shall consist of suitable earth material such as rock, loam, clay, or other such materials as approved by the Engineer that will form a stable embankment.

D 426.04 CONSTRUCTION METHODS

- A. Construction of retaining walls shall conform to the design and details shown on the plans and to the pertinent requirements of the following Sections:
 - Section 406 Concrete Structures
 - Section 410 Reinforcing Steel
 - Section 416 Expansion Joint Materials

- B. Any required piling or drilled shafts shall be in accordance with the pertinent Specification.

- C. Contractor shall prevent surface water or rainwater from damaging the retaining wall during construction. Shape the backfill to prevent water from ponding or flowing on the backfill or against the retaining wall face. Remove and replace all portions of the retaining wall damaged or out of tolerance by erosion, sloughing, or saturation of the retaining wall or embankment backfill.

D 426.05 MEASUREMENT

Retaining walls will be measured by the square foot of the front surface area of the wall. Unless otherwise shown on the plans, the area will be measured from one (1) foot below finished grade to the top of wall including any coping required.

D 426.06 PAYMENT

The work performed and materials furnished in accordance with this Section and measured as provided under "Measurement" will be paid for at the unit price bid for "Retaining Walls", of the type and/or special surface finish specified. This price shall be full compensation for excavation in back of retaining walls and for footings; furnishing and placing footings, leveling pads, copings and traffic railing foundations, when required; furnishing placing and compacting backfill to finished grade, including cement for stabilization; furnishing and placing concrete, reinforcing steel, waterproofing material, filter material, drain pipe, drainage aggregate, joint material, water stop, and filter fabric when required; fabricating, curing and finishing all panels; furnishing and placing temporary and/or permanent earth reinforcement, anchorage systems and fasteners; for wall erection; and for all labor, tools, equipment and incidentals necessary for a complete retaining wall.

No payment will be made for piling or drilled shafts, except when used as foundations for spread footing or MSE walls. When piling or drilled shafts are installed beyond limits shown on the drawings at the direction of the Engineer, the additional quantity will be paid for in accordance with the appropriate bid item.

**SECTION 428
CONCRETE DRIVEWAYS**

D 428.01 GENERAL

Applications for driveway permits shall be made in writing to the Building Development Services Department to construct, reconstruct, alter, remove, or replace any driveway section within the public R.O.W. (Right-of-way). The application shall include the location of the proposed improvements, together with a plot plan drawn to scale (or approved site plan) fully describing the nature of the proposed improvements and the locations as well as the traffic control plan. Construction of driveways within the R.O.W. shall be in compliance with ADA. Any existing obstructions as traffic signs, fire hydrants, street lights, etc. shall be relocated outside the proposed driveway at the owner's expense. Water meters, water valves and manholes shall be relocated or adjusted as shown on plans.

All driveways shall intersect the public street at essentially right angles except that one-way limited movement driveways may intersect at angles no less than 45 degrees as shown in Detail No.

No entrance nor exit driveway or curb cut for any property shall be allowed within twenty feet (20') from the intersecting property line at street intersection, measured along and parallel with the curb of such street Detail No.

Driveways within the ROW (right- of- way) shall not exceed a grade of 10%. Maximum "break over" angles, being the algebraic difference in successive grade changes, shall be 12% for summit conditions and 2% on sidewalk area, as shown in Detail No.

Minimum Thickness

Type of Driveways	Concrete Thickness Including Sidewalk Area
Residential	6 inch
Commercial	7 inch
Industrial	8 inch

D 428.02 MATERIALS

- A. Concrete: Conform to material and proportion requirements for concrete Section 504-Concrete and Section 406-Concrete Structures.
- B. Reinforcing Steel: Conform to material requirements for welded wire fabric Section 410-Reinforcing Steel.
- C. Preformed Expansion Joint Material: Conform to material requirements for preformed expansion joint material of Section 416-Expansion Joint Material.
- D. Expansion Joint Filler: Conform to material requirements for expansion joint material of Section 406- Concrete Structures.

D 428.03 PREPARATION

- A. Identify and protect utilities which are to remain.
- B. Protect living trees, other plant growth, and features designated to remain.
- C. Conduct clearing and grubbing operation in accordance with Section 402-Clearing and Grubbing.

- D. Excavate subgrade to the line, grade and cross-section shown on plans. Remove soft spots and pumping soils and replace with fill material having a Plasticity Index between 7 and 20.
- E. If there is an existing curb and gutter, saw cut the curb leaving the gutter radius or reconstruct as the existing.

D 428.04 PLACEMENT

Place and finish concrete in accordance with applicable portions of Section 406-Concrete Structures. No exposed materials shall be allowed as finish surface within the R.O.W.

D 428.05 JOINTS

Install joints in concrete driveway in accordance with Section 406-Concrete Structures.

D 428.06 CONCRETE CURING

Cure concrete in accordance with Section 406- Concrete Structures.

D 428.07 PROTECTION

Conform to applicable requirements of Section 406-Concrete Structures.

D 428.08 MEASUREMENT AND PAYMENT

Payment for concrete driveways is on square foot basis. Refer to Division C, General Provisions, Section 9 Measurement and Payment for unit price procedures.

SECTION 430 CONCRETE SIDEWALKS

D 430.01 GENERAL

Section includes reinforced concrete sidewalks and accessible ramps. Applications for sidewalk permits shall be made in writing to the Building Development Services Department to construct, reconstruct, alter, remove, or replace any sidewalk section within the R.O.W. (Right-of-Way). The application shall include the location of the proposed improvements, together with a plot plan drawn to scale (or approved site plan) fully describing the nature of the proposed improvements and the locations as well as the traffic control plan. Construction of sidewalks and accessible ramps shall be in compliance with ADA. Any existing obstructions as water meters, traffic signs, fire hydrants, water valves, street lights, etc. shall be relocated outside the proposed driveway at the owner's expense.

D 430.02 REFERENCES

- A. ASTM C 31 - Standard Practice for Making and Curing Concrete Test Specimens in the field.
- B. ASTM C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- C. ASTM C 42 - Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
- D. ASTM C 138 - Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.
- E. ASTM C 143 - Standard Method for Slump of Hydraulic Cement Concrete.
- F. ASTM C 172 - Practice for Sampling Freshly Mixed Concrete.
- G. ASTM C 698 - Standard Test Methods for Moisture - Density Relations of Soils and Soil Aggregate Mixtures Using 5.5 - Pound Rammer and 12-inch Drop.

D 430.03 SUBMITTALS

Submit certified testing results and certificates of compliance.

D 430.04 MATERIALS

- A. Concrete: Conform to material and proportion requirements for concrete Section 406.
- B. Reinforcing Steel: Conform to material requirements in section 410 & 412.
- C. Reinforcing Fiberglass: Conform to material and proportion requirements as per Section 414. Approval from the District Engineer is required.
- D. Preformed Expansion Joint Material: Conform to material requirements for preformed expansion joint material of Section 416-Expansion Joint Material.
- E. Expansion Joint Filler: Conform to material requirements for expansion joint material of Section 406- Concrete Structures.
- F. Forms: Use straight, unwrapped wood or metal forms with nominal depth equal to or greater than the proposed sidewalk thickness. The use of 2" by 4" lumber as forms will be allowed.

EXECUTION

D 430.05 REPLACEMENT

Replace sidewalks and accessible ramps that are removed or damaged during construction as per this specification to the next joint. Provide replaced and new sidewalks with accessible ramps if sidewalk intersects curb at street or driveway as per the latest ADA standards.

D 430.06 PREPARATION

- A. Identify and protect utilities which are to remain.
- B. Protect living trees, other plant growth, and features designated to remain.
- C. Conduct clearing and grubbing operation in accordance with Section 402-Clearing and Grubbing.
- D. Excavate subgrade to the line, grade and cross-section shown on plans. Remove soft spots and pumping soils and replace with fill material having a Plasticity Index between 7 and 20.

D 430.07 PLACEMENT

- A. *Setting Forms:* Securely stake forms to line and grade. Maintain position during concrete placement.
- B. *Reinforcement:* Install 6 x 6, W2.9 x W2.9 welded wire fabric or No. 3 reinforcing steel bars on 18-inch centers longitudinally and transversely. Lay longitudinal bars in walk continuously, except through expansion joints. Support reinforcement in manner to maintain reinforcement in center of slab vertically during placement.
- C. *Expansion Joints:* Install expansion joints at 40' to 80' in accordance with Section 416-Expansion Joint Material.
- D. Place concrete in forms to specified depth and tamp thoroughly with "jitterbug" tamp, or other acceptable method. Bring mortar to surface. Where a sidewalk crosses a driveway, ensure that the sidewalk depth and reinforcement are not less than the driveway cross-sectional details shown on the plans.
- E. Strike off to smooth finish with wood strike board. Finish smoothly with wood hand float. Brush across sidewalk with fine-haired brush. Exposed material shall not be allowed as finish surface.
- F. Unless otherwise indicated on plans, mark off joints $\frac{1}{4}$ inch deep, at spacing equal to 5 feet and matching C&G joints. Use joint tool equal in width to edging tool.
- G. Finish edges with tool having $\frac{1}{4}$ inch radius.
- H. After concrete has set sufficiently, refill space along side of sidewalk to top of walk with suitable material. Tamp until firm and solid. Dispose of excess material in accordance with Section 128-Waste Material Disposal. Repair driveways and parking lots damaged by sidewalk excavation in accordance with Section 430.

D 430.08 CURING

Conform to requirements of Section 406 - Concrete Curing.

D 430.09 FIELD QUALITY CONTROL

- A. Testing will be performed under provision of Division C, General Provisions, Section 6 Control of Work and Materials.
- B. Compressive Strength Test Specimens: Four test specimens for compressive strength test will be made in accordance with ASTM C 31 for each 30 cubic yards or less of sidewalk that is place in one day. Two specimens will be tested at 7 days. The remaining two specimens will be tested at 28 days. Specimens will be tested in accordance with ASTM C 39. Minimum compressive strength shall be 3000 pounds per square inch at 28 days.
- C. Yield test for cement content per cubic yard of concrete will be made in accordance with ASTM C 138. If such cement content is found to be less than that specified per cubic yard, reduce batch weights until amount of cement per cubic yard of concrete conforms to requirements.
- D. If the Contractor places concrete without notifying the laboratory, the District will have the concrete tested by means of a core test as specified in ASTM C 42. The cost of the test will be deducted from payment due the Contractor.
- E. Sampling of fresh concrete shall be in accordance with ASTM C 172.
- F. Take slump tests when cylinders are made.
- G. Concrete shall be acceptable if the average of the two 28 day compression tests is equal to or greater than the minimum 28-day strength specified.
- H. If either of the two tests is less than the average of the two tests by more than 10 percent, that entire test shall be considered erratic and not indicative of the concrete strength. Core samples will be required of this concrete.
- I. If any 28-day laboratory test indicates that concrete of low strength has been placed, the concrete in question shall be tested by taking cores as directed by the District Engineer may direct. At least three representative cores shall be taken and tested as specified in ASTM C 42. Cost for any additional testing required due to a failed test will be paid by the contractor.

D 430.10 NONCONFORMING

Remove and replace areas of sidewalk that fail compressive strength tests, with concrete of thickness shown on plans. Nonconforming sidewalk sections shall be replaced at no additional cost to the District.

D 430.11 PROTECTION

Maintain sidewalks in good condition until completion of work.

Replace damaged sidewalks in accordance with Paragraph D 430.06 - Replacement.

D 430.12 MEASUREMENT

Sidewalks will be measured by the square foot or by the foot of different widths. Accessible ramps will be measured by each unit. The unit will consist of the curb ramp, landing, adjacent flares or side curb, and detectable warning surface as show on the plans.

D 430.13 PAYMENT

Will be paid by the unit price bid for concrete sidewalks for the depth specified and accessible ramps. This price is full compensation for surface preparation of base; materials; removal and disposal of excavated material; drilling and doweling into the existing concrete curb, sidewalk and pavement; repair of the adjacent street or pavement structure damaged by the operations; and equipment, labor, materials, tools and incidentals.

**SECTION 504
CONCRETE**

D-504.01 DESCRIPTION: These specifications shall govern for the materials used, for the storing, measuring, and handling of materials, and for the proportioning and mixing of Portland Cement Concrete.

MATERIALS

D-504.02 CEMENT: Portland Cement shall conform to the requirements of the latest revision of ASTM Designation C150, Type 1, or Type II. Only one brand or kind of cement shall be used in any one structure except as permitted in writing by the Engineer. All cement shall be delivered in bags plainly marked with the brand and name of the manufacturer.

D-504.03 COARSE AGGREGATE: The coarse aggregate shall conform to the requirements of the latest revision of ASTM Designation C-33 and ASTM Designation D-448. Coarse aggregate for the various classes of concrete shall conform to the requirements of the following table:

**TABLE 1 COARSE AGGREGATE GRADATION CHART
PERCENT RETAINED ON EACH SIEVE**

Aggregate Grade No.	Nominal Size	2-1/2"	2"	1-1/2"	1"	3/4"	1/2"	3/8"	No. 4	No. 8
1	2 ½	0	0-	15-50	-	60-80	-	-	95-100	-
2 (467) *	1 ½		0	0-5	-	30-65	-	70-90	95-100	-
3	1		0	0-5	-	10-40	40-75	-	95-100	-
4 (57) *	1			0	0-5	-	40-75	-	90-100	95-100
5 (67) *	¾				0	0-10	-	45-80	90-100	95-100
6 (7) *	½					0	0-10	30-60	85-100	95-100
7	3/8						0	5-30	75-100	-
8	No.4						0	0-5	35-60	90-100

* Numbers in parenthesis indicate that these gradations conform to corresponding ASTM gradation form ASTM C-33.

The amount of deleterious substances in coarse aggregate shall not exceed the following percentages by weight:

Material removed by decantation	1.0%
Shale, slate and similar materials	1.0%
Clay lumps	0.25%
Soft fragments	3.0%
Other deleterious substances (Including friable, thin, elongated or laminated pieces)	5.0%

The sum of all deleterious materials exclusive of materials removed by decantation shall not exceed 5% by weight.

D-504.04 FINE AGGREGATE: The fine aggregate shall conform to the requirements of the latest revision of ASTM Designation C-33.

PERCENT RETAINED ON EACH SIEVE								
AGGREGATE GRADE #1	3/8 IN.	NO.4	NO.8	NO.16	NO. 30	NO. 50	NO.100	NO.200
	0	0-5	0-20	15-50	35-75	65-90	90-100	97-100

THE AMOUNT OF DELETERIOUS SUBSTANCES IN FINE AGGREGATE SHALL NOT EXCEED THE FOLLOWING PERCENTAGES BY WEIGHT:	
Materials removed by decantation	3.0%
Clay Lumps	0.5%
Other deleterious substances (Such as coal, shale, coated or soft flaky particles) Material finer than No. 200 sieve (a) In concrete subject to surface abrasion	2.5%
(b) All other concrete	3.0%

D-504.05 WATER: Water shall be clean and free from deleterious amounts of acids, alkalies, and organic materials.

EQUIPMENT

D-504.06 GENERAL: All equipment will be inspected by the Engineer and only equipment approved by him may be used. Any equipment disapproved shall be removed from the job site within 24 hours after it has been inspected.

D-504.07 CEMENT STORAGE FACILITIES: All cement shall be stored in well ventilated, weatherproof buildings which will protect the cement from dampness. The floor supporting the cement shall clear the ground a sufficient distance to prevent the absorption of moisture by the cement. Provision for storage shall be ample, and the shipment of cement shall be segregated in such manner as to provide easy access for identification of each shipment.

The Engineer may permit small quantities of cement to be stored in the open for periods not exceeding 48 hours, if a raised platform and adequate waterproof coverings are provided.

D-504.08 AGGREGATE STORAGE FACILITIES: If the aggregates are stored on the ground, the sites for the stockpiles shall be grubbed clear of all weeds and grass, and leveled off. The bottom layer of aggregate shall not be disturbed nor used without cleaning.

When the contract requires the use of two or more sizes of aggregate, the different sizes shall be stored in a manner as to prevent intermixing.

Materials in all stockpiles shall be handled and placed in such manner that segregation of materials within the stockpile will be avoided.

D-504.09 MEASURING EQUIPMENT: Equipment for measuring concrete materials shall be such that the proportions can be accurately controlled and easily checked at any time during the work, preferably measurement by weight rather than by volume.

D-504.10 MIXING EQUIPMENT: The mixing shall be done in a batch mixer of approved type and size which will ensure the uniform distribution of the material throughout the mass so that the mixture will be uniform in color and smooth in appearance. Whenever a concrete mixer is not suitable or adequate for the work, it shall be removed from the site upon written order from the Engineer. Pick-up and throw-over blades in the mixer drum which are worn down more than ten percent (10%) in depth shall be repaired or replaced.

D-504.11 CLASSIFICATION AND MIX DESIGN: It shall be the responsibility of the Contractor to furnish the mix design, using a Coarse Aggregate Factor acceptable to the Engineer, for the class(es) of concrete specified to conform with the requirements contained herein and in accordance with TxDOT Standards. The contractor shall perform, at his own expense, the work required to substantiate the design, except the testing of strength specimens, which will be done by the Department. Complete concrete design data shall be submitted to the Engineer for approval and shall be less than 1 year old signed and sealed by a licensed professional engineer in the State of Texas.

It shall also be the responsibility of the Contractor to determine and measure the batch quantity of each ingredient including all water, not only for batch designs, but for all concrete produced for the project, so that the mix conforms to these specifications and other requirements shown on the plans.

In lieu of the above mix design responsibility, the Contractor may accept a design furnished by the Engineer, however, this will not relieve him of the responsibility of providing concrete meeting the requirements of these specifications.

Trial batches will be made and tested using all the proposed ingredients prior to placing of concrete, and when the aggregate, and/or type, brand or source of cement, or admixture is changed. When the brand and/or source of cement only is changed, the Engineer may waive trial batches only if a prior record of satisfactory performance of the cement has been established.

Trial batches shall be made in the mixer to be used on the job. When Transit Mix concrete is to be used, the trial designs will be made in a transit mixer representative of the mixers to be used. Batch size shall not be less than fifty percent (50%) of its rated mixing capacity.

Mix designs from previous or concurrent jobs may be used without trial batches if it is shown that no substantial change in any of the proposed ingredients has been made. Mix design shall be current or less than one (1) year old.

The coarse aggregate factor shall not be more than 0.82, but when the voids in the coarse aggregate exceed 48 percent of the total dry loose volume, the coarse aggregate factor shall not exceed 0.85.

The coarse aggregate factor shall not be less than 0.68 unless authorized by the Engineer in writing.

Water reducing or retarding agents may be used with all classes of concrete at the option of the Contractor, and will be required for hot weather concreting for cased drilled shafts and for continuous slab placement.

When a retarding admixture is required for hot weather concreting, must meet the requirements of ASTM C 94. When used in continuous slab placement, the amount to be used will be established by several trial batches with varying retarder content and simulating the placing conditions to be encountered. When

water reducing or retarding agents are used at the option of the Contractor, reduced dosage of the admixture will be permitted.

Entrained air materials shall comply with ASTM C 260 and will be required in accordance with Table 7 TxDOT item 421. Specimens will be tested in accordance with Tex-414-A or Tex-416-A

D-504.12 QUALITY OF CONCRETE: The concrete shall be uniform, workable, and of a consistency acceptable to the Engineer. The cement content, maximum allowable water/cement ratio, the desired and maximum slump, the proper amount of entrained air and the strength requirements for all classes of concrete shall conform to the requirements of these specifications. It shall be the responsibility of the Contractor to provide concrete meeting these specifications.

During the progress of the work, the Engineer will cast test cylinders or beams, perform slump and entrained air tests, and will make temperature checks, as required, to ensure compliance with the specifications.

A strength test shall be defined as the average of the breaking strength of two cylinders or two beams as the case may be. Specimens will be tested in accordance with Test Methods TEX-418- A or Tex- 448- A.

If the required strength or consistency of the class of concrete being produced cannot be secured with the minimum cement specified or without exceeding the maximum water/cement ratio, the Contractor will be required to furnish different aggregates, use a water-reducing agent, an air-entraining agent, or increase the cement content in order to provide concrete meeting these specifications.

All test specimens, beams or cylinders, representing tests for removal of forms and/or false work shall be cured using the same methods, and under the same conditions as concrete represented.

"Design Strength" beams and cylinders shall be cured in accordance with TxDOT Bulletin C-11 and Supplement thereto.

The Contractor shall provide and maintain curing facilities as described in TxDOT Bulletin C-11 and Supplement thereto, for the purpose of curing test specimens. Provision shall be made to maintain the water in the curing tank at temperatures between 70°F and 90°F.

When control of concrete quality is by twenty-eight-day compressive tests, job control will be by seven-day compressive tests which are shown to provide the required twenty-eight-day strength based on results from trial batches. Thereafter, if the required seven-day strength is not secured with the quantity of cement specified in Table 5, changes in the batch design will be made as specified in this article.

TABLE 5- CONCRETE CLASSES TxDOT ITEM 421

Class of Concrete	Design Strength, Min. 28-day f 'c (psi)	Maximum W/C Ratio ¹	Coarse Aggregate Grades ^{2, 3}	General Usage ⁴
A	3,000	0.60	1—4, 8	Inlets, manholes, curb, gutter, curb & gutter. conc. Retards, sidewalks, driveways, backup walls, anchors

Class of Concrete	Design Strength, Min. 28-day f 'c (psi)	Maximum W/C Ratio ¹	Coarse Aggregate Grades ^{2, 3}	General Usage ⁴
B	2,000	0.60	2—7	Riprap, small roadside signs and anchors
C	3,600	0.45	1—6	Drilled shafts, bridge substructure, bridge railing, culverts except top slab of direct traffic culverts, headwalls, wing walls, approach slabs, concrete traffic barrier (cast-in-place)
D	1,500	0.60	2—7	Riprap
E	3,000	0.50	2—5	Seal concrete
F⁵	Note 6	0.45	2—5	Railroad structures; occasionally for bridge piers, columns, or bents
H⁵	Note 6	0.45	3—6	Prestressed concrete beams, boxes, piling, and concrete traffic barrier (precast)
S⁵	4,000	0.45	2—5	Bridge slabs, top slabs of direct traffic culverts
P	See Item 360	0.45	2—3	Concrete pavement
DC⁵	5,500	0.40	6	Dense conc. overlay
CO⁵	4,600	0.40	6	Conc. overlay
LMC⁵	4,000	0.40	6—8	Latex-modified concrete overlay
SS⁵	Note 7	0.45	4—6	Slurry displacement shafts, underwater drilled shafts
K⁵	Note 6	0.45	Note 6	Note 6
HES	Note 6	0.45	Note 6	Note 6

1. Maximum water-cement or water-cementitious ratio by weight.
2. Unless otherwise permitted, do not use Grade 1 coarse aggregate except in massive foundations with 4-in. minimum clear spacing between reinforcing steel bars. Do not use Grade 1 aggregate

in drilled shafts.

3. Unless otherwise approved, use Grade 8 aggregate in extruded curbs.
4. For information only.
6. Structural concrete classes.
7. As shown on the plans or specified.
8. Cementitious material content shall be minimum 658 lb./cy of concrete.

D-504.13 CONSISTENCY: The consistency of the concrete as placed should allow the completion of the finishing operation without the addition of water to the surface. When field conditions are such that additional moisture is needed for the final concrete surface finishing operation, the required water shall be applied to the surface by fog spray only and shall be held to a minimum. The concrete shall be workable, cohesive, possessing satisfactory finishing qualities, and of the stiffest consistency that can be placed and vibrated into a homogeneous mass. Excessive bleeding shall be avoided. Slump requirements will be as specified in TxDOT item 421 Table 8.

**TABLE 8
SLUMP REQUIREMENTS**

CONCRETE DESIGNATION	RECOMMENDED DESIGN AND PLACEMENT SLUMP (IN.)	MAXIMUM ACCEPTABLE PLACEMENT SLUMP (IN.)
Drilled Shafts	See item 416	See item 416
Thin-walled section (9 in. or less)	4	6-1/2
Approach slabs, concrete overlays, caps, columns, piers, wall sections (over 9 in.)	3	5
Bridge slabs	4	5-1/2
Prestressed Concrete Members ¹	4	6-1/2
Concrete Traffic Barrier, concrete bridge railing	4	6-1/2
Dense concrete overlay	3/4	2
Latex-modified concrete for bridge deck overlays	3	7-1/2
Concrete Placed Under Water	6	8-1/2
Concrete pavement (slip-formed)	1-1/2	3
Concrete pavement (formed)	4	6-1/2
Riprap, Curb, Gutter, and other Miscellaneous Concrete	As approved	As approved

1. If a high-range water reducer (HRWR) is used, maximum acceptable slump will be 9 in.

NOTE: No concrete will be permitted with slump in excess of the maximums shown.

- (a) The mortar will cling to the coarse aggregate
- (b) The concrete is not sufficiently fluid to segregate when transported to the place of deposit
- (c) The concrete, when dropped directly from the discharge chute, will flatten out at the center of

- the pile but the edges of the pile will stand up and not flow
- (d) The mortar will show no free water when removed from the mixer
 - (e) The concrete will settle into place when deposited in the forms, and when transported in metal chutes at an angle of 30 degrees horizontal, it will slide and not flow into place
 - (f) The surface of the finished concrete will be free from "laitance", or a surface film of free water

Any concrete failing to meet the requirements although meeting the slump requirements will be considered unsatisfactory; and the mix shall be changed to correct such unsatisfactory conditions.

D-504.14 MIXING: The first batch of materials placed in the mixer for each placement shall contain an extra quantity of sand, cement, and water sufficient to coat the inside surface of the drum without diminishing the mortar content or the mix. Upon cessation of mixing for any considerable period of time, the mixer shall be thoroughly cleaned.

The entire contents of the drum shall be discharged before any materials are placed therein for the succeeding batch. The concrete shall be mixed in quantities required for immediate use, and any concrete which is not in place within one (1) hour after water is added to the batch will not be used. Re-tempering of concrete will not be permitted.

After all the ingredients are assembled in the drum the mixing shall continue for a minimum time of one and one-half minute for 14 cubic foot mixers and smaller, and for a minimum time of one minute for 21 cubic foot mixers and larger. During the mixing time the drum shall revolve at a speed of 14 to 20 revolutions per minute. The mixer shall be equipped with a speed regulator to hold the mixer to the required speed of revolution. The absolute volume of the concrete batch shall not exceed 120 percent of the NRMCA-rated capacity of the mixer.

D-504.15 READY MIX CONCRETE: Concrete forms from a central plant of mixed-in-transit mixer trucks may be used if it complies with these specifications. The Engineer shall have free access at all times to the batching and mixing plant for sampling of all materials and inspection of work performed at this project. Concrete shall be delivered in water-tight containers which will not permit segregation of the materials. When delivered, the concrete shall be uniform throughout the mass.

The delivery ticket shall include the date, time, strength, slump, and amount of batch delivered. If an extra charge of water is required at the job site because of too low a slump, the drum shall be turned a minimum of 30 revolutions after addition of such water. Mixer shall be completely emptied before recharging. Trucks shall not be loaded greater than NRMCA-rated capacity. The maximum time interval between the addition of the cement to the batch and the placing of the concrete in the forms shall conform to the requirements set up under TxDOT specifications, Item 421. Over wet mixers shall be rejected and shall not be corrected by the addition of either aggregate or cement to the particular batch in question.

D-504.16 ADVERSE WEATHER: In threatening weather which, in the opinion of the Engineer, may result in conditions which will adversely affect the quality of the concrete to be placed, the Engineer may order postponement of the work. Where work has been started and changes in weather conditions require protective measures to be used, the Contractor shall furnish adequate shelter to protect the concrete against damage from rainfall, wind, or damage due to freezing temperature. In case it is necessary to continue mixing operation during rainfall, the Contractor shall provide protective coverings for the material stockpiles as well as the concrete being placed. The covering for aggregate stockpiles will be required only to the extent as may be necessary to control the moisture conditions in the aggregate so that adequate control of the consistency of the concrete mix may be maintained.

No concrete shall be mixed without the approval of the Engineer when the air temperature is at or below

40 degrees Fahrenheit taken in the shade away from artificial heat and falling. If authorized by the Engineer, concrete may be mixed when the air temperature is 35 degrees Fahrenheit and rising. When permission is given for mixing when the temperature is below 40 degrees Fahrenheit, the Engineer will specify the special precautions which shall be taken.

In case the air temperature is at or above 85 degrees Fahrenheit, concrete may be mixed in accordance with the requirements set up in TxDOT, Specifications.

Hand mixing of concrete will be permitted only for small placements or in the case of an emergency and then only when authorized by the Engineer. The Engineer will also specify the proportioning and methods of mixing to be used.

D-504.17 TESTING AND INSPECTION OF MATERIALS:

- (a) Concrete testing of mix designs shall be made by a commercial testing laboratory approved by the Engineer. One copy of the test reports shall go to the Engineer and one copy of same shall go to the Contractor.
- (b) Selection of the testing laboratory by the Engineer shall be understood as in no way relieving the Contractor's responsibility for the satisfactory performance of the work in full conformance with the requirements of the contract. Excluding written protest by the Contractor, in advance of processing or use of materials, services of the testing laboratory shall be understood as constituting full acceptance by an approval of the Contractor.
- (c) Tests of concrete and materials shall be made under the direction of the Engineer who shall have access to all places where materials are stored, proportioned, or mixed.
- (d) The Contractor shall submit to the Engineer the mixes he/she intends to use which have been proven by preliminary compression test prior to commencement of work. Proving tests shall consist of at least six 6" x 12" cylinders for each mix specified. Three cylinders shall be tested at 7 days and three at 28 days.
- (e) During the progress of the work one set of 3 (4) each 6" x 12" cylinders for compression tests shall be cast for each 50 c.y. or day's pour. Cylinders shall be tested for compression at seven 7 days, 14 days, and at 28 days, and one cylinder will be reserved as "stand-by" or as per engineer's recommendation.

Samples used for testing must be representative of the batch tested and should be taken from the middle third portion of the batch. Samples shall be mixed with a shovel to ensure uniformity throughout the sample and immediately molded into test specimens.

If test cylinders fail to meet specified strength at 28 days by more than 5%, core tests of the structure may be ordered by the Engineer at the Contractor's expense. These tests shall be made by an approved laboratory.

- (f) Slump tests: Slump tests shall be made on each sample taken for compression tests and shall comply with Table 8 "Slump Requirements". Additional slump tests shall be as required by the Engineer.

D-504.18 TEST METHODS:

- (a) ASTM Designation C-17 "Standard Method of Sampling Fresh Concrete."
- (b) ASTM Designation C-143 "Standard Method of Slump Test for Consistency of Portland Cement Concrete".
- (c) ASTM Designation C-31 "Standard Method of Making and Curing Compression and Flexure Test Specimens in the Field".
- (d) ASTM Designation C-39 "Standard Method of Test for Compressive Strength of Molded Concrete Cylinders".
- (e) ASTM Designation C-42 "Standard Methods of Securing, Preparing, and Testing Specimens from Hardened Concrete for Compressive and Flexural Strengths".

All tests shall conform to the requirements of the latest revisions of the applicable ASTM Designations.

D-504.19 PLACING, CURING, AND FINISHING: The placing of concrete including construction of forms and falsework, curing and finishing, shall be in accordance with Division D, Section 406, CONCRETE STRUCTURES.

D-504.20 MEASUREMENT AND PAYMENT: No separate measurement or payment will be made under this item, but all such work done shall be deemed a subsidiary obligation of the Contractor, having been taken into account and included in price bid for the complete job.

D-504.21 COST ESCALATIONS: Claims made by Contractor for concrete price adjustment during construction will not be considered by Owner. Any cost escalation for material will be borne by Contractor.

SECTION 510 FLEXIBLE BASE COURSE

D 510.01 GENERAL

Flexible Base shall consist of a foundation course for surfacing, pavement, or other base courses; shall be composed of uncontaminated materials of uniform quality that meet the requirements of TxDOT Item 247, and shall be constructed as herein specified in conformity with the sections shown on the plans and to the lines and grades established by the Engineer.

D 510.02 MATERIALS

The materials shall consist of argillaceous limestone, calcareous clay particles with or without stone, conglomerate, gravel, sand, or other granular materials. The materials shall be at least Type "B" Grade II, conforming to Item No. 247 of the Texas Department of Transportation Specifications 2004 or latest edition. The source of the material shall be approved by the Engineer prior to use. The plasticity index of caliche shall have a maximum of 12 and a minimum of 5. The Contractor shall stockpile the material to be used for this particular project. Sampling and testing shall conform to TxDOT or ASTM specifications. Triaxial test will be required only when specified by the engineer. Stones greater than 3" in any direction shall be removed from street during construction.

D 510.03 CONSTRUCTION METHODS

The flexible base materials shall be placed on the approved subgrade in courses not to exceed eight (8) inches compacted depth. It shall be the responsibility of the Contractor that the required amount of materials be delivered and uniformly spread and shaped. All materials shall be moved from the place where it is dumped by cutting in windrow. After the material has been cut into windrows, it shall be sprinkled, spread, shaped, and rolled in proper sequence to prevent segregation and as necessary for required compaction.

The surface upon completion shall be smooth and in conformity with typical sections and to the established lines and grades. Any deviation in excess of 1/4 inch in cross section and in length of 16 feet measured longitudinally shall be corrected. All irregularities, depressions, or weak spots which develop shall be corrected.

Flexible base shall be compacted to an apparent dry density of not less than 98 percent (98%) of the maximum dry density as determined in accordance with TxDOT Specifications Test Method TEX 113-E. Tests for density will be made within 24 hours after compaction operations are completed. If the material fails to meet the density specified, it shall be reworked as necessary to meet the density required. Just prior to the placing of any succeeding course of flexible base or surfacing on a previously completed course, the density and moisture of the top four (4) inches of the flexible base shall be checked and if tests show the density to be more than 2 percent (2%) below the specified minimum or the moisture content to be more than 3 percent (3%) above or below the optimum, the course shall be reworked as necessary to obtain the specified compaction and moisture content.

Should the base course due to any reason or cause lose the required stability, density, or finish before the surface is completed, it shall be recompacted, refinished, and retested at the sole expense of the Contractor.

The limits of placement for F.B.C. will extend 1 foot beyond the back of curb (whenever curb is specified) in order to provide proper support for concrete curb (Detail No.).

D 510.04 MEASUREMENT

Flexible Base: The number of square yards of flexible base course to be paid for shall be measured as the square yards in place after compaction. Thickness shall be checked by means of depth tests or cores, but no extra yardage for thickness in excess of that shown on the plans will be paid.

D 510.05 PAYMENT

The yardage of flexible base measured as provided for in Paragraph above will be paid for at the contract unit price for "Flexible Base". All payment made under this section shall constitute full compensation for excavation for furnishing, loading, hauling, and placing materials; for mixing, blending, sprinkling, shaping and compacting; for reconditioning the underlying course and shoulders, and for furnishing all labor, tools, and equipment as specified herein.

**SECTION 516
BITUMINOUS PRIME COAT**

GENERAL

D 516.01 DESCRIPTION

This item shall consist of an application of asphaltic material on the completed base course in accordance with these specifications and as directed by the Engineer.

MATERIAL

D 516.02 CUT-BACK ASPHALT

The bituminous material shall conform to the following:

GRADE MC-30	Min	Max
Kinematic Vis. At 140 F, CST	30	60
Flash Point T.O.C. F	100	

When distilled ASTM Method D-402, the distillate-off volume shall be as follows:

	Min	Max
Off at 437 F%	--	25
Off at 500 F%	40	70
Off at 600 F%	75	93
Residue from 680 F Distillation Volume %	50	--

The residue when poured from the flash without cooling immediately upon reaching the maximum temperature specified shall have the following characteristics:

	Min	Max
Penetration at 77 F, 100gms, 5 sec	120	250
Ductility at 77 F, 5 cm/min., cms.	100	--
Solubility in CCI 4%	99.5	--

The material shall be free from water.

MC-30 shall be applied uniformly at the rate of 0.25 gallons per square yard. At Contractor's option, appropriate emulsified asphalt, water mixture may be used in lieu of MC-30. Number of applications, mixture rate, and depth of penetration shall be approved by Engineer prior to use of emulsified asphalt. Furnishing and placement of prime coat shall be subsidiary to pavement and flexible base construction.

CONSTRUCTION METHODS

D 516.03 APPLICATION OF ASPHALT

Asphalt shall be applied when the air temperature is 60°F and above, and it may be applied when the air temperature is 50°F and rising; the air temperature to be taken in the shade and away from artificial heat. No asphalt shall be placed when general weather conditions in the opinion of the Engineer are not suitable.

All storage tanks, piping, retorts, booster tanks, and distributors used in storing or handling asphalt shall be kept clean and in good operating condition at all times, and they shall be operated in such a manner that there will be no contamination of the asphalt with foreign material. Asphalt shall not be heated above 400°F at any time, and when applied, shall be at a temperature of not less than 70°F, and not more than 150°F. The Engineer will select the temperature of application, and the Contractor shall apply the asphalt at a temperature within 15°F of the temperature selected. All asphalt heated above 400°F will be rejected.

Before the application of asphalt, the surface of the base shall be cleaned of dirt, dust, or other deleterious matter by sweeping or other approved methods and, if required by the Engineer, lightly sprinkled with water.

Asphalt shall be applied on the clean surface by an approved type of self-propelled pressure distributor so operated as to distribute the asphalt in the quantity specified evenly and smoothly under a pressure necessary for proper distribution. The Contractor shall provide all necessary facilities for determining the temperature of the asphalt in all the heating equipment and in the distributor for determining the rate at which it is applied and for insuring uniformity at the junction of two distributor loads. Asphalt shall be applied for the full width of the surface treatment in one application unless the width exceeds twenty-two (22) feet. No traffic or hauling will be permitted over the freshly applied asphalt for five days.

MEASUREMENT AND PAYMENT

D 516.04 QUANTITY – SQUARE YARDS

The quantity of bituminous prime coat to be paid shall be measured in square yards of the area primed, applied at a rate of 0.25 gallons per square yard.

D 516.05 GALLONS

The number of gallons of bituminous prime coat measured as provided in Section 514, Paragraph D-514.04 will be paid for at the contract unit price per square yard for bituminous prime coat applied.

D 516.06 GENERAL

All payment made under these sections shall constitute full compensation for furnishing (freight included) heating, hauling, and distributing all bituminous material; for cleaning the surface to which it is applied; and for furnishing all labor, tools, and equipment.

**SECTION 518
BITUMINOUS TACK COAT**

D 518.01 DESCRIPTION

This item shall consist of an application of asphaltic material on the completed and prime base course or existing pavement in accordance with these specifications and as directed by the Engineer. **Do not use prime oils as MC-30 or AEP as Tack Coat Material**

MATERIAL

D 518.02 CUT-BACK ASPHALT

The bituminous material shall conform to the following:

Grade RC-250	Min	Max
Viscosity (Furol) at 140° F, cSt	250	400
Flash Point T.O.C. °F	80	--

The distillate, expressed as percent by volume of total distillate to 680° F, shall be as follows:

to 437 °F	40	75
to 500 °F, %	65	90
to 600 °F, %	85	--
Residue from Distillation, Volume %	70	--

The residue, when poured from the flash without cooling, immediately upon reaching the maximum temperature specified, shall have the following characteristics:

	Min	Max
Penetration at 77 F, 100 g., 5 sec.	80	120
Ductility at 77 F, 5 cm/min., cms.	100	--
Solubility in CCl 4%	99.0	--
Spot Test	Neg	

The material shall be free from water.

RC-2 cut-back asphalt used for tack coat may, upon written instructions from the Engineer, be further cut-back by the addition of an approved grade of gasoline not to exceed fifteen (15%) percent by volume.

CONSTRUCTION METHODS

D 518.03 APPLICATION OF ASPHALT

Asphalt shall not be applied when the air temperature is above 60°F, and may be applied when the air temperature is 50°F and rising; the air temperature to be taken in the shade and away from artificial heat. No asphalt shall be placed when general weather conditions in the opinion of the Engineer are not suitable.

All storage tanks, piping, retorts, booster tanks, and distributors used in handling asphalt shall be kept clean and in good operating condition at all times, and they shall be operated in such a manner that

there will be no contamination of the asphalt with foreign material. Asphalt shall not be heated above 400°F and at the time of application, it shall be at a temperature not less than 100°F, and not more than 175°F. The Engineer will select the temperature of application and the Contractor shall apply the asphalt at a temperature within 15 degrees of the temperature selected. All asphalt heated above 400°F will be rejected.

Before application of asphalt, the surface to receive the coat shall be cleaned of dirt, or other deleterious matter by sweeping or other approved methods. Asphalt shall be applied on the clean surface by an approved type of self-propelled pressure distributor so operated as to distribute the asphalt in the quantity specified evenly and smoothly under the pressure necessary for proper distribution. The Contractor shall provide all necessary facilities for determining the temperature of the asphalt in all the heating equipment and in the distributor for determining the rate at which it is applied, and for insuring uniformity at the junction of two distributor loads. Asphalt shall be applied for the full width of the surface treatment in one application unless the width exceeds twenty-two (22) feet. No traffic or hauling will be permitted on the freshly applied asphalt.

MEASUREMENT & PAYMENT

D 518.04 QUANTITY – SQUARE YARDS

The quantity of bituminous tack coat to be paid for shall be measured in square yards of the area tacked, applied at a rate of 0.10 gallons per square yard.

D 518.05 GALLONS

The number of gallons of bituminous tack coat measured as provided in Section 516, Paragraph D-516.04 will be paid for at the contract unit price per square yard for bituminous prime coat, applied.

D 518.06 GENERAL

All payment made under these sections shall constitute full compensation for furnishing (freight included), heating, hauling, and distributing all bituminous material; for cleaning the surface to which it is to be applied; and for furnishing all labor, tools, and equipment.

SECTION 520
HOT MIX ASPHALTIC CONCRETE

D 520.01 DESCRIPTION

This item shall consist of a base course, a leveling up course, a surface course, or any combination of these courses as shown on the plans, each to be composed of a compacted mixture of mineral aggregate and asphaltic material. The mixture, when designed and tested in accordance with these specifications and methods outlined in Tex 204-F shall have the following:

In Place Density %		
Min	Max	Optimum
95	99	96

Stability %
Not less than 35 nor more than 60 unless otherwise shown on plans

The pavement shall be constructed on the previously completed and approved subgrade, base, existing pavement, bituminous surface, or, in the case of a bridge, on the prepared floor slab, as herein specified and in accordance with the details shown on the plans.

D 520.02 MATERIALS

Materials used in Hot-Mix Asphaltic Concrete Pavement shall meet the requirements as set forth in TxDOT Item 341 "Dense Graded Hot-Mix Asphalt" Specifications, 2014 or latest edition.

Prior to laying any asphalt, Contractor shall submit a Hot-Mix Asphaltic Concrete mix design (less than one year old) signed and sealed by a professional engineer licensed in Texas for approval. He/She shall also submit written assurance that material stockpiles are sufficient to produce a mix consistent with the design for the duration of the project. If material source change occurs prior to completion, Contractor shall provide a revised mix design at no additional expense to Owner.

The Contractor shall provide for quality control at the plant to ensure that paving material delivered to the site conforms to requirements of these specifications and the mix design unless otherwise specified by Engineer.

D 520.03 CONSTRUCTION METHODS

Construction methods used in Hot- Mix Asphaltic Concrete Pavement shall meet the requirements as set forth in TxDOT Item 341 "Dense Graded Hot-Mix Asphalt" Specifications, 2014 or latest revision, with the following addition:

- 1) Place the mixture when the roadway surface temperature is 60°F or higher unless otherwise approved. Place mixture only when weather conditions and moisture conditions of the roadway surface are suitable in the opinion of the engineer.
- 2) Delivery temperature no to exceed 350°F
- 3) Minimum placement temperature shall not be less than 260°F and depending on the Hot Mix Binder grade.
- 4) Ensure pavement is fully compacted before allowing rollers to stand on the pavement.
- 5) Use only water or an approved release agent on rollers, tamps, and other compaction equipment. Keep diesel, gasoline, oil, grease, and other foreign matter off of the mixture.
- 6) Allow the compacted pavement to cool to 160°F or lower before opening to traffic.

D 520.04 EQUIPMENT

Mixing plants that will not continuously produce a mixture meeting all of requirements of TxDOT Item 341.4 Specifications, 2014, shall not be allowed.

D 520.05 TESTING

The assigned Laboratory shall test a job site sample to compare with the approved Hot-Mix design and also test for in-place air void determination as per TxDot Item 341. Reports of Core test, made by the assigned laboratory, to assure the required compacted lift thickness shall be provided prior to acceptance.

D 520.06 MEASUREMENT

The asphaltic mixture shall be measured by square yards of various types and thickness as actually used in the completed and accepted work in accordance with the plans and specifications for the project. No separate measurement will be made for fluxing oil.

D 520.07 PAYMENT

The number of square yards of asphaltic mixture placed will be paid for at the contract unit price per square yard of various types and thickness. The unit price will be full compensation for surface preparation, hot mix material, placement, equipment, labor, tools and incidentals. The yardage of Hot Mix Asphaltic Concrete measured as provided for in Paragraph above will be paid for at the contract unit price for:

Item 14	3" Type B HMAC
Item 15	3" Type D HMAC
Item 16	4" Type D HMAC
Item 17	5" Type D HMAC

SECTION 522 CUTTING AND REPLACING PAVEMENT

D 522.01 DESCRIPTION

This item shall govern for the cutting of pavements, the removal and bases and the replacement of bases and pavements, as herein specified and in conformity with the typical sections shown on the plans and to the lines established by the Engineer.

D 522.02 MATERIALS

- 1) Prime Coat: All prime coat shall conform to the provisions of Division D, Section 516, "Bituminous Prime Coat".
- 2) Tack Coat: All tack coat shall conform to the provisions of Division D, Section 518, "Bituminous Tack Coat".
- 3) Flexible Base Course: All flexible base shall conform to the provisions of Division D, Section 510, "Flexible Base Course".
- 4) Hot-Mix Asphaltic Concrete Pavement: All hot-mix asphaltic concrete pavement shall conform to the provision of Division D, Section 520, "Hot Mix Asphaltic Concrete Pavement - Type D".
- 5) Excavation and Backfilling: All excavation and backfilling shall conform to the provision of Division D, Section 102, "Excavation and Backfill for Utilities" Backfill under existing pavement.

D 522.03 CONSTRUCTION METHODS

1) Cutting of Pavements

A. Concrete and asphaltic concrete pavements: All concrete and asphaltic concrete pavements shall be cut with a concrete saw. The depth of the cut shall be such that upon removal of concrete and/or asphaltic concrete the sides of the cut shall be straight and square. Care shall be taken when cutting concrete pavement, not to cut transverse reinforcing steel.

B. Base Material: Base material shall be removed by normal trenching operations.

2) Replacement of Bases:

A. Base Material: Base replacement shall be of the type shown on the plans and in the bid proposals.

3) Replacement of Pavements:

Pavements shall be replaced with hot-mix asphaltic concrete pavement or reinforced concrete pavement. Replacement will be of the type shown on the plans and in the bid proposals.

A. Hot-mix asphalt pavement: Shall be furnished and placed in accordance with Division D, Section 520, "Hot-Mix Asphaltic Concrete Pavement. Flexible base shall be primed in accordance with the provisions of Division D, Section 516, "Bituminous Prime Coat", prior to the placement of hot-mix asphaltic concrete.

B. All concrete bases shall be tack coated with RC- 250 in accordance with the provisions of Division D, Section 518, "Bituminous Tack Coat", prior to the placement of hot-mix asphaltic concrete.

- C. Replacement of pavement shall be with straight lines parallel and perpendicular to the flow of traffic. Do not replace pavement areas with angled sides or irregular shapes. All replacements shall be full lane width see details 534-1 to 534-5 for special conditions.

D 522.04 MEASUREMENT

This item will be measured by the square yard of finished pavement surface area repaired. No measurement will be made for areas outside the limits shown in the plans or other damaged because of Contractor negligence without written authorization by the engineer.

D 522.05 PAYMENT

The work performed and the materials furnished in accordance with this specification shall be paid for the unit price bid per square yard of the various pavement types and depths when specified. The price shall be considered full compensation for saw cutting, removal, stockpiling, and/or disposal of existing pavement, base, and waste material and for all equipment, materials, labor, tools, and incidentals to reconstruct the pavement base, prime, tack and surface course shown in the plans. Curb replacement, where incidentally repaired will not be paid for directly but will be considered subsidiary to this item.

**SECTION 602
SILT FENCE**

D 602.01 DESCRIPTION

This item shall govern for the material of silt fence fabric and related fencing materials used for control of sediment in surface runoff waters.

D 602.02 MATERIAL REQUIREMENTS

- A. Fabric: Fabric may be manufactured from polyester, polypropylene, or polyamide and shall be resistant to ultraviolet degradation, mildew and rot and shall be suitable for use in a wet soil and stagnant water environment. The edges of woven fabric shall be sealed or salvaged to prevent raveling. Fabric shall be at least 36 inches wide with 6 to 8 inches of the width buried in a trench to prevent undercutting, unless specified otherwise on the plans. The fabric shall exhibit the following physical properties when sampled and tested using the specified methods.

Physical Property	Test Method	Silt Fence
1) Tensile Strength, lb	ASTM D 4632	90 Min
2) Elongation @ Yield, %	ASTM D 4632	100 Min
3) Trapezoidal Tear, lb	ASTM D 4533	35 Min
4) Apparent Opening Size	ASTM D 4751	50-80 Min
5) Permittivity, sec-1	ASTM D 4491	1 Min
6) Ultraviolet Stability original tensile strength retained after 500 hours exposure, %	ASTM D 4355	80 Min

- B. Silt Fence: This system consists of fence posts, spaced no more than 8.5 feet apart, and fabric with and attached reinforcing net. Fence posts shall be a minimum of 42 inches long, embedded at least 1 foot, and constructed of either wood or steel. Soft wood posts shall be at least 3 inches in diameter or nominal 2 in. x 4 in. and essentially straight. Hardwood posts shall be a minimum of 1.5 in. x 1.5 in. Net reinforcement shall be a galvanized welded wire mesh of at least 12.5 gauge wire with maximum opening size of 4 in². The fabric shall be attached to the top of the net by crimping or cord at least every 2 feet, or as otherwise specified.

D 602.03 CERTIFICATION AND IDENTIFICATION

Each lot or shipment shall be accompanied by a certification of conformance to this specification. The shipment must be identified by a ticket or labels securely affixed to the fabric rolls. This ticket or label must list the following information:

- a. Name of manufacturer or supplier
- b. Brand name and style
- c. Manufacturer's lot number or control number
- d. Roll width in inches
- e. Roll length in yards

D 602.04 MEASUREMENT AND PAYMENT

- A. Unless indicated in the PROPOSAL FORMS as a pay item, no separate payment for work performed under this Item. Include cost of work performed under this Item in Contract prices bid for items of which this work is a component. When indicated in PROPOSAL FORMS as pay item measure and pay for the filter fabric fence by the linear feet of completed and accepted filter fabric fence between the limits of the beginning and ending of wooden stakes. Filter fabric fence, measured as stated will be paid for at the unit price bid for "FILTER FABRIC FENCE, COMPLETE IN PLACE".

- B. Payment for filter fabric fence will include and be full compensation for all labor, equipment, materials, supervision, and all incidental expenses for construction of these items, complete in place, including, but not limited to, protection of trees, maintenance requirements, repair and replacement of damaged sections, removal of sediment deposits, and removal of erosion and sedimentation control systems at the end of construction.

**SECTION 604
EROSION CONTROL BLANKET**

D 604.01 APPLICATION

To protect the side slope of a natural channel and to reduce erosion. The following specification should be met for the erosion control blankets.

The mats should be made of 100% biodegradable agricultural straw/woods netting on top and bottom sides with a minimum thickness of 0.4 inch. Material should not contain any chemical additives. The blanket should be durable and flexible to work with the following information:

- Flow velocity: greater than 5 fps
- Permissible shear strength: greater than 2.5 lbs. sq. ft.
- Weight: greater than 0.5 lbs. sq. yd.
- Tensile strength/elongation: less than 30%
- Should be capable to control side slope of 3:1 to 2:1
- Netting shall be light photodegradable polypropylene (greater than 1.5 lbs./1000 sq. ft.)

Approved Material Suppliers (to date):

Company Name	City, State	Model #	Phone #
North American Green	Evansville, Indiana	SC250	812-867-6632
East Coast Erosion Control	Bernville, Pennsylvania	ECP-2	800-582-4005
American Excelsior Co.	Dallas, Texas	Curlex Enforcer	817-640-2161 800-777-2691

CONSTRUCTION SPECIFICATIONS

D 604.02 SITE PREPARATION

- A. Proper site preparation is essential to ensure complete contact of the protection matting with the soil.
- B. Grade and shape area of installation.
- C. Remove all rocks, clods, vegetative or other obstructions so that the installed blankets, or mats will have direct contact with the soil.

SECTION 606 NPDES REQUIREMENTS

D 606.01 GENERAL

This section describes the required documentation to be prepared and signed by the Contractor before conducting construction operations, in accordance with the terms and conditions of the National Pollutant Discharge Elimination System (NPDES) Permit, as stated in the Federal Register Vol. 57 No. 175, issued by the Environmental Protection Agency on September 2, 1992.

The Contractor shall be responsible for implementation, maintenance, and inspection of storm water pollution prevention control measures including, but not limited to, erosion and sediment controls, storm water management plans, waste collection and disposal, off-site vehicle tracking, and other practices shown on the drawings or specified elsewhere in this or other specifications.

The Contractor shall review implementation of the Storm Water Pollution Prevention Plan (SWPPP) in a meeting with the District Engineer prior to start construction.

D 606.02 UNIT PRICES

Unless indicated in the Unit Price schedule as a pay item, no separate payment will be made for work performed under this section. Include cost of work performed under this section in pay items of which this work is a component.

D 606.03 REFERENCES

ASTM D3786- Standard Test Method for Hydraulic Bursting Strength for Knitted Goods and Non-woven Fabrics

ASTM D4632- Standard Test Method for Grab Breaking Load and Elongation of Geotextiles

EXECUTION

D 606.04 NOTICE OF INTENT

The Contractor shall fill out, sign, and date the Contractor's Notice of Intent (NOI). The signed copy of the Contractor's NOI shall be returned to the District. The District will complete the Owner's Notice of Intent and will submit both notices to the EPA. Submission of the NOI is required by both the District and the Contractor before construction operations start.

D 606.05 CERTIFICATION REQUIREMENTS

Submit name, address, and telephone number of persons or firms responsible for maintenance and inspection of erosion and sediment control measures and all Subcontractors.

D 606.06 RETENTION OF RECORDS

- (a) The Contractor shall keep a copy of the Storm Water Pollution Prevention plan at the construction site or at the Contractor's office from the date it became effective to the date of project completion.
- (b) At the project closeout, the Contractor shall submit to the City all NPDES forms and certifications, as well as a copy of the SWPPP. Stormwater pollution prevention records and data will be retained by District for a period of three (3) years from the date of project completion.

D 606.07 REQUIRED NOTICES

The following notices shall be posted from the date that this SWPPP goes into effect until the date of final site stabilization:

- 1) Copies of the Notices of Intent submitted by the District and Contractor and a brief project description shall be posted at the construction site or at Contractor's office in a prominent place for the public viewing.
- 2) Notice to drivers of equipment and vehicles, instruction them to stop, check, and clean tires of debris and mud before driving onto traffic lanes. Post such notices at every stabilized construction exit area.
- 3) In an easily visible location on site, post a notice of waste disposal procedures.
- 4) Notice of hazardous material handling and emergency procedures shall be posted with the NOI on site. Keep copies of Material Safety Data Sheets at a location on site that is known to all personnel.
- 5) Keep a copy of each signed certification at the construction site or at Contractor's office.

**SECTION 608
HYDRO-MULCH SEEDING**

D 608.01 GENERAL

A. Summary

This Section includes the preparation, application and protection of operations consisting of hydro-mulch seeding within the lines and limits as shown on PLANS and as further directed by the ENGINEER.

B. References

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

TEXAS DEPARTMENT OF AGRICULTURE (TDA)
TDA Chapter 61 1994 Texas Seed Law-Rules and Regulations (March Issue)

TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR
CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES (TxDOT)
TxDOT Item 164 2004 Seeding for Erosion Control
TxDOT Item 166 2004 Fertilizer
TxDOT Item 168 2004 Vegetative Watering

C. Quality Assurance

A sample of each variety of seed to be furnished for analysis and testing when directed by the ENGINEER.

D. Delivery, Storage, and Handling

Each variety of seed to be furnished and delivered in separate bags or containers and protected from moisture until placed.

D 608.02 PRODUCTS

A. Manufacturers

The following cellulose fiber mulch manufacturers are approved for providing hydraulic mulches with the exact trade name of mulches accepted. No variation will be accepted unless approved by the ENGINEER.

Trade Name of Approved Product	Name of Manufacturer	Manufacturer Address
American Fiber Mulch	American Fiber Manufacturing, Inc.	1701 Bench Mark Dr. Austin, TX 78728
Conwed Fibers Hydro Mulch	Conwed Fibers	1st Plaza, Suite 350, 1985 Tate Blvd., SE, Hickory, NC 28601
Second Nature Regenerated Wood Fiber	Central Fiber Corporation	4814 Fiber Lane Rd. Wellsville, KS 66092
Pro Mat	Tascon, Inc.	7607 Fairview Houston, TX 77041

B. Materials and/or Equipment

1) Seed

All seed must meet the requirements of the Texas Seed Law FDA Chapter 61 including the labeling requirements for showing pure live seed (PLS = purity x germination), name and type of seed. Seed furnished to be of the previous season's crop and the date of analysis shown on each bag to be within nine months of the time of use on the project. Buffalograss to be treated with a dormancy method approved by the ENGINEER. The species and varieties of seed to be from among the types specified in Tables 1A and 1B of Item 164 of the Texas Department of Transportation Specifications.

2) Planting Season and Seed Mixes to conform to the requirements of Item 164 of the Texas Department of Transportation Specifications and/or as modified hereinafter.

3) Cellulose Fiber Mulch to be of the type and manufacturer as provided in paragraph 2.01.

The mulch to be designed for use in conventional mechanical planting, hydraulic planting of seed or hydraulic mulching of grass seed, either alone or with fertilizers and other additives. The mulch to be such that, when applied, the material is to form a strong, moisture-retaining mat without the need of an asphalt binder. It shall be kept in a dry condition until applied and shall not be molded or rotted.

4) Fertilizer to be in accordance with TxDOT Specification Item 166.

5) Water to be in accordance with TxDOT Specification Section 168.

D 608.03 EXECUTION

A. Erection/Installation/Application and/or Construction

1) Construction Methods

After the designated areas have been completed to the lines, grades and cross sections shown on the PLANS, seeding to be performed in accordance with the requirements hereinafter described. Unless otherwise approved by the ENGINEER, all areas to be seeded to be cultivated to a depth of at least four (4) inches, except where seeding is to be done using a seed drill suitable for seeding into untilled soil. The seedbeds to be cultivated sufficiently to reduce the soil to a state of good tilth when the soil particles on the surface are small enough and lie closely enough together to prevent the seed from being covered too deeply for optimum germination. Cultivation of the seedbed will not be required in loose sand where depth of sand is four (4) inches or more.

2) Planting Season and Seed Mixes

Planting season and the required seed mixes to be in accordance with the required table for location of operation as specified in TxDOT Specification Item 164 as modified hereinafter.

Seed Type	Application Rate per lbs/acre	Planting Date
Hulled Common Bermuda Grass 98/88 Unhulled Common Bermuda Grass 98/88	40	Jan 1 to Mar 31
Hulled Common Bermuda Grass 98/88	40	Apr 1 to Sep 30
Hulled Common Bermuda Grass 98/88 Unhulled Common Bermuda Grass 98/88 Annual Rye Grass (Gulf)	40 40 30	Oct 1 to Dec 31

3) Water Application to be in accordance with TxDOT Item 168.

D 608.04 PROTECTION

A. Maintenance

The hydro-mulch seeding to be adequately watered until established. Any areas damaged by erosion or areas that do not have an acceptable turfing to be reseeded.

B. Final Acceptance

Final acceptance and payment will be dependent upon hydromulch seeded areas demonstrating a healthy well established growth.

D 608.05 MEASUREMENT AND PAYMENT

Measurement to be by lump sum or acre, as indicated in the Contract Bid Documents. Payment for work under this Section will be made at contract price for "Hydro-Mulch Seeding," which price to be full compensation for all fertilizer, seed, equipment, materials, and labor necessary for fertilizing and seeding.

**SECTION 610
SEEDING**

D 610.01 GENERAL

Scope: Seeding and fertilizing of areas not covered by structures, sidewalks, or roads within the project area. Project area is indicated on PLANS or by Special Provision. When shown on PLANS, provide soil retention protection.

D 610.02 PRODUCTS

A. Materials and/or Equipment

- 1) Seeds: Conform to requirements of U.S. Department of Agriculture Rules and Regulations as set forth in Federal Seed Act and Texas Seed Law. Use seed which has been treated with an approved fungicide. Container labels to show purity and germination and name and type of seed. Planting date, type, and rate of application as follows:

Type	Rate of Application in lbs/acre	Planting Date
1) Unhulled Bermuda Grass	20	January 1 – April 1
2) Hulled Bermuda Grass	12	April 1 – October 1
3) Mix Bermuda and Rye in following proportions: Unhulled Bermuda Grass Rye Grass (Gulf)	12 200	October 1 – January 1

- 2) Fertilizer: Use pellet or granular fertilizer with analysis of 16 percent nitrogen, 20 percent phosphoric acid, and zero percent potash (or 10-10-5), unless otherwise required. Determine percent by methods of Association of Official Agricultural Chemists. Container labels to show analysis. Powdered or caked fertilizer not permitted.
- 3) Straw Mulch: Use straw of oat or rice stems, prairie grass, bermuda grass, or other approved straw. Do not use straw containing Johnson grass or other noxious weeds and foreign materials.
- 4) Fiber Mat: Fiber mat to consist of machine-produced mat of wood fibers, with consistent thickness throughout blanket. Use blanket with top side of netted twisted kraft paper having high wet strength or biodegradable extruded plastic mesh. Use blanket of weight from 0.7 Pound per square yard to 1.0 Pound per square yard.
- 5) Paper Mesh: Use paper mesh consisting of knitted construction of yarn with uniform openings interwoven with strips of biodegradable paper, furnished in rolls with suitable protection for outdoor storage. Use paper mesh of weight from 0.2 pound per square yard to approximately 0.5 pound per square yard.
- 6) Wire Staples: As recommended by fiber mat or paper mesh manufacturer.

D 610.03 EXECUTION

A. Erection/Installation/Application and/or Construction

1) General

Fertilizing and Seeding: After area(s) to receive fertilizing and seeding has been completed to lines, grades, and sections shown on PLANS, apply fertilizer at uniform average rate of 500 pounds per acre. Thoroughly mix upper 3 inches of topsoil with fertilizer until a uniform

mixture of fertilizer and topsoil is obtained. Sprinkle areas to be seeded with water, using fine spray to avoid washing or erosion of soil. Broadcast seed with sowing equipment at rate specified above, using care to obtain uniform distribution. After broadcasting, lightly rake seeds into soil to a depth not to exceed 1/2 inch. Complete seeding by rolling with roller developing 15 to 25 pounds per inch of tread. Keep seeded areas moist for a period of 10 days immediately following placement. When watering seeded areas, use fine spray to prevent erosion of seeds or soil. Reseed any areas damaged by erosion. Do not apply seeds when weather is too windy or other adverse conditions exist.

2) Straw Mulch Soil Retention Blanket

Fertilizing and Seeding: After ditch or slope has been completed to lines, grades, and cross-sections shown on PLANS, apply fertilizer and seed as per A. above. When seed and fertilizer are to be distributed as water slurry, mixture to be applied within 30 minutes after all components are placed in equipment.

Mulch Application: Immediately upon completion of planting of seed and fertilizing, spray straw mulch uniformly over the area at the rate of 1.5 to 2 tons of hay or 2.5 tons of straw per acre. Equip mulching machine to inject asphaltic material into straw uniformly as it leaves the equipment at the rate of 0.05 To 0.10 Gallon of asphalt per square yard of mulched area. When watering seeded areas, use fine spray to prevent erosion of seeds or soil. Reseed any areas damaged by erosion for any reason. Mulching operation to follow seeding and fertilizing immediately in continuous operation.

3) Fiber Mat or Paper Mesh Soil Retention Blanket

Fertilizing and Seeding: See B.1. above.

Fiber Mat or Paper Mesh Installation: Place fiber mat or paper mesh within 24 hours after seeding operations have been completed. Prior to placing, clear area to be covered of all rocks or clods over 1.5-inch diameter and all sticks or other foreign material which will prevent close contact of the blanket with the soil. Area to be smooth and free of ruts or other depressions. If, as a result of a rain, prepared seed bed becomes crusted or eroded, or if eroded places, ruts, or depression exist for any reason, rework soil until smooth and reseed such areas. After area has been properly prepared, lay fiber mat or paper mesh flat, smooth, and loosely, without stretching or crimping material. Apply materials with lengths running parallel to the flow of water. Where more than one width is required, butt or overlap edges as required by manufacturer. Hold material in place by means of wire staple driven into soil at 90 degree angle to surface. Staple material along each edge and in grid pattern with minimum 3-foot centers each way as recommended by manufacturer. In ditches and on slopes, provide additional stapling as recommended by manufacturer.

B. Measurement and Payment

1) Fertilizing and Seeding: Measure by the acre or lump sum as indicated in PROPOSAL. Payment for work under this Item will be made at Contract price for "Seeding," which price to be full compensation for all fertilizer, seed, equipment, materials and labor necessary for fertilizing and seeding.

2) Straw Mulch Seeding: Measure by the square yard as indicated in the PROPOSAL. Payment for work under this Item to be made at the Contract price for "Straw Mulch Seeding," which price to be full compensation for all fertilizer, seed, straw mulch, equipment, materials and labor necessary for fertilizing and seeding.

- 3) Fiber Mat Seeding: Measure by the square yard as indicated in the PROPOSAL. Payment for work under this Item to be made at the Contract price for "Fiber Mat Seeding," which price to be full compensation for all fertilizer, seed, fiber mat, equipment, materials, and labor necessary for fertilizing and seeding.
- 4) Paper Mesh Seeding: Measure by the square yard as indicated in the PROPOSAL. Payment for work under this Item to be made at the Contract price for "Paper Mesh Seeding," which price to be full compensation for all fertilizer, seed, paper mesh, equipment, materials, and labor necessary for fertilizing and seeding.

SECTION 712 TRAFFIC CONTROL AND REGULATION

D 712.01 GENERAL DESCRIPTION

Section includes requirements for signs, signals, control devices, flares, lights, and traffic signals, as well as construction parking control, designated haul routes and bridging of trenches and excavation. Temporary Traffic Control plans shall be in strict accordance with the latest revision of TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

D 712.02 INSPECTIONS

- (a) Yard Inspection: Before the Traffic control Plan (TCP) is implemented and devices or hardware are installed in the field the devices must be inspected to insure that they are accepted devices in acceptable condition. There must also be sufficient devices to meet the needs of the approved traffic control plan.
- (b) Drive-Through Inspection: To decrease hazards to motorists and workers, traffic control shall be inspected and evaluated immediately after the traffic control plan is implemented. This kind of inspection shall be done in all lanes, in both directions or crossroads, during the day and the night, and from all entry or exist points within the zone. Any other routes such as detours that have work zone traffic on them shall be inspected also. Unacceptable devices or situations that are found on the jobsite shall be replaced or the situation corrected. Imminent danger situation require immediate correction.

D 712.03 MATERIALS

All materials shall comply with the latest version of the Texas State Manual on Uniform Traffic Control Devices

D 712.04 PUBLIC ROADS

- (a) Abide by laws and regulations of governing authorities when using public roads. If the Contractor's work requires that public roads be temporarily impeded or closed, approvals shall be obtained from governing authorities and permits paid for before starting any work.
- (b) Contractor shall maintain at all times a 10-foot-wide all-weather lane adjacent to work areas which shall be kept free of construction equipment and debris and shall be for the use of emergency vehicles, or as otherwise provided in traffic control plan.
- (c) Contractor shall not obstruct the normal flow of traffic from 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. on designated major arterials or as directed by the District Engineer.
- (d) Contractor shall maintain local driveway access to residential and commercial properties adjacent to work areas at all times.
- (e) Surrounding streets used for entering or leaving the job area must be keep free of excavated material, debris, and any foreign material resulting from construction operations.

D 712.05 CONSTRUCTION PARKING CONTROL

- (a) Control vehicular parking to prevent interference with public traffic and parking and access by emergency vehicles.

- (b) Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.
- (c) Prevent parking on or adjacent to access roads or in non-designated areas.

D 712.06 FLARES AND LIGHTS

- (a) Provide flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

D 712.07 HAUL ROUTES

- (a) Utilize haul routes designed by authorities or shown on the drawings for construction traffic.
- (b) Confine construction traffic to designated haul routes.
- (c) Provide traffic control at critical areas of haul routes to regulate traffic minimize interference with public traffic.

D 712.08 TRAFFIC SIGNS AND SIGNALS

- (a) Install traffic control devices at approaches to the site and on site, at cross roads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- (b) Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.
 - 1. Relocate traffic signs and signals as work progresses to maintain effective traffic control.

D 712.09 BRIDGING TRENCHES AND EXCAVATIONS

- (a) Whenever necessary, bridge trenches and excavation to permit an unobstructed flow of traffic.
- (b) Secure bridging against displacement by using adjustable cleats, angles, bolts or other devices whenever bridge is installed:
 - 1. On a existing bus route;
 - 2. When more than five percent of daily traffic is comprised of commercial or truck traffic;
 - 3. When more than two separate plates are used for the bridge; or
 - 4. When bridge is to be used for more than five consecutive days.
- (c) Install bridging to operate with minimum noise.
- (d) Adequately shore the trench or excavation to support bridge and traffic.
- (e) Extend steel plates used for bridging a minimum one foot beyond edges of trench or excavation. Use temporary paving materials (premix) to featheredges of plates to minimize wheel impact on secured bridging.
- (f) Use steel plates (refer to SECTION 808) of sufficient thickness to support H-20 loading, truck or lane that produces maximum stress.

D 712.10 REMOVAL

- (a) Remove equipment and devices when no longer required.
- (b) Repair damage caused by installation

(c) Remove post settings to a depth of 2 feet.

D 712.11 MEASUREMENT

Measurement is a lump sum basis for traffic control and regulation, including submittal of a traffic control plan if different from the plan shown on the Drawings, provision of traffic control devices and provision of equipment and personnel as necessary to protect the work and the public.

D 712.12 PAYMENT

The amount invoiced shall be paid by percent completed or as approved by the Engineer based on the schedule of values submitted for traffic control and regulation. Refer to Division C, General Provisions, Section 9 - Measurement and Payment for unit prices procedures.

SECTION 802 SHEETING AND BRACING

D 802.01 DESCRIPTION

Unstable soil encountered in trench or foundation excavation which tends to cave in or otherwise, shall be properly sheeted and braced as per OSHA requirements. Sufficient bracing material shall be left in place to guarantee safety to workmen and material where removal of such sheeting and bracing after it has served its purpose would be dangerous to workmen during backfilling or harmful to materials in place.

D 802.02 MATERIALS

The sheeting material to be placed in contact with the dirt shall be either rough lumber with a minimum thickness of 2" appropriately designed steel sheet piling. Braces shall consist of lumber with a minimum thickness of 4" or metal screw jacks or other mechanical devices approved by the Engineer. All lumber shall be No. 3 common or better.

D 802.03 WHEN TO INSTALL SHEETING AND BRACING

Whenever, in the opinion of the Engineer or the Contractor, the soil at the edge of any excavation is sufficiently unstable as to endanger the safety of life, limb, or property, sheeting and bracing material shall be installed. Such material shall also be installed in all trenches whose sides are steeper than the natural angle of repose of the soil material if it were in loose uncompacted condition and the trenches are in excess of 8 feet deep, but only such portions of the total height of the trench shall be sheeted as appears necessary. Should a layer or pocket of material be encountered anywhere in the trench or other excavation which is of such type as to make possible the failure of adjacent soils, such layer or pocket shall be sheeted and braced in such a manner as to insure its permanency. Whenever a doubt exists as to the necessity of the installation of sheeting and bracing, it shall be installed.

D 802.04 CONSTRUCTION METHODS

Upon discovery of unstable material in any excavation, such sheeting and bracing as may be deemed adequate by the Engineer shall be installed. Stay bracing, piling boards, and box or vertical sheeting methods shall be used depending on the nature of the unstable material encountered. Metal sheeting and steel sheet piling may be used at the option of the Engineer.

D 802.05 MEASUREMENT

This item will be measured by the foot along the long axis of the trench.

D 802.06 PAYMENT

Contractor shall investigate the conditions as they exist in the field and include in the unit price bid per linear foot. This price is full compensation for the excavation and backfill required for excavation protection; furnishing, placing and removing shoring, sheeting, or bracing; dewatering or diversion of water; jacking and jack removal; and equipment, labor, materials, tools and incidentals.

SECTION 804
WORK PERFORMED AND NON-WORKING DAYS

D 804.01 WORKING DAY

A working day is Monday thru Friday, 8:00 a.m. to 5:00 p.m. excluding holidays.

D 804.02 WORK PERFORMED ON A NON-WORKING DAY

Any work which is to be performed on a non-working day must be inspected. The Engineer will decide which work will be requiring the presence of an inspector.

D 804.03 COST OF INSPECTION

The cost for having an inspector present shall be incurred by the Contractor performing the work. Such arrangements will be made in writing and submitted to the Engineer for his approval. Any testing requested by the contractor out of service hours or any overtime charged by the testing laboratory for delaying, shall be paid by the contractor.

D 804.04 STOP WORK

Any work stoppage by the contractor must be reported in writing to the Engineer and owner 24 hours prior to work stoppage.

SECTION 808 STEEL PLATE BRIDGING UTILITY PROVISIONS

GENERAL

D 808.01 DESCRIPTION

Temporary Steel Plate Bridging: When approved by the Engineer or Contracting Agency the Contractor may use steel plates to bridge excavated trenches in areas where the roadway surface is to be opened to traffic.

D 808.02 MATERIALS

The plates shall be of steel construction capable of supporting HS-20 loading.
Plates shall be fabricated from ASTM-36 Steel (Min). (see drawing 808-1 for plate thickness)
Plate Locks Trench Securing System

D 808.03 WHEN TO INSTALL STEEL PLATES

When backfilling operations of an excavation in the traveled way either transverse or longitudinal cannot be properly completed within a work day, steel plate bridging may be required to preserve unobstructed traffic flow. In such cases, the following conditions shall apply:

- 1) The plates must extend beyond the edge of the trench wall to adequately support the traffic loads on it. All steel trench plates shall extend beyond the edges of the trench wall a minimum of twelve (12") inches. Drawing No. 808-1
- 2) Trenches and excavations shall be adequately shored and braced to withstand highway traffic loads.
- 3) Each plate must be fully supported around the perimeter to prevent wobbling or rocking with non asphaltic shims and installed to operate with minimum noise.
- 4) Plates shall be secured and ramped on all sides with a trench plate securing device, to ensure a smooth transition from the road surface to the top of the plate surface and back to the road surface.
- 5) If the trench steel plates are going to be in place more than 48 hrs, a "STEEL PLATE" sign with black lettering on an orange background will be used in advance of steel plate bridging. This sign is used along with any other required construction signing.
- 6) The contractor is responsible for maintenance of the steel plates, shoring, and trench plate securing systems, and ensuring that they meet minimum specifications. If District must correct emergency condition due to excavation and plate placement and or movement, Contractor will be charged for the cost of corrective measures required.

CONSTRUCTION METHODS

D 808.04 GENERAL

For trenches and excavations with spans greater than four feet (4'), a structural design shall be prepared by a civil engineer registered in the state of Texas and approved by the District. Steel plate bridging and shoring shall be installed using either Method (1) or (2):

Method 1: Roadways with posted speeds equal to or less than 30 mph

One pre-approved method of securing steel trench plates involves a perimeter restraint consisting of polypropylene (PP). This method involves placing a 6" wide strip of PP along the edges of the trench plate which are exposed to traffic. The adjacent edges of multiple trench plates do not require additional edge restraint along those edges.

The PP strips shall be tapered from a nominal 1" thickness to approximately 1/4' to provide a ramped surface for vehicles to enter and exit the trench plate. The PP perimeter restraint shall be safety orange in color to provide high visibility and help alert drivers to the presence of trench plates.

The perimeter restraint shall be secured to the pavement with 4" long Simpson -Titan H.D 3/8" concrete anchors (or equal) with washers. Anchors shall be spaced at intervals of 36" or less. The ends of the perimeter restraint shall be anchored a minimum 4" and a maximum of 8" from each end.

The horizontal gaps between the sides of the perimeter restraint and the trench plate shall not exceed 1/2". Vertical differences in elevation between the top of the perimeter restraint and the top of the trench plate shall not exceed 1/2". Plates shall be shimmed with PP shims to prevent vertical movement of the trench plate of more than 1/4" at any location. Shims, as required, shall be secured below the perimeter restraint at the anchor locations used to secure the frame. Shim thicknesses shall be limited to a total of 3/4". Gaps that require greater than 3/4" thick shims shall be corrected by reorienting trench plates to reduce the size of vertical gaps between the bottom of the trench plate and the street surface.

Holes in the PP perimeter restraint and shims shall be pre-drilled and oversized to allow for PP expansion and contraction. Holes in the perimeter restraints shall be counter sunk to minimize exposure of bolt heads to traffic.

Trench plates may be removed and replaced as necessary to complete utility work in the street without removal of the PP perimeter restraint. Upon completion of construction and permanent removal of trench plates and frames, the anchor screw holes shall be filled with liquid asphalt during the trench patching operation or with high strength grout or other material approved or directed by the engineer. Patch material shall be struck smooth with the street surface.

The PP securing system shall be substantially similar, or equal to, the Plate Lock Trench Plate Securing System which is pre-approved for use. The trench plate securing system shall be installed per manufacture's direction and continuously maintained around all outside edges of the trench plates until removal of the plates.

Method 2: Roadways with posted speeds greater than 30 mph

The pavement shall be cold-planed to a depth equal to the thickness of the plate and to a width and length equal to the dimensions of the plate(s) The approach and ending plates shall be attached to the roadway by a minimum of 2 dowels pre-drilled into the corners of the plate and drilled 3 inches into the pavement: subsequent plates shall be butted to each other.

D 808.05 MEASUREMENT AND PAYMENT

No Separate measurement or payment will be made for this item

SECTION 812 DEFINITIONS

Whenever used in these GENERAL CONDITIONS or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

Addenda- Written or graphic instruments issued by ENGINEER prior to the receipt of bids which clarify, correct, or change the Bidding Requirements or the Contract Documents.

Agreement- The written contract between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment- A request from CONTRACTOR for a progress or final payment on the form accepted by ENGINEER and which is accompanied by such supporting documentation as is required by the Contract Documents.

Asbestos- Any material that contains more than one percent (1%) asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

Bid- The offer or proposal of the BIDDER submitted on the prescribed form setting forth the required information, including prices for the Work to be performed.

Bidder- An individual, partnership, limited liability company, corporation, or joint venture submitting a bid for a proposed Contract.

Bidding Documents- The advertisement or Invitation to Bid, Instructions to Bidders, the Bid form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

Bidding Requirements- The information requested by and conditions for bidding set forth in the advertisement or Invitation to Bid, Instructions to Bidders, and the Bid form.

Bonds- Performance and Payment bonds and other instruments of security.

Change Order- A document prepared by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work, or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

Contract Documents- The Agreement, Addenda (which pertain to the Contract Documents), Contractor's Bid (including documentation accompanying the BID and any post-bid documentation accompanying the BID and any post-bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these GENERAL CONDITIONS, the Supplementary Conditions, the Specifications, and the PLANS, as the same are more specifically identified in the Agreement, together with

all Written Amendments, Change Orders, Work Change Directives, Field Orders, and ENGINEER'S written interpretations and clarifications, issued pursuant to Paragraph 3.3, on or after the Effective Date of the Agreement. Shop Drawing submittals approved pursuant to Paragraphs 6.17.4 and 6.17.5 and the reports and drawings referred to in Paragraphs 4.2.1 and 4.2.2 are not Contract Documents.

Contract Price- The amount agreed to by OWNER and CONTRACTOR for completion of the Work, in accordance with the Contract Documents, as stated in Article 4 of the Agreement (subject to the provisions of Paragraph 11.3.1 in the case of Unit Price Work), and as adjusted by any Change Orders.

Contract Times- The numbers of days or the dates stated in the Agreement: (i) to achieve Substantial Completion, and (ii) to complete the Work so that it is ready for final payment as evidenced by ENGINEER'S written recommendation of final payment in accordance with Paragraph 14.9.1.

Contractor- The person, firm, or corporation with whom OWNER has entered into the Agreement.

Defective- An adjective which, when modifying the word Work, refers to Work that is unsatisfactory, faulty, or deficient, in that it does not conform to, or has not been performed in accordance with, the Contract Documents, or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER'S recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with Paragraph 14.5.1 or 14.6).

Effective Date of the Agreement- The date indicated in the Agreement on which it becomes effective; but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

Engineer- The licensed person, firm, or corporation authorized by the District or the owner to act on their behalf.

Engineer's Subconsultant- A licensed person, firm, or corporation having a contract with ENGINEER to furnish services as ENGINEER'S independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

Field Order- A written order issued by ENGINEER which orders minor changes in the Work in accordance with Paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Times.

General Requirements- Sections of Division A, B, and C of the Specifications.

Hazardous Waste- The term Hazardous Waste shall mean (i) any hazardous materials, hazardous wastes, hazardous substances, and toxic substances as those or similar terms are

defined under any Environmental Laws; (ii) any Asbestos or any material which contains any hydrated mineral silicate, including chrysolite, amosite, crociodolite, tremolite, anthophyllite, and/or actinolite, whether friable or non-friable;(iii) any PCBs or PCB-containing materials, or fluids; (iv) radon; (v) any other hazardous, radioactive, toxic, or noxious substance, material, pollutant, or solid, liquid, or gaseous waste; (vi) any pollutant or contaminant (including petroleum, petroleum hydrocarbon, petroleum products, crude oil, and any factions thereof; any oil or gas exploration or production waste, and natural gas, synthetic gas, and any mixtures thereof) that in its condition, concentration, or area of release could have a significant effect on human health, the environment, or natural resources; (vii) any substance that, whether by its nature or its use, is subject to regulation under any Environmental Law or, with respect to which any Environmental Law or Governmental Authority, requires environmental investigation, monitoring, or remediation; (viii) any Radioactive Material; and (ix) any underground storage tanks, as defined in 42 U.S.C. Section 699(1)(A)(I) (including those defined by Section 9001[1] of the 1984 Hazardous and Solid Waste Amendments to the Resource Conservation Act, 42 U.S.C. Section 6901 et seq.; the Texas Water Code Annotated Section 26.344; and Title 30 of the Texas Administrative Code Sections 334.3 and 334.4), whether empty, filled, or partially filled with any substance.

Laws and / or Regulations- Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction over the Work, the Project, and/or the CONTRACTOR's performance of the Work.

Liens- Liens, charges, security interests, or encumbrances upon real property or personal property.

Milestone- A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

Notice of Award- The written notice by OWNER to the apparent Successful Bidder stating that, upon compliance by the apparent Successful Bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

Notice to Proceed- A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR's obligation under the Contract Documents.

Or Equal Clause- Whenever a material or article required is specified or shown on the plans by using the name of the proprietary product, or of a particular manufacturer or vendor, any material or article which will perform adequately the duties imposed by the general design will be considered equal and satisfactory, provided the material or article so proposed is of equal substance and function, and only after written approval by the District Engineer.

Owner- The public body or authority, corporation, association, firm, or person which is a party to the Agreement and for whom the Work is to be provided.

Partial Utilization- Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work in accordance with Paragraph 14.6.

PCBs- Polychlorinated biphenyls.

Petroleum- Petroleum, including crude oil or any fraction thereof, which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.

Plans- The PLANS which show the scope, extent, and character of the Work to be furnished and performed by CONTRACTOR and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents. Shop drawings are not Drawings as so defined.

Project- The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

Radioactive Material- Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

Resident Project Representative- The authorized representative of the OWNER who may be assigned to the site or any part thereof.

Right of Way- A general term denoting land or property devoted to transportation purposes.

Samples- Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

Shop Drawings- All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

Specifications- Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor- An individual, firm, or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site. Excluding a material supplier, truck owner-operator, wholly owned subsidiary, specialty-type businesses such as security companies and rental companies.

Subsidiary- Materials, labor, or other elements that because of their nature or quantity have not been identified as a separate item and are included within the items on which they necessarily depend.

Substantial Completion- The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER' s definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended or, if no such certificate is issued, when the Work is complete and ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with Paragraph 14.9. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

Supplementary Conditions- The part of the Contract Documents which amends or supplements these GENERAL CONDITIONS.

Supplier- A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated into the Work by CONTRACTOR or any Subcontractor.

Traffic Lane- The strip of roadway intended to accommodate the forward movement of a single line of vehicles.

Underground Facilities- All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities which have been installed underground.

Unit Price Work- Work to be paid for on the basis of unit prices.

Work- The entire completed construction or the various separately identifiable parts thereof required to be furnished by the CONTRACTOR under the Contract Documents. Work includes and is the result of the CONTRACTOR performing or furnishing all labor, furnishing and incorporating all materials and equipment into the construction, performing or furnishing all services, and furnishing all documents, all as required by the Contract Documents.

Work Change Directive- A written directive to CONTRACTOR, issued on or after the Effective date of the Agreement and signed by OWNER and prepared by ENGINEER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed, as provided in Paragraph 4.2 or 4.3, or to emergencies under Paragraph 6.15. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times as provided in Paragraph 10.1.2.

Written Amendment- A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical, rather than strictly construction-related aspects of the Contract Documents.