



## COUNTY OF GALVESTON

### SPECIFICATIONS AND CONTRACT DOCUMENTS

### 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION

**Bid #B221010**

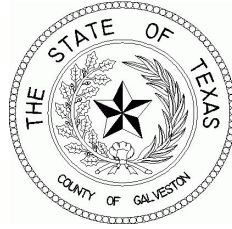


MARCH 2022

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**GALVESTON COUNTY  
PURCHASING DEPARTMENT**



**INVITATION TO BID**

**ITB #B221010**

**23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION**

**BID DUE DATE: 04/14/2022**

**2:00 P.M. CST**

***Rufus Crowder, CPPO, CPPB  
Purchasing Agent  
Galveston County  
722 Moody (21<sup>st</sup> Street)  
Fifth (5<sup>th</sup>) Floor  
Galveston, Texas 77550  
(409) 770-5372***



**INVITATION TO BID**  
**23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION**  
**GALVESTON COUNTY, TEXAS**

**Purpose:**

Galveston County is seeking a contractor for the reconstruction of 23<sup>rd</sup> Street in Galveston, Texas from Broadway to Seawall Blvd. This will entail the removal of the existing road and replacing it with concrete along with the construction of ADA ramps and sidewalk upgrades. The project includes water, sanitary sewer system and storm sewer system upgrades on 23<sup>rd</sup> Street as well as on Avenue K from 23<sup>rd</sup> to 21<sup>st</sup> Street.

Sealed bids in **sets of four (4), one (1) unbound original and three (3) copies**, will be received in the office of the Galveston County Purchasing Agent **until 2:00 P.M. CST, on Thursday, April 14, 2022**, and opened immediately in that office in the presence of Galveston County Auditor and the Purchasing Agent. Sealed bids are to be delivered to Rufus G. Crowder, CPPO CPPB, Galveston County Purchasing Agent at the Galveston County Courthouse, 722 Moody, (21<sup>st</sup> Street), Floor 5, Purchasing, Galveston, Texas 77550, (409) 770-5372.

**The time stamp clock located in the Purchasing Agent's office shall serve as the official time keeping piece for this solicitation process. Any bids received after 2:00 P.M. CST on the specified date will be returned unopened.**

All submittals must be marked on the outside of the sealed envelope:

**ITB #B221010, 23<sup>rd</sup> Street Paving, Drainage & Utility Rehabilitation**

Bidder's name, return address, should be prominently displayed on the proposal package for identification purposes.

**Procurement Timeline:**

A timeline for this solicitation and initial process is included below. Galveston County reserves the right to amend these dates and will notify proposers of any changes via an addendum posted on the County's Purchasing Department's website and [www.CivCast.com](http://www.CivCast.com):

- |  |   |
|--|---|
| <input type="checkbox"/> Advertise ITB (first date of publication)     | Wednesday, March 16, 2022                     |
| <input type="checkbox"/> Advertise ITB (second date of publication)    | Wednesday, March 23, 2022                     |
| <input type="checkbox"/> <b>Pre-Bid (Non-mandatory)</b>                | <b>Tuesday, March 29, 2022 at 10:00 a.m.</b>  |
| <input type="checkbox"/> <b>Deadline for Questions &amp; Inquiries</b> | <b>Friday, April 1, 2022 by 5:00 p.m.</b>     |
| <input type="checkbox"/> <b>Submission Deadline / BID Opening</b>      | <b>Thursday, April 14, 2022, at 2:00 p.m.</b> |

**Virtual Bid Opening:**

Interested parties can attend the Thursday, April 14, 2022, at 2:00 p.m. bid opening virtually. Instructions are listed below:

**Join from Meeting Link:**

<https://galvestoncountytexas.webex.com/galvestoncountytexas/j.php?MTID=mdc263e22fa02105103f86f6058045233>

**Join by meeting number**

Meeting number (access code): 2499 997 2436

Meeting password: B221010

**Tap to join from a mobile device (attendees only)**

+1-415-655-0001,,24999972436## US Toll

**Join by phone**

+1-415-655-0001 US Toll

Global call-in numbers

**Join from a video system or application**

Dial 24999972436@galvestoncountytx.webex.com

**Pre-Bid Conference:**

**A non-mandatory Pre-Bid conference will be held on Tuesday, March 29, 2022, at 10:00 a.m., CST.**

Interested parties can attend the pre-Bid conference virtually. Instructions are listed below.

**Join from the meeting link**

<https://galvestoncountytx.webex.com/galvestoncountytx/j.php?MTID=m7bc811f79c75cc823adab5f3dd9fc2f5>

**Join by meeting number**

Meeting number (access code): 2494 173 0238

**Meeting password: B221010**

**Tap to join from a mobile device (attendees only)**

+1-415-655-0001,,24941730238## US Toll

**Join by phone**

+1-415-655-0001 US Toll

Global call-in numbers

**Join from a video system or application**

Dial 24941730238@galvestoncountytx.webex.com

You can also dial 173.243.2.68 and enter your meeting number.

**Plans and Specifications:** Specifications can be obtained by visiting the Galveston County website @

<http://www.galvestoncountytx.gov/county-offices/purchasing>

Copies of bid/Contract Documents may also be obtained from [www.Civcast.com](http://www.Civcast.com) search 23<sup>rd</sup> Street Paving, Drainage & Utility Rehabilitation Proposers must register on this website in order to view and/or download specifications and plans for this project. There is NO charge to view or download documents. Hard copies can be purchased through CivCast. If copies of the proposing documents are to be mailed, please contact LJA Engineering, Inc. at 713.450.1300.

**Pricing:** Submitted prices, if required and applicable, shall be either lump sum or unit prices as shown on proposal sheets. The net price shall be delivered to Galveston County, including all freight, shipping, and license fees. Galveston County is tax exempt, and no taxes should be included in proposal pricing.

**Bonding Requirements:**

- **BID GUARANTEE:** Evidencing its firm commitment to engage in the contract if Bidder is selected for award of contract, each Bidder is required to furnish with their proposal a Cashier's Check, or an acceptable Bidder's Bond, in the amount of five percent (5%) of the total contract price. The Bidder's Bond must be executed with a surety company authorized to do business in the State of Texas. Failure to furnish the bid/proposal guarantee in the proper form and amount, by the time set for opening of bids may be cause or rejection of the proposal.
- **PERFORMANCE AND PAYMENT BONDS:** Successful bidder, before beginning work, shall execute a performance bond and a payment bond, each of which must be in the amount of the contract. The required payment and performance bonds must each be executed by a corporate surety in accordance with Section 1, Chapter 87, Acts of the 56<sup>th</sup> Legislature, Regular Session, 1959 (Article 7.19-1, Vernon's Texas Insurance Code).

- **DAVIS-BACON WAGE RATES:**

Davis-Bacon Wage Rates are requirements for this solicitation.

Attention is called to the fact that not less than, the federally determined prevailing (Davis-Bacon and Related Acts) wage rates are required to be paid to laborers and mechanics. When required by Federal program legislation, all prime construction contracts in excess of \$2,000 must include a provision for compliance with the Davis-Bacon Act as supplemented by the Department of Labor regulations (29 C.F.R. Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractor must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. In addition, contractors must be required to pay wages not less than once a week. In addition, the successful bidder must ensure that employees and applicants for employment are not discriminated against because of race, color, religion, sex, age, or national origin. Please reference the General Provisions, item 69, Procurement Laws, sub-item 3, **Davis-Bacon Act as amended (40 U.S.C. 3141-3148)**.

- **DEBARMENT AND SUSPENSION:**

To participate in this solicitation, respondent certifies that neither it, nor any of its Principals, are presently debarred, suspended, proposed for debarment, disqualified, excluded, or in any way declared ineligible for the award of contracts by any Federal agency. All contractors/subcontractors that are debarred, suspended, or otherwise excluded from or ineligible for participation on federal assistance programs may not undertake any activity in part or in full under this project.

The Galveston County Commissioners' Court reserves the right to waive any informality and to reject any and all bids and to accept the bid or bids which, in its opinion, is most advantageous to Galveston County with total respect the governing laws.

Rufus G. Crowder, CPPO CPPB  
Purchasing Agent  
Galveston County

**GENERAL PROVISIONS**

**INFORMATION TO BID  
23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION  
GALVESTON COUNTY, TEXAS**

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**INFORMATION TO BID  
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## GENERAL PROVISIONS

### INFORMATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

The Special Provisions and the General Provisions of this Invitation to Bid and the Exhibits attached hereto are made a part of this agreement between the Parties. In the event of a conflict between the General Provisions and the Special Provisions, the terms of the Special Provisions shall control.

#### 1. BID PACKAGE

*The Invitation to Bid, General and Special Provisions, drawings, specifications/line-item details, contract documents, addenda (if any), and the Bid are all part of the Bid package and Resultant Contract. **Bids must be submitted in sets of four (4), one (1) unbound original, and three (3) copies,** on the forms provided by the County if County forms are provided and shall include the Bid sheets completed in their entirety and signed by an authorized representative by original signature. Failure to complete and sign the Bid sheets/contract page(s) may disqualify the Bid from being considered by the Commissioners' Court. Any individual signing on behalf of the Bidder expressly affirms that he or she is duly authorized to tender this Bid and to sign the Bid under the terms and conditions in this request for Bid on behalf of the Bidder and to bind the Bidder to the terms and conditions of this request for Bid and the Bidder's response hereto.*

*Bidder further understands that Bidders' signing of the contract shall be of no effect unless the contract is subsequently awarded by the Commissioners' Court and the contract properly executed by the Commissioners' Court.*

*All figures must be written in ink or typed. Figures written in pencil or with erasures are not acceptable. However, mistakes may be crossed out, corrections inserted, and initialed in ink by the individual signing the bid. If there are discrepancies between unit prices quoted and extensions, the unit price shall prevail.*

**Each Bidder is required to thoroughly review this entire Invitation to Bid package to familiarize themselves with the Bid procedures, the plans and specifications for the requested work, as well as the terms and conditions of the contract the successful Bidder will execute with the County.**

#### 2. BIDDER'S RESPONSIBILITY

The Bidder must affirmatively demonstrate its responsibility. The Bidder must also meet the following minimum requirements:

- A. have adequate financial resources or the ability to obtain such resources as required;
- B. be able to comply with all federal, state, and local laws, rules, regulations, ordinances, and orders regarding this request for Bid;
- C. have a satisfactory record of performance;
- D. have a satisfactory record of integrity and ethics; and
- E. be otherwise qualified and eligible to receive an award.

## GENERAL PROVISIONS

### INFORMATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

#### 3. TIME FOR RECEIVING BIDS

Bids may be submitted by mail or hand delivery and **must be submitted only to the Galveston County Purchasing Agent**. If by delivery, the Bidder must deliver the Bid to the reception desk in the County Purchasing Agent's Office. The delivery and mailing instructions for the Galveston County Purchasing Agent are the following:

**Rufus Crowder, CPPO CPPB  
Galveston County Purchasing Agent  
722 Moody, Fifth (5<sup>th</sup>) Floor  
Galveston, Texas 77550**

Bids will **not** be accepted by facsimile transmission or by electronic mail (email) unless superseded by instructions within the Special Provisions section of this solicitation. Bids must be received by the County Purchasing Agent on or before the deadline for the opening of the Bids. **For clarity, mailing date/postmark is not sufficient – Bids must be received by the County Purchasing Agent on or before the deadline.** Late Bids will not be accepted and will be returned to the Bidder unopened. Bids received prior to the submission deadline will be maintained unopened until the specified time for opening.

The County Purchasing Agent will accept Bids from 8:00 a.m. to 5:00 p.m. on each business day up to the submission deadline. Business days do not include Saturdays and Sundays, and do not include other days in which the County is closed for business in observance of holidays or for other reasons.

**The time-stamp clock within the County Purchasing Agent's Office shall be the official time clock for the purpose of this solicitation and thus shall be the determinant of whether the Bid was timely received.**

**The Bidder should prominently identify the procurement number and name on the outside of the envelope/ mailing package.** If the Bidder fails to identify the request for Bid number and name on the outside of the envelope as required, the Purchasing Agent will open the envelope for the sole purpose of identifying the solicitation number for which the submission was made. The envelope will then be resealed. No liability will attach to a County office or employee for the premature opening of a Bid.

If a Bid is not submitted, return this Request for Bid and state reason (s), otherwise your name may be removed from the Purchasing Agent's mailing list.

#### 4. COMPETITIVENESS, INTEGRITY, INQUIRIES AND QUESTIONS

To prevent biased evaluations and to preserve the competitiveness and integrity of the procurement process, **Bidders are to direct all communications regarding this invitation to bid only to the Galveston County Purchasing Agent**, unless otherwise specifically noted.

**Do not contact the requesting department.** Attempts by offering firms to circumvent this requirement will be viewed negatively and may result in rejection of the Bid of the firm found to be in non-compliance.

## GENERAL PROVISIONS

### INFORMATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

**All questions regarding this Invitation to Bid must be submitted in writing to:**

**Rufus Crowder, CPPO CPPB  
Purchasing Agent  
722 Moody  
Fifth (5<sup>th</sup>) Floor  
Galveston, Texas 77550  
Fax: (409) 621-7997  
E-mail: [purchasing.bids@co.galveston.tx.us](mailto:purchasing.bids@co.galveston.tx.us)**

All questions received and the responses thereto will be mailed, emailed, or faxed to all prospective Bidders by addendum. No inquiries except clarification of instructions will be addressed by telephone.

Bidder is advised to carefully review this Invitation to Bid – it provides specific information necessary to aid participating firms in formulating a thorough response. Bidder's failure to examine all documents shall not entitle the Bidder to any relief from the conditions imposing in the Invitation to Bid and the resultant contract.

**An authorized person from the Bidder must sign the Bid.** This signatory must be a person from the submitting firm who is duly authorized to tender and sign the Bid on behalf of the Bidder and to bind the Bidder to the terms and conditions of this Request for Bid, the Bidder's response, and all other terms and conditions of the contract. By this signature, the Bidder further acknowledges that the Bidder has read the request for Bid and Bid documents thoroughly before submitting a Bid and will fulfill the obligations in accordance with the terms, conditions, and specifications detailed herein.

#### 5. **BID OPENING**

The Purchasing Agent shall open the Bids on the date and time specified herein. Bids shall be opened in a manner that avoids disclosure of the contents to competing offerors and that keeps the Bids secret during negotiations. The Purchasing Agent will examine Bids promptly and thoroughly. **Upon opening, no Bid may be withdrawn for a period of sixty (60) calendar days after the Bid opening date.**

#### 6. **WITHDRAWAL OF BID / FIRM BID RULE**

Bidders may request withdrawal of their sealed Bid prior to the scheduled Bid opening time provided the request for withdrawal is submitted to the Purchasing Agent in writing. No Bids may be withdrawn for a period of sixty (60) calendar days after opening of the Bids.

#### 7. **COMMISSIONERS' COURT**

No contract is binding on the County until it is properly placed on the Commissioners' Court agenda, approved in open Court, authorized to be executed by the County Judge, and fully executed by both parties.

Department heads and elected officials are not authorized to enter into any type of agreement or contract on behalf of the County. Only the Commissioners' Court acting as a body may enter into a contract on behalf of and contractually bind the County. Additionally, department heads and elected officials are not authorized to agree to any type of supplemental agreements or contracts for goods or services. Supplemental agreements are subject to review by the County Legal Department prior to being accepted and signed by the County's authorized representative.

## GENERAL PROVISIONS

### INFORMATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

#### 8. REJECTION OF BIDS / DISQUALIFICATION

Galveston County, acting through its Commissioners' Court, reserves the right to:

- reject any and all Bids in whole or in part received by reason of this request for Bid;
- waive any informality in the Bids received;
- disregard the Bid of any Bidder determined to be not responsible;
- disregard the Bid of any Bidder determined to have not submitted its Bid timely; and/or
- discontinue its efforts for any reason under this request for Bid package at any time prior to actual execution of contract by the County.

Bidders may be disqualified, and rejection of Bids may be recommended to the Commissioners' Court for any of (but not limited to) the following causes:

- A. Failure to use the Bid forms furnished by the County, if applicable;
- B. Lack of signature by an authorized representative of Bidder;
- C. Failure to properly complete the Bid;
- D. Engaging in communications regarding this procurement during the pendency of this procurement with County officials and/or personnel who are not within the Purchasing Department;
- E. Failure to meet the mandatory requirements of this request for Bid; and/or
- F. Evidence of collusion among Bidders.

#### 9. RESTRICTIVE OR AMBIGUOUS SPECIFICATIONS

It is the responsibility of the prospective Bidder to review the entire request for Bid packet and to notify the Purchasing Agent if the specifications are formulated in a manner that would restrict competition or appear ambiguous. Any protest or question(s) regarding the specifications or Bid procedures must be received in the Purchasing Agent's Office not less than seventy-two (72) hours prior to the time set for Bid opening. Bidders are to submit their Bid as specified herein or propose an approved equal.

#### 10. SUBSTITUTES / DESCRIPTION OF MATERIALS AND EQUIPMENT

Any brand name or manufacturer reference used herein is intended to be descriptive and not restrictive, unless otherwise noted, and is used to indicate the type and quality of material. The term "or equal" if used, identifies commercially produced items that have the essential performance and salient characteristics of the brand name stated in the item description. All supplies, material, or equipment shall be new and of the most suitable grade for the purpose intended. For clarification, "new" includes products containing recovered materials that are EPA-designated items and additionally see Section 63 of these General Provisions on contracts involving federal funds. It is not the County's intent to discriminate against any materials or equipment of equal merit to those specified. However, if Bidder desires to use any substitutions, prior written approval must be obtained from the Purchasing Agent and sufficiently in advance such that an addendum may be issued. All material supplied must be one hundred percent (100%) asbestos free. Bidder, by submission of its Bid, certifies that if awarded any portion of this procurement, the Bidder will supply only material and equipment that is 100% asbestos free.

#### 11. EXCEPTIONS TO BID CONDITIONS

**The Bidder will list on a separate sheet of paper any exceptions to the conditions of this request for Bid.** This sheet will be labeled, "Exceptions to Bid Conditions", and will be attached to the Bid. If no

## GENERAL PROVISIONS

### INFORMATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

exceptions are stated, **it will be understood that all general and special conditions will be complied with, without exception.**

The Bidder must specify in its Bid any alternatives it wishes to propose for consideration by the County. Each alternative should be sufficiently described and labeled within the Bid and should indicate its possible or actual advantage to the program being offered.

The County reserves the right to offer these alternatives to other Bidders.

#### 12. PRICING

Bids will be either lump sum or unit prices as shown on the Bid sheets if included. The net priced items will be delivered to Galveston County, including all freight, shipping, and delivery charges. Galveston County is a tax-exempt local government of the State of Texas, therefore, no taxes shall be included with submitted pricing.

Cash discount must be shown on the Bid, otherwise prices will be considered net. Unless prices and all information requested are complete, the Bid may be disregarded and given no consideration.

In case of default by the contractor, the County of Galveston may procure the articles or services from other sources and may deduct from any monies due, or that may thereafter become due to the contractor, the difference between the price named in the contract of purchase order and the actual cost thereof to the County of Galveston. Prices paid by the County of Galveston shall be considered the prevailing market price at the time such purchase is made. Periods of performance may be extended if the facts as to the cause of delay justify such extension in the opinion of the Purchasing Agent and the Commissioners' Court.

#### 13. PROCUREMENT CARD (P-CARD) PROGRAM

The County of Galveston participates in a Procurement Card (P-Card) program that allows payments made to a vendor by credit card. This method typically results in substantially faster bill payments, sometimes within three (3) to five (5) days of the actual transaction date. All transaction fees from the card provider are to be paid by the successful contractor. If awarded company will accept payment via credit card (Visa, MasterCard, etc.), this should be notated in the Bid submittal.

#### 14. PASS THROUGH COST ADJUSTMENTS

Except in instances of extreme extenuating circumstances, Contractor prices shall remain firm throughout the contract period and any renewals. Examples of extreme extenuating circumstances include such situations as a nationwide rail strike, oil shortage or oil embargo.

In extreme extenuating circumstances, Contractors may be allowed to temporarily "pass through" additional costs they are forced to incur through no fault of their own. A request for a pass-through cost increase will not be considered unless a Contractor's cost for the Contractor's product exceeds 10% over the original cost for the product. Also, the increase in cost must be nationwide and consistent for a minimum period of sixty (60) calendar days. Costs that historically are anticipated to rise over a period of time (for example only, such as wages or insurance costs) do not qualify for pass through. If a Contractor thinks he will be asking for a pass-through cost adjustment during the term of the contract, then the original cost of the product to Contractor must be stated in Contractor's original Bid.

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A request for a pass-through cost does not guarantee that one will be granted. Contractors must submit such information on each request as required by the County Purchasing Agent. The County Purchasing Agent will review each request on a case-by-case basis and if valid submit the request to the Commissioners' Court for authorization and determination of the appropriateness of each request as well as amount and duration of increase. Contractors will not be permitted any additional compensation for mark-ups or profits based on the increase in price. Rather, such additional compensation will be limited to the actual increase in original cost to the Contractor as such increase is reflected by the original cost stated in the bid. But in no event will the amount of additional compensation exceed 25% increase in Contractor's original cost for the product as such cost is reflected in Contractor's original Bid or the duration exceed a period of sixty (60) calendar days. In addition, should the cost, during the period of the pass through, return to normal or decrease to below pre pass through prices, appropriate downward adjustments shall be made. No more than one pass through adjustment will be permitted per year.

#### **15. MODIFICATION OF BIDS**

A Bidder may modify a Bid by letter at any time prior to the submission deadline for receipt of Bids. Modification requests must be received by the Purchasing Agent prior to the submission deadline. Modifications made before opening time must be initialed by Bidder guaranteeing authenticity. Bids may not be amended or altered after the official opening with the single exception that any product literature and/or supporting data required by the actual specifications, if any, will be accepted at any time prior to the Commissioners' Court considering of same.

#### **16. PRE-BID CONFERENCE**

A pre-bid conference for the purpose of discussing contract requirements and answering questions of prospective Bidders may be conducted in this procurement. A pre-Bid conference may be mandatory or voluntary. If the pre-bid conference is mandatory, then the County is authorized to condition acceptance of a Bid on compliance with attendance. The Special Provision section of this procurement shall specify if a pre-bid conference is to be held and shall specify whether the pre-bid conference is mandatory or voluntary. Regardless of whether the pre-Bid conference is mandatory or voluntary, only a principal, officer, or employee of the Bidder may represent the Bidder at the pre-bid conference and no person may represent more than one Bidder at the pre-bid conference.

#### **17. SIGNATURE OF BIDS**

Each Bid shall give the complete name of the Bidder and the mailing address of the Bidder and be signed by an authorized representative by original signature with the authorized representative's name and legal title typed below the signature line. Each Bid shall include the Bidder's Federal Employer Identification Number (FEIN). Failure to sign the Contract page(s) and Bid response sheets may disqualify the Bid from being considered by the County. The person signing on behalf of the Bidder expressly affirms that the person is duly authorized to tender the Bid on behalf of the Bidder and to sign the Bid sheets and contract under the terms and conditions of this Invitation to Bid and to bind the Bidder hereto and further understands that the signing of the contract shall be of no effect until it is properly placed on the Commissioners' Court agenda, approved in open Court, authorized to be executed by the County Judge, and fully executed by both parties.

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#### 18. AWARD OF BIDS – EVALUATION CRITERIA AND FACTORS

The award will be made to the responsible Bidder whose Bid is determined to be the lowest and best evaluated offer demonstrating the best ability to fulfill the requirements set forth in this Request for Bid.

**The proposed cost to the County will be considered firm and cannot be altered after the submission deadline, unless the County invokes its right to request a best and final offer.**

“Lowest and best” means a bid or offer providing the best value considering associated direct and indirect costs, including transport, maintenance, reliability, life cycle, warranties, and customer service after a sale.

In determining the lowest and best bid for a contract for the purchase of earth-moving, material-handling, road maintenance, or construction equipment, the Commissioners’ Court may also consider the information submitted under Section 262.0255 of the Local Government Code; and in determining the lowest and best bid for a contract for the purchase of road construction material, the Commissioners’ Court may consider the pickup and delivery locations of the bidders and the cost to the county of delivering or hauling the material to be purchased. The Commissioners’ Court may award contracts for the purchase of road construction material to more than one bidder if each of the selected bidders submits the lowest and best bid for a particular location or type of material.

Each Bidder, by submitting a Bid, agrees that if its’ Bid is accepted by the Commissioners’ Court, the Bidder will furnish all items and services upon which prices have been tendered and upon the terms and conditions in this Bid, including but not limited to the best and final offer if applicable, and the contract.

The contractor shall commence work only after the transmittal of a fully executed contract and after receiving written notification to proceed from the County Purchasing Agent. The contractor will perform all services indicated in the Bid in compliance with this contract.

Neither department heads nor elected officials are authorized to sign any binding contracts or agreements prior to being properly placed on the Commissioners’ Court agenda and approved in open court. Department heads and other elected officials are not authorized to enter into any type of agreement or contract on behalf of Galveston County. Only the Commissioners’ Court, acting as a body, may enter into a contract on behalf of the County. Additionally, department heads and other elected officials are not authorized to agree to any type of supplemental agreements or contracts for goods or services. Supplemental agreements are subject to review by the County’s legal counsel prior to being signed by the County’s authorized representatives.

The County of Galveston reserves the right to accept Bids on individual items listed, or group items, or on the Bid as a whole; to reject any and all Bids; to waive any informality in the Bids; to disregard Bids that are not submitted timely; to disregard the Bids of Bidders determined to be not responsible; and to accept the Bid that appears to be in the best interest of the County. The selection process may, however, include a request for additional information or an oral presentation to support the written Bid.

In determining and evaluating the best Bid, the pricing component may not necessarily be controlling, but quality, equality, efficiency, utility, general terms, delivery, suitability of the service offered, and the reputation of the service in general use will also be considered along with any other relevant items.

The County reserves the right to reject any or all Bids in whole or in part received by reason of this Request for Bid and may discontinue its efforts under this Request for Bid for any reason or no reason or solely for the County’s convenience at any time prior to actual execution of the contract by the County.



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**A Bidder whose Bid does not meet the mandatory requirements set forth in this request for Bid will be considered non-compliant.**

The invitation to submit a Bid which appears in the newspaper, or other authorized advertising mediums, these general provisions, the special specifications which follow, the Bid sheets, forms, and any addenda issued are all considered part of the Bid and resultant contract.

Each Bidder, by submitting a Bid, agrees that if its Bid is accepted by the Commissioners' Court, such Bidder will furnish all items and services upon the terms and conditions in this request for Bid and the resultant contract.

Notice of contract award is anticipated to be made within ninety (90) days of opening of Bids to the lowest responsive and responsible contractor, whose Bid complies with all the requirements in the request for Bid.

Contractor shall submit to the County, for approval, within ten (10) days from notice of contract award, all Certificates of Insurance evidencing the required coverage as described under Section 37, Requirement of and Proof of Insurance, or if different, then as described within the Special Provisions or resultant contract.

The contractor shall not commence work under these terms and conditions of the contract until all applicable Purchase Orders, Certificates of Insurance, Performance and Payment Bonds, and Irrevocable Letters of Credit (if required) have been approved by the County of Galveston and the Contractor has received notice to proceed in writing and an executed copy of the contract from the County Purchasing Agent.

#### **19. DISPUTE AFTER AWARD / PROTEST**

Any actual or prospective Bidder who is allegedly aggrieved in connection with this procurement or award of a contract resulting therefrom may protest. The protest shall be submitted in writing to the Purchasing Agent within seven (7) calendar days after such aggrieved person knows of or should have known of the facts giving rise thereto. If the protest is not resolved by mutual agreement, the Purchasing Agent will promptly issue a decision in writing to the protestant. If the protestant wishes to appeal the decision rendered by the Purchasing Agent, such appeal must be made to the Commissioners' Court through the Purchasing Agent. The decision of the Commissioners' Court will be final. The Commissioners' Court need not consider protests unless this procedure is followed.

#### **20. PUBLIC INFORMATION ACT (f/k/a Open Records Act)**

The Bidder acknowledges that the County is a government body for purposes of the Public Information Act, codified as Chapter 552 of the Texas Government Code, and as such is required to release information in accordance with the provisions of the Public Information Act.

**If Bidder considers any of its submitted information to be proprietary in nature, trade secret, or otherwise confidential, then it must clearly and conspicuously mark such information as proprietary, trade, secret, or confidential. By the submission of its Bid, Bidder expressly affirms that it has clearly and conspicuously marked any information within its submission that Bidder considers confidential, proprietary, and/or trade secret.**

In the event the County receives a request for information under the Public Information Act seeking information that the Bidder has marked as confidential, proprietary, and /or trade secret, then the County

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agrees that it shall provide notice to the Bidder of the request for information and the request for decision process under the Public Information Act. Thus, the County will submit the initial correspondence to the Texas Attorney General – however, the burden is and shall be on the Bidder to submit correspondence to the Attorney General if the Bidder wishes its information to be withheld. Bidder is deemed to have knowledge of the Public Information Act. **By the submission of its Bid, Bidder expressly acknowledges that the burden to withhold its' information from public disclosure lays with the Bidder;** thus, Bidder further acknowledges and agrees that it shall submit comments to the Texas Attorney General in the request for decision process if Bidder wishes to have its' information withheld from public disclosure.

#### 21. BIDDER'S E-MAIL ADDRESSES – CONSENT TO DISCLOSURE

Notwithstanding the foregoing Section 20, Bidder acknowledges and agrees that the confidentiality of any and all email addresses Bidder uses or discloses in communicating with the County are **open** to the public in accordance with Section 552.137 of the Government Code and Bidder consents to the release of its email addresses.

#### 22. RESULTANT CONTRACT

**Bidder should submit a proposed contract / agreement with its response, or its sample material terms and conditions for review and consideration.**

It is the intent of this solicitation to enter a contract that meets State and Federal guidelines. It is imperative that all responders seeking a contract under this solicitation effort, familiarize and adhere to the requirements of the General Provisions, Special Provisions, and the procurement standards as referenced in 2 C.F.R. Part 200, Sections 200.317-200.326, and Appendix II, 2 C.F.R. Part 200. Sections 200.317–200.326 and Appendix II are referenced in the General Provisions section of this solicitation.

The resultant contract consists of the following documents: Invitation to Bid, General Provisions, Special Provisions, General Terms and Conditions (including specifications, drawings, and addenda), Bidder's Bid, Bid Sheets, contract award, and any other documents referenced herein or attached hereto for the work. Collectively these documents may also be referred to as the Plans and Specifications.

The Galveston County Commissioners Court, and/or authorized designees will be responsible for negotiating with the successful contractor, the scope of work, the standards of performance, the specific technology provided, and the support services required for the proposed projects. All contractual amendments will be processed in accordance with Galveston County Purchasing Policies and Procedures.

Amendments will also be brought to Galveston County Commissioners' Court for approval as deemed necessary. The approval process serves to ensure the project technology and/or service is within the scope of the resultant contract, and that pricing meets the agreed upon pricing methodology as specified in the contract, and that funds are available.

Bidder shall correctly and fully execute the resultant contract first. After this, the contract shall be set for consideration by the Commissioners' Court. If the Commissioners' Court authorizes the execution of the contract, the resultant contract shall become effective upon the Commissioners' Court execution of same, provided that the contract is executed by all parties to the contract. Contract documents shall consist of the contract, the General and Special Provisions, drawings, solicitation package (including best and final offer(s) if such is utilized), any addenda issued, and any change orders issued during the work. If

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applicable to the attached Bid, Bidder must sign three (3) original contracts and return all three with their Bid submittal.

The Contractor shall procure all permits, licenses, certificates, or any such approvals of plans or specifications as may be required by federal, state, and local laws, ordinances, rules, and regulations, for the proper execution and completion of the work under the resultant agreement.

The Contractor is responsible for all damage or loss by fire, theft or otherwise, to materials, tools, equipment, and consumables, left on County property by the contractor.

The resultant agreement is considered a non-exclusive agreement between the parties.

The successful contractor hereby certifies that this agreement is made without prior understanding, agreement or connection with any corporation, firm or person who submitted bids for the Work covered by The resultant agreement and is in all respects fair and without collusion or fraud. As to Contractor, the successful contractor hereby warrants and certifies that he/she is authorized to enter into this agreement and to execute same on behalf of the Contractor as the act of the said Contractor.

The agreement, including the General and Special Conditions and all amendments or addenda issued by the county, contains all the terms and conditions agreed upon by the parties. No other agreements, oral or otherwise, regarding the subject matter of the resultant agreement shall be deemed to exist or to bind either party hereto.

*To satisfy cost reasonableness responsibilities at the time of any extension period, the County of Galveston reserves the right to obtain additional quotes and current pricing information from the successful contractor and other contractors to perform the work as stated per the specification listed herein and in the resultant. The solicited results may be used by the County to determine if the contract extensions will be considered, or other service options be utilized.*

#### 23. CONTRACT TERM

The term of the resultant contract will begin on the date of full execution or the execution by the Commissioners' Court, whichever is later, and will terminate on the date specified in the resultant contract unless terminated earlier as herein set forth.

#### 24. COLLATERAL CONTRACT

The County reserves the right to provide by separate contract or otherwise, in such manner as not to delay its programs or damage said Contractor, all labor and material essential to the completion of the work that is not included in this contract.

Award prices include all royalties and costs arising from patents, trademarks, and copyrights in any way involved in the work. Whenever the Awardee is required or desires to use any design, device, material or process covered by letters of patent or copyright, the Awardee shall indemnify and save harmless the County, its officers, agents and employees from any and all claims for infringement by reason of the use of any such patented design, tool, material, equipment, or process, to be performed under the contract, and shall indemnify the County its officers, agents, and employees for any costs, expenses and damages which may be incurred by reason of any infringement at any time during the prosecution or after the completion of the work.

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#### 25. TERMINATION FOR DEFAULT

Failure of either party in the performance of any of the provisions of this contract shall constitute a breach of contract, in which case either party may require corrective action within ten (10) business days from date of receipt of written notice citing the exact nature of such breach. Failure of the party being notified to take corrective action within the prescribed ten (10) business days, or failure to provide written reply of why no breach has occurred, shall constitute a Default of Contract.

All notices relating to default by Bidder of the provisions of the contract shall be issued by the County through its Legal counsel, and all replies shall be made in writing to the County's legal counsel. Notices issued by or issued to anyone other than the County's legal counsel shall be null and void and shall be considered as not having been issued or received.

Galveston County reserves the right to enforce the performance of this contract in any manner prescribed by law in the event of breach or default of this contract, and may contract with another party, with or without solicitation of Bids or further negotiations. At a minimum, Bidder shall be required to pay any difference in service or materials, should it become necessary to contract with another source, plus reasonable administrative costs, and attorney fees.

In the event of Termination for Default, Galveston County, its agents, or representatives shall not be liable for loss of any profits anticipated to be made by Bidder.

In addition to the remedies stated herein, the County has the right to pursue other remedies permitted by law or in equity.

No waiver by either party of any event of default under this agreement shall operate as a waiver of any subsequent default under the terms of this agreement.

County reserves the right to terminate this contract immediately in the event Bidder:

- A. Fails to meet delivery or completion schedules; and/or
- B. Fails to otherwise perform in accordance with the accepted Bid and the contract.

#### 26. TERMINATION FOR CONVENIENCE

County may terminate this contract upon at least thirty (30) calendar days prior written notice for its convenience or for any reason deemed by the County to serve the public interest. As well, County may terminate this contract upon thirty (30) calendar days prior written notice for any reason resulting from any governmental law, order, ordinance, regulation, or court order. In no event shall County be liable for loss of any profits anticipated to be made hereunder by Bidder should this contract be terminated early.

#### 27. FORCE MAJEURE

If by reason of Force Majeure either Party shall be rendered unable, wholly or in part, to carry out its responsibilities under this contract by any occurrence by reason of Force Majeure, then the Party unable to carry out its responsibility shall give the other Party notice and full particulars of such Force Majeure in writing within a reasonable time after the occurrence of the event, and such notice shall suspend the Party's responsibility for the continuance of the Force Majeure claimed, but for no longer period.

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Force Majeure means acts of God, floods, hurricanes, tropical storms, tornadoes, earthquakes, or other natural disasters, acts of a public enemy, acts of terrorism, sovereign conduct, riots, civil commotion, strikes or lockouts, and other causes that are not occasioned by either Party's conduct which by the exercise of due diligence the Party is unable to overcome, and which substantially interferes with operations.

#### **28. ESTIMATED QUANTITIES**

Any reference to quantities shown in the request for Bid is an estimate only. Since the exact quantities cannot be predetermined, the County reserves the right to adjust quantities as deemed necessary to meet its requirements.

#### **29. CONTRACTOR INVESTIGATION**

Before submitting a Bid, each Bidder shall make all investigations and examinations necessary to ascertain all site conditions and requirements affecting the full performance of the contract and to verify any representations made by the County upon which the contractor will rely. Bidder shall exercise due diligence and is further charged with knowledge of the local, State, and Federal laws, rules, and regulations applicable to this contract. If the Bidder receives an award as a result of its Bid submission in this procurement, the Bidder's failure to have made such investigations and examinations will in no way relieve the Bidder from its obligation to comply in every detail with all provisions and requirements of the contract, nor will a plea of ignorance of such conditions and requirements be accepted as a basis for any claim whatsoever by the contractor for additional compensation and/or for excused nonperformance.

#### **30. NO COMMITMENT BY COUNTY OF GALVESTON**

This request for procurement does not commit the County of Galveston to award any costs or pay any costs, or to award any contract, or to pay any costs associated with or incurred in the preparation of a Bid in response to this request for Bid and does not commit the County of Galveston to procure or contract for services or supplies.

#### **31. BID COSTS BORNE BY BIDDER**

Galveston County shall not be liable for any costs incurred by Bidder in preparation, production, or submission of a Bid, including but not limited to best and final offer if applicable. As well, Galveston County shall not be liable for any work performed by Bidder prior to issuance of fully executed contract and properly issued notice to proceed. Galveston County shall not be liable for any costs incurred by Bidder by reason of attending a pre-Bid conference. Galveston County shall not be liable for any costs incurred by Bidder by reason of the County invoking use of best and final offers.

#### **32. BEST AND FINAL OFFERS (BAFO)**

In acceptance of Bids, the County reserves the right to negotiate further with one or more of the Bidders as to any features of their Bids and to accept modifications of the work and price when such action will be in the best interest of the County. This includes, but is not limited to, the solicitation of a Best and Final Offer from one or more of the Bidders. If a Best and Final Offer is invoked, this allows acceptable Bidders the opportunity to amend, change, or supplement their original Bid. Bidders may be contacted in writing by the Purchasing Agent, requesting that they submit their Best and Final Offer. Any such Best and Final Offer must include discussed and negotiated changes.

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#### 33. SINGLE BID RESPONSE

If only one Bid is received in response to the request for Bid, a detailed cost Bid may be requested of the single Bidder. A cost/price analysis and evaluation and/or audit may be performed of the cost Bid to determine if the price is fair and reasonable.

#### 34. CHANGES IN SPECIFICATIONS

If it becomes necessary to revise any part of this Bid, a written notice of such revision will be provided to all Bidders in the form of addenda. The County is not bound by any oral representations, clarifications, or changes made in the written specifications by the County's employees or officials, unless such clarification or change is provided to Bidders in a written addendum from the Purchasing Agent. Bidders are advised to inquire prior to the submission deadline as to whether any addenda to this request for Bid have been issued, as the successful Bidder will be required to abide by such addenda.

The County of Galveston reserves the right to revise or amend the specifications up to the time set for opening of Bids. Such revisions and amendments, if any, shall be announced by form of addenda. Copies of such addenda (or addendum in the event only one addendum is issued in the procurement) shall be furnished to all prospective contractors. Prospective contractors are defined as those contractors listed on the County's request for Bid list for this material/service or those who have obtained documents from the Purchasing Agent's Office subsequent to the advertisement. If revisions and amendments require changes in quantities or prices proposed, or both, the date set for opening of Bids may be postponed by such number of days as in the opinion of the County shall enable prospective contractors to revise their Bids. In any case, the Bid opening shall be at least seven (7) business days after the last revising or amendment addendum and the addendum shall include an announcement of the new date, if applicable, for the opening of Bids.

#### 35. BID IDEAS AND CONCEPTS

The County reserves to itself the right to adopt or use for its benefit, any concept, plan, or idea contained in any Bid.

#### 36. BID DISCLOSURES

While this procurement is pending, the names of those who submitted Bids will not be made public unless in conformity with the County Purchasing Act. Likewise, no pricing, staffing, or other contents of the Bid information will be released unless in conformity with the County Purchasing Act. Bidders are requested to withhold all inquiries regarding their Bid or other submissions until after an award is made. No communication is to be had with any County employee or official, other than the County Purchasing Agent, regarding whether a Bid was received - violations of this provision may result in the rejection of a Bid.

#### 37. INDEMNIFICATION

**The contractor agrees to assume all risks and responsibility for, and agrees to indemnify, defend, and save harmless, the County of Galveston, its elected and appointed officials and department heads, and its agents and employees from and against all claims, demands, suits, actions, recoveries, judgments, and costs and expenses including reasonable attorney's fees for the defense thereof, arising out of or in connection therewith on account of the loss of life, property or injury or damage to the person which shall arise from contractor's operations under this contract, its use of County facilities and/or equipment or from any other breach on the part of the contractor, its employees,**

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**agents or any person(s), in or about the County's facilities with the expressed or implied consent of the County. Contractor shall pay any judgment with cost which may be obtained against Galveston County resulting from contractor's operations under this contract.**

**Contractor agrees to indemnify and hold the County harmless from all claims of subcontractors, laborers incurred in the performance of this contract. Contractor shall furnish satisfactory evidence that all obligations of this nature herein above designated have been paid, discharged or waived. If Contractor fails to do so, then the County reserves the right to pay unpaid bills of which County has written notice direct and withhold from Contractor's unpaid compensation a sum of money reasonably sufficient to liquidate any and all such lawful claims.**

#### 38. REQUIREMENT OF AND PROOF OF INSURANCE

The successful Bidder shall furnish evidence of insurance to the County Purchasing Agent and shall maintain such insurance as required hereunder or as may be required in the Special Provisions or resultant contract, if different. Contractor shall obtain and thereafter continuously maintain in full force and effect, Commercial General Liability insurance, including but not limited to bodily injury, property damage, and contractual liability, with combined single limits as listed below or as may be required by State or Federal law, whichever is greater.

- A. For damages arising out of bodily injury to or death of one person in any one accident:  
ONE HUNDRED THOUSAND AND NO/100 (\$100,000.00) DOLLARS.
- B. For damages arising out of bodily injury to or death of two or more persons in any one accident:  
THREE HUNDRED THOUSAND AND NO/100 (\$300,000.00) DOLLARS.
- C. For any injury to or destruction of property in any one accident:  
ONE HUNDRED THOUSAND AND NO/100 (\$100,000.00) DOLLARS.

**Insurance shall be placed with insurers having an A.M. Best's rating of no less than A.** Such insurance must be issued by a casualty company authorized to do business in the State of Texas, and in standard form approved by the Board of Insurance Commissioners of the State of Texas, with coverage provisions ensuring the public from loss or damage that may arise to any person or property by reason of services rendered by Contractor.

**Galveston County shall be listed as the additional insured on policy certificates and shall be provided with no less than thirty (30) calendar days prior notice of any changes to the policy during the contractual period.**

Certificates of Insurance, fully executed by a licensed representative of the insurance company written or countersigned by an authorized Texas state agency, shall be filed with the County Purchasing Agent within ten (10) business days of issuance of notification from the County Purchasing Agent to Bidder that the contract is being activated as written proof of such insurance and further provided that Bidder shall not commence work under this contract until it has obtained all insurance required herein, provided written proof as required herein, and received written notice to proceed issued from the County Purchasing Agent.

Proof of renewal/replacement coverage shall be provided prior to the expiration, termination, or cancellation date of any policy and Galveston County shall be named as an additional insured on any such renewal/replacement coverage and a certificate of insurance showing such shall be provided to the

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Purchasing Agent. Said insurance shall not be cancelled, permitted to expire, or changed without at least thirty (30) days prior written notice to the County.

Insurance required herein shall be maintained in full force and effect during the life of this contract and shall be issued on an occurrence basis. Contractor shall require that any and all subcontractors that are not protected under the Contractor's own insurance policies take and maintain insurance of the same nature and in the same amounts as required of Contractor and provide written proof of such insurance to Contractor. Proof of renewed/replacement coverage shall be provided prior to the expiration, termination, or cancellation date of any policy. Contractor shall not allow any subcontractor to commence work on the subcontract until such insurance required for the subcontractor has been obtained and approved.

**Workers' Compensation Insurance:** Successful Bidder shall carry in full force Workers' Compensation Insurance Policy(ies), if there is more than one employee, for all its' employees, including but not limited to full time, part time, and emergency employees employed by the successful Bidder. Current insurance certificates certifying that such policies as specified above are in full force and effect shall be furnished by successful Bidder to the County.

Insurance is to be placed with insurers having a Best rating of no less than A. The Bidder shall furnish the County with certificates of insurance and original endorsements affecting coverage required by these insurance clauses within ten (10) business days of receiving notification from the County Purchasing Agent that the contract is being activated. The certificates and endorsements for each insurance policy are to be signed by a person authorized by the insurer to bind coverage on its behalf. The Bidder shall be required to submit annual renewals for the term of this contract prior to expiration of any policy.

In addition to the remedies stated herein, the County has the right to pursue other remedies permitted by law or in equity.

The County agrees to provide Bidder with reasonable and timely notice of any claim, demand, or cause of action made or brought against the County arising out of or related to utilization of the property. Bidder shall have the right to defend any such claim, demand, or cause of action at its sole cost and expense and within its sole and exclusive discretion. The County agrees not to compromise or settle any claim or cause of action arising out of or related to the utilization of the property without the prior written consent of the Bidder.

In no event shall the County be liable for any damage to or destruction of any property belonging to the Bidder.

**Subrogation Waiver.** Bidder and Bidder's insurance carrier waive any and all rights to subrogation against Galveston County in regard to any suit or claim arising out of personal injury or property damage resulting from Bidder's performance under this agreement.

#### 39. BID GUARANTEE

Unless specified differently within the Special Provisions of this procurement, each Bidder shall be required to submit a Bid guarantee with its Bid as required within this Section.

Evidencing its firm commitment to engage in contract if Bidder is selected for award of contract, each Bidder is required to furnish with their bid a cashier's check or an acceptable Bidder's bond (generally, a bid bond) in the amount of five percent (5%) of the total contract price. If Bidder is using a bond, then the



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bond must be executed with a surety company authorized to do business in the State of Texas. Failure to furnish the Bid guarantee in the proper form and amount, by the time set for opening of Bids may be cause for rejection of the Bid.

The cashier's check or Bidder bond (as applicable) will be returned to each respective unsuccessful Bidder(s) after the Commissioners' Court award of contract and shall be returned to the successful Bidder upon the completion and submission of all contract documents. Provided however, that the cashier's check or Bidder bond will be forfeited to the County as liquidated damages should successful Bidder fail to execute the contract within thirty (30) days after receiving notice of the acceptance of its Bid.

#### **40. PERFORMANCE AND PAYMENT BONDS (if required)**

Successful Bidder, before beginning work, shall execute a performance bond and a payment bond, each of which must be in the amount of the contract. The required payment and performance bonds must each be executed by a corporate surety authorized to write surety bonds in the State of Texas and in accordance with Chapter 3503 of the Insurance Code (codified in 2005 and originally within Section 1, Chapter 87, Acts of the 56<sup>th</sup> Leg., R.S., 1959, and in Article 7.19-1, Vernon's Texas Insurance Code).

The performance and payment bonds must each clearly and prominently display on the bond or on an attachment to the bond:

- a.) The name, mailing address, physical address, and telephone number, including the area code, of the surety company to which any notice of claim should be sent; or
- b.) The toll-free telephone number maintained by the Texas Department of Insurance under Subchapter B, Chapter 521, Insurance Code, and a statement that the address of the surety company to which any notice of claim should be sent may be obtained from the Texas Department of Insurance by calling the toll free-telephone number.

The performance bond shall be solely for the protection of Galveston County, in the full amount of the contract, and conditioned on the faithful performance of the work in accordance with the plans, specifications, and contract documents. The payment bond is solely for the protection and use of payment bond beneficiaries who have a direct contractual relationship with the prime contractor or a subcontractor to supply labor or material, and in the amount of the contract.

The payment and performance bonds required to be furnished herein must be furnished before the contractor begins work and are a requirement for issuance of a Notice to Proceed. Such bonds must be furnished to the Galveston County Purchasing Agent within thirty (30) calendar days after the date of the full execution of the contract or, if applicable, as required under Chapter 2253, Government Code, whichever is earlier. Contractor's failure to provide the required payment and performance bonds within such time period shall constitute an event of default under this contract. Contractor shall not commence work until all applicable certificates of insurance, performance bonds, and payment bonds have been received and approved by the County Purchasing Agent and the Contractor receives notice to proceed in writing that has been issued by the County Purchasing Agent.

Additionally, if this request for Bid is for the award of a public works contract, then compliance with Chapter 2253 of the Texas Government Code, which is known as the McGregor Act, is mandatory. Performance and payment bonds are required to be furnished in accordance with Chapter 2253 of the Texas

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Government Code. Bidder should familiarize itself with the entire provisions of Chapter 2253 of the Texas Government Code.

#### 41. PATENT AND COPYRIGHT PROTECTION

The Bidder agrees at its sole expense to protect the County from claims involving infringement of patents, copyright, trademark, trade secret, or other intellectual property rights. **Bidder shall indemnify and save harmless the County of Galveston, its officers, employees, and agents, from liability of any nature and kind whatsoever, including without limitation cost and expenses, for or on account of any copyrighted, trademarked, trade secret, patented or un-patented invention, process, or article manufactured or used in the performance of the contract, or other intellectual property rights, including its use by the County.** Bidder also agrees that if Bidder is awarded this contract, that no work performed hereunder shall be subject to patent, copyright, or other intellectual property by Bidder.

#### 42. CONFLICT OF INTEREST DISCLOSURE REPORTING (FORM CIQ)

Bidder may be required under Chapter 176 of the Texas Local Government Code to complete and file a Conflict-of-Interest Questionnaire (CIQ Form). The CIQ Form pertains to business relationship, gift giving and family relationship reporting. If Bidder is required to file a CIQ Form, then **the completed CIQ Form must be filed with the County Clerk of Galveston County, Texas.**

**Business relationship.** If Bidder has an employment or other business relationship with a local government officer of Galveston County or with a family member of a local government officer of Galveston County that results in the officer or family member of the officer receiving taxable income that exceeds \$2,500.00 during the preceding 12-month period, then Bidder **MUST** complete a CIQ Form and file the original of the CIQ Form with the County Clerk of Galveston County.

**Gift-giving.** If Bidder has given a local government officer of Galveston County or a family member of a local government officer of Galveston County one or more gifts with an aggregate value of more than one-hundred dollars (\$100.00) during the preceding 12-months, then Bidder **MUST** complete a CIQ Form and file the original of the CIQ Form with the County Clerk of Galveston County.

**Family member.** For purposes of the business relationship and gift giving reporting requirements, a “family member” means a person related to another person with the first degree of consanguinity or affinity, as described by Subchapter B, Chapter 573, Texas Government Code. Examples of persons within the first degree by consanguinity or affinity include a son, daughter, father, mother, spouse, son-in-law, daughter-in-law, father-in-law, mother-in-law, stepson, stepdaughter, stepmother, and stepfather.

**Family relationship.** If Bidder has a “family relationship” with a local government officer of Galveston County then Bidder **MUST** complete a CIQ Form and file the original of the CIQ Form with the County Clerk of Galveston County, regardless of whether Bidder has a business relationship or has given gifts to the local government officer or a family member of the local government officer. For this purpose, “family relationship” means Bidder is related within the third degree by consanguinity or the second degree by affinity, as those terms are defined under Chapter 573 of the Texas Government Code, to a local government officer of Galveston County. Examples of such relationships include a son, daughter, mother, father, brother, sister, grandchild, great-grandchild, grandparent, great-grandparent, niece, nephew, uncle, aunt, spouse, mother-in-law, father-in-law, daughter-in-law, son-in-law, spouse’s grandchild, spouse’s grandparent, grandparent’s spouse, grandchild’s spouse, stepson, stepdaughter, stepmother, and stepfather.

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Bidder must file its original CIQ Form with the Galveston County Clerk. The Galveston County Clerk has offices at the following locations:

**Galveston County Clerk**

Galveston County Justice Center, Suite 2001  
600 59<sup>th</sup> Street  
Galveston, Texas 77551

**Galveston County Clerk**

North County Annex, 1<sup>st</sup> Floor  
174 Calder Road  
League City, Texas 77573

Again, if Bidder is required to file a CIQ Form, the original completed form is filed with the Galveston County Clerk (**not the Purchasing Agent**).

For Bidder's convenience, a blank CIQ Form is enclosed with this Bid package. Blank CIQ Form(s) may also be obtained by visiting the Purchasing Agent's website. This website is linked from the Galveston County homepage, at <http://www.galvestoncountytexas.gov>.

Chapter 176 specifies deadlines for the filing of CIQ Forms (both initial filings and updated filings).

It is Bidder's sole responsibility to file a true and complete CIQ Form with the Galveston County Clerk if Bidder is required to file by the requirements of Chapter 176 of the Local Government Code. Bidder is advised that it is an offense to fail to comply with the disclosure reporting requirements dictated under Chapter 176 of the Texas Local Government Code, and the failure to file may be grounds to void the contract, if Bidder is awarded a contract.

If Bidder has any questions about compliance with Chapter 176, Bidder may wish to consult its' legal counsel. Compliance is the individual responsibility of each person, business, and agent who is subject to Chapter 176 of the Texas Local Government Code.

#### 43. DISCLOSURE OF INTERESTED PARTIES/FORM 1295

Under Section 2252.908 of the Government Code, any business entity that enters into a contract with Galveston County that requires the approval of the Commissioners' Court must submit a "Disclosure of Interested Parties" to the County prior to the execution of the contract. This form, the "Disclosure of Interested Parties" form was promulgated by the Texas Ethics Commission and is the "Form 1295". **This procurement is subject to these requirements.**

The Texas Ethics Commission was charged with promulgating rules to implement Section 2252.908 of the Government Code. The rules adopted by the Texas Ethics Commission are located at Sections 46.1, 46.3, and 46.5 of Title 1 of the Texas Administrative Code. Thus, the law covering these requirements is located at Section 2252.908 of the Government Code, and in Title 1, Sections 46.1, 46.3, and 46.5 of the Texas Administrative Code.

The Texas Ethics Commission's website is: [www.ethics.state.tx.us](http://www.ethics.state.tx.us). The area of the Texas Ethics Commission website pertaining to Form 1295 is:

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[www.ethics.state.tx.us/whatsnew/elf\\_info\\_form1295.htm](http://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm).

**Form 1295 must be completed electronically through the Texas Ethics Commission website** (handwritten forms are not allowable). Once the business entity has completed their electronic filing of Form 1295, then the business entity must print out the electronically completed form, and sign and notarize the Form 1295. Once Form 1295 is signed and notarized, the business entity must submit their completed, signed, and notarized Form 1295 to the Galveston County Purchasing Agent.

**Successful Bidder is and shall be subject to these requirements, and no resultant contract may be executed by the Commissioners' Court until the completed, signed, and notarized Form 1295 is on file with the County Purchasing Agent.**

**No portion of the Form 1295 process commits the County to any type of award of contract whatsoever.**

After the Purchasing Agent's Office receives the completed, signed, and notarized Form 1295, the Purchasing Department representative will, within 30 days, go to the Texas Ethics Commission website to submit electronic confirmation of the County's receipt of the completed, signed, and notarized Form 1295.

#### **44. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS & REQUIREMENT TO REGISTER IN SAM**

Bidder certifies that neither it, nor any of its Principals, are presently debarred, suspended, proposed for debarment, disqualified, excluded, or in any way declared ineligible for the award of contracts by any Federal agency. Contractor agrees that it shall refund Galveston County for any payments made to Contractor while ineligible. Contractor acknowledges that Contractor's uncured failure to perform under this Agreement, if such should occur, may result in Contractor being debarred from performing additional work for the County, the respecting State Agency administering the grant funding the contract, if applicable, the State, FEMA, or HUD (as applicable), and other Federal and State entities. Further, Bidder has executed the Certification Regarding Debarment, Suspension, Proposed Debarment, and Other Responsibility Matters and returned the fully completed and executed original certification with the submission of its Bid.

**The truthful and fully completed and executed original of the Certification Regarding Debarment, Suspension, Proposed Debarment, and Other Responsibility Matters must be included with the submission of Bidder's Bid and is a mandatory requirement of this request for Bid. Bidder's failure to include the fully completed and executed original of this Certification shall be considered non-compliance with the requirements of this request for Bid and grounds for the rejection of Bidder's Bid.**

Bidder shall immediately notify the County Purchasing Agent if it becomes debarred or suspended, placed on the Consolidated List of Debarred Contractors, or in any other way becomes ineligible for award of contract by any Federal agency. This Certification is a material fact relied upon by Galveston County; if it is later determined that the contractor did not comply with 2 C.F.R. Part 180 and 2 C.F.R. Part 3000, in addition to the remedies available to Galveston County and the State agency administering this grant, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment of contractor.

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If the contract to be awarded pursuant to this procurement involves the use of Federal funds, then Bidder must also be registered in the Federal Contractor Registry through the System for Award Management (SAM) to be eligible for award of contract pursuant to this procurement.

Information regarding the SAM is available at:

<http://www.federalcontractorregistry.com/?gclid=CIG1hf2rr8wCFYkCaQoducANZw> or at  
<https://www.sam.gov/portal/SAM/#1>.

No contract involving the use of Federal funds may be awarded to any Bidder unless and until such registration is current and in good standing under SAM. Successful Bidder must maintain SAM registration throughout the entire term of the agreement with the County. If this contract involves the use of Federal funds, then Bidder must enclose proof of such SAM registration within its response, which is also a mandatory requirement of this procurement; failure to enclose such proof shall be considered non-compliance with the requirements of this procurement and grounds for the rejection of Bidder's response to this procurement (i.e., bid, Bid, or qualifications statement, as applicable).

#### 45. TRANSACTIONS WITH TERRORIST ORGANIZATIONS PROHIBITED

(Texas Government Code 2252.151; 2252.152) Prohibition on contracts with certain companies per Government Code 2252.151 Definitions:

(1) **"Company"** has the meaning assigned by Section 806.001.

(2) **"Foreign terrorist organization"** means an organization designated as a foreign terrorist organization by the United States secretary of state as authorized by 8 U.S.C. Section 1189.

(3) **"Governmental contract"** means a contract awarded by a governmental entity for general construction, an improvement, a service, or a public works project for a purchase of supplies, materials, or equipment. The term includes a contract to obtain a professional or consulting service subject to Government Code, Chapter 2254.

(4) **"Governmental entity"** has the meaning assigned by Government Code, Section 2252.001.

Pursuant to Chapter 2252, Texas Government Code, Contractor shall certify that, at the time of execution of this Contract, neither the Contractor, nor any wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of the same (1) engages in business with Iran, Sudan, or any foreign terrorist organization as described in Chapters 806 or 807 of the Texas Government Code, or Subchapter F of Chapter 2252 of the Texas Government Code, or (2) is a company listed by the Texas Comptroller of Public Accounts under Sections 806.051, 807.051, or 2252.153 of the Texas Government Code.

#### 46. VERIFICATION NOT TO BOYCOTT ISRAEL

Prohibition on contracts with companies boycotting Israel per Government Code 2271.001 Definitions:

(1) **"Boycott Israel"** has the meaning assigned by Section 808.001.

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### INFORMATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

(2) "**Company**" has the meaning assigned by Section 808.001; except that the term does not include a sole proprietorship.

(2) "**Governmental entity**" has the meaning assigned by Government Code, Section 2251.001.

PROVISION REQUIRED IN CONTRACT. (a) This section applies only to a contract that:

(1) is between a governmental entity and a company with 10 or more full-time employees; and

(2) has a value of \$100,000 or more that is to be paid wholly or partly from public funds of the governmental entity.

(b) A governmental entity may not enter into a contract with a company for goods or services unless the contract contains a written verification from the company that it:

(1) does not boycott Israel; and

(2) will not boycott Israel during the term of the contract.

As required by GOVERNMENT CODE, CHAPTER 2271, **CONTRACTOR hereby verifies that it does not boycott Israel and will not boycott Israel throughout the term of this Agreement.** For the purposes of this verification, "Boycott Israel" means refusing to deal with, terminating business activities, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes.

#### 47. SOVEREIGN IMMUNITY

The County specifically reserves any claim it may have to sovereign, qualified, or official immunity as a defense to any action arising in conjunction with this contract.

#### 48. CONTROLLING LAW AND VENUE

Bidder acknowledges and agrees that the contract is and shall be governed and construed by the laws of the State of Texas and that venue shall lie exclusively in a court of competent jurisdiction in Galveston County, Texas.

#### 49. MERGERS, ACQUISITIONS

The Bidder shall be required to notify the County of any potential for merger or acquisition of which there is knowledge at the time that a Bid is submitted.

If subsequent to the award of any contract resulting from this request for Bid the Bidder shall merge or be acquired by another firm, the following documents must be submitted to the County:

- A. Corporate resolutions prepared by the awarded Bidder and the new entity ratifying acceptance of the original contract, terms, conditions and prices;
- B. New entity's Federal Identification Number (FEIN);
- C. New entity's proposed operating plans;
- D. New entity's proof of registration in SAM for contracts involving Federal funds;
- E. New entity's certification regarding debarment;

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- F. New entity's certification regarding lobbying; and
- G. W-9 Form for new entity

Moreover, Bidder is required to provide the County with notice of any anticipated merger or acquisition as soon as Bidder has actual knowledge of the anticipated merger or acquisition. The New Bidder's proposed plan of operation must be submitted prior to merger to allow time for submission of such plan to the Commissioners' Court for its approval.

#### **50. DELAYS**

The County reserves the right to delay the scheduled commencement date of the contract if it is to the advantage of the County. There shall be no additional costs attributed to these delays should any occur. Bidder agrees it will make no claims for damages, for damages for lost revenues, for damages caused by breach of contract with third parties, or any other claim by Bidder attributed to these delays, should any occur. In addition, Bidder agrees that any contract it enters into with any third party in anticipation of the commencement of the contract will contain a statement that the third party will similarly make no claim for damages based on delay of the scheduled commencement date of the contract.

#### **51. ACCURACY OF DATA**

Information and data provided through this request for Bid are believed to be reasonably accurate.

#### **52. SUBCONTRACTING/ASSIGNMENT**

Bidder shall not assign, sell, or otherwise transfer its contract in whole or in part without prior written permission of the County acting by and through its Commissioners' Court. Such consent, if granted, shall not relieve the Bidder of any of its responsibilities under this contract.

#### **53. INDEPENDENT CONTRACTOR**

Bidder expressly acknowledges that it is an independent contractor. Nothing in this agreement is intended nor shall be construed to create an agency relationship, an employer/employee relationship, a joint venture relationship, or any other relationship allowing County to exercise control or direction over the manner or method by which Bidder or Bidder's subcontractors perform in providing the requirements stated in the request for Bid.

#### **54. MONITORING PERFORMANCE**

The County shall have the unfettered right to monitor and audit the Bidder's work in every respect. In this regard, the Bidder shall provide its full cooperation and ensure the cooperation of its employees, agents, assigns, and subcontractors. Further, the Bidder shall make available for inspection and/or copying when requested, original data, records, and accounts relating to the Bidder's work and performance under this contract. In the event any such material is not held by the Bidder in its original form, a true copy shall be provided.

#### **55. SUBJECT TO APPROPRIATION OF FUNDS**

State law prohibits the obligation and expenditure of public funds beyond the fiscal year for which a budget has been approved by the Commissioners' Court. Galveston County anticipates this to be an integral part of future

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### **INFORMATION TO BID**

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budgets to be approved during the periods of this contract, except for unanticipated needs or events which may prevent such payments against this contract. However, Galveston County cannot guarantee the availability of funds, and enters into this contract only to the extent such funds are made available through appropriation (allocation) by the Commissioners' Court. This contract shall not be construed as creating any debt on behalf of the County of Galveston in violation of TEX. CONST. art. XI, § 7, and it is understood that all obligations of Galveston County are subject to the availability of funds.

#### **56. CONTRACTS SUBJECT TO GRANT FUNDING**

Notwithstanding the foregoing, if the contract to be awarded by this procurement is funded with Federal or State grant funds, the Bidder acknowledges that the obligations of the County under the contract are contingent upon the continued availability of grant funding to meet the County's obligations. If the grant(s) to the County is reduced, de-obligated, or otherwise discontinued or terminated, Contractor agrees that the County may immediately terminate the contract without penalty or any liability whatsoever on the part of the County, the State, or the Federal awarding agency.

#### **57. PROCUREMENT ETHICS**

Galveston County is committed to the highest ethical standards. Therefore, it is a serious breach of the public trust to subvert the public purchasing process by directing purchases to certain favored vendors, or to tamper with the competitive bidding process, whether it's done for kickbacks, friendship or any other reason. Since misuse of the purchasing power of a local government carries criminal penalties, and many such misuses are from a lack of clear guidelines about what constitutes an abuse of office, the Code of Ethics outlined below must be strictly followed.

Galveston County also requires ethical conduct from those who do business with the County.

#### **CODE OF ETHICS – Statement of Purchasing Policy:**

Public employment is a public trust. It is the policy of Galveston County to promote and balance the objective of protecting the County's integrity and the objective of facilitating the recruitment and retention of personnel needed by Galveston County. Such policy is implemented by prescribing essential standards of ethical conduct without creating unnecessary obstacles to entering public office.

Public employees must discharge their duties impartially so as to assure fair competitive access to governmental procurement by responsible contractors. Moreover, they should conduct themselves in such a manner as to foster public confidence in the integrity of the Galveston County procurement organization.

To achieve the purpose of this Article, it is essential that those doing business with Galveston County also observe the ethical standards prescribed herein.

#### **General Ethical Standards:**

It shall be a breach of ethics to attempt to realize personal gain through public employment with Galveston County by any conduct inconsistent with the proper discharge of the employee's duties.

It shall be a breach of ethics to attempt to influence any public employee of Galveston County to breach the standards of ethical conduct set forth in this code.



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It shall be a breach of ethics for any employee of Galveston County to participate directly or indirectly in a procurement when the employee knows that:

- The employee or any member of the employee's family, has a financial interest pertaining to the procurement;
- A business or organization in which the employee or any member of the employee's family, has a financial interest pertaining to the procurement; or
- Any other person, business, or organization with which the employee or any member of the employee's family is negotiating or has an arrangement concerning prospective employment is involved in the procurement.

#### **Gratuities:**

It shall be a breach of ethics for any person to offer, give, or agree to give any employee or former employee of Galveston County, or for any employee or former employee of Galveston County to solicit, demand, accept or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation of any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or bid pending before this government.

#### **Kickbacks:**

It shall be a breach of ethics for any payment, gratuity or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor for any contract for Galveston County, or to any person associated therewith, as an inducement for the award of a contract, subcontract or order.

#### **Contract Clause:**

The prohibition against gratuities and kickbacks prescribed above shall be conspicuously set forth in every contract and solicitation by Galveston County.

#### **Confidential Information:**

It shall be a breach of ethics for any employee or former employee of Galveston County to knowingly use confidential information for actual or anticipated personal gain, or for the actual or anticipated gain of any other person.

#### **Prohibition against Contingent Fees:**

It shall be a breach of ethical standards for a person to be retained, or to retain a person, to solicit or secure a Galveston County contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except for retention of bona fide employees or bona fide established commercial selling agencies for the purpose of securing business. Failure to abide by this section constitutes a breach of ethical standards.

#### **Representation:**

Bidder represents and warrants, by signing and submitting its Bid, that it has not retained anyone in violation of this section prohibiting contingent fees.

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**Contract Clause:**

The representation prescribed above shall be conspicuously set forth in every contract and solicitation thereof.

**58. NON-COLLUSION AFFIDAVIT**

Bidder certifies, by signing and submitting a Bid, that the Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the Bid is genuine and not collusive or sham; that the contractor has not directly or indirectly induced or solicited another contractor to put in a false or sham Bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any contractor or anyone else to put in a sham Bid or that anyone shall refrain from bidding; that the contractor has not in any manner, directly or indirectly, sought by agreement, communications, or conference with anyone to fix the bid price of the contractor or any other Bidder, or to fix any overhead, profit or cost element of the Bid price, or that of any other contractor, or to secure any advantage against the public body awarding the contract or anyone interested in the proposed contract; that all statements contained in the Bid are true; and further, that the contractor has not, directly or indirectly, submitted his or her Bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any cooperation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham Bid.

**A blank Non-Collusion Affidavit is included with this Bid packet. Bidder must enclose a truthful and fully executed original Non-Collusion Affidavit with the submission of its Bid. This is a mandatory requirement of this request for Bid. Failure to include the truthfully and fully executed Non-Collusion Affidavit in the submission of its Bid shall be considered non-compliance with the requirements of this request for Bid by the Bidder and grounds for the rejection of Bidder's submission.**

No negotiations, decisions, or actions shall be initiated by any company as a result of any verbal discussion with any County employee prior to the opening of responses to this request for Bid.

No officer or employee of the County of Galveston, and no other public or elected official, or employee, who may exercise any function or responsibilities in the review or approval of this undertaking shall have any personal or financial interest, direct or indirect, in any contract or negotiation process thereof. The above compliance request will be part of all County of Galveston contracts for this service.

**59. CERTIFICATION REGARDING LOBBYING – COMPLIANT WITH APPENDIX A TO 24 C.F.R. PART 871**

Bidder certifies that, to the best of his or her knowledge and belief, that:

- a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the bidder, to any person for influencing or attempting to influence a department or employee of an agency, a member of Congress, or an employee of a member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan or cooperative agreement.

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- b. If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence a department or employee of any agency, a member of Congress, a department or employee of congress, or an employee of a member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, **the bidder shall complete and submit Standard Form LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.**
- c. Bidder shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of the certification is a prerequisite for making or entering into a contract with Bidder and is imposed by Section 1352, Title 31, United States Code. Further, any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

**The truthful and fully completed and executed original of the Certification Regarding Lobbying (included with bid packet) must be included with the submission of Bidder's Bid and is a mandatory requirement of this request for Bid. Bidder's failure to include the fully completed and executed or original of this Certification shall be considered non-compliant with the requirements of this request for Bid and grounds for the rejection of the Bidder's Bid.**

#### 60. NON-DISCRIMINATION

- a. **Equal Employment Opportunity:** Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, disability, genetic information or veteran status. Bidder will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, national origin, sex, disability, genetic information or veteran status. Such action shall include, but not be 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 for training, including apprenticeship. Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices of employment.

Bidder will, in all solicitation or advertisements for employees placed by or on behalf of Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, sex, disability, genetic information, or veteran status.

Bidder will cause the foregoing provisions to be inserted in all subcontracts for any work covered by this Agreement so that such provisions will be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

Bidder will include the provisions herein in every subcontract or purchase order unless exempted.

- b. **Drug Free Work Place Act:** Bidder shall comply with all applicable requirements of the Drug-Free Workplace Act of 1988 (Public Law 100-690, Title V, Subtitle D; 41 U.S.C. § 8102, et seq.) and implementing regulations thereunder.

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### INFORMATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

- c. Americans with Disabilities Act: Bidder shall comply with all applicable provisions of the Americans with Disabilities Act of 1990 (Public Law 101-136) and implementing regulations thereunder.
- d. OSHA Regulations: Bidder agrees to maintain and to display any applicable materials for its employees in accordance with OSHA regulations.
- e. Compliance with Immigration Laws and Use of E-Verify: Bidder agrees to comply with all requirements of the U.S. Immigration Reform and Control Act of 1986, as amended, and any implementing regulations thereto. Bidder further agrees to utilize the E-Verify system through the Department of Homeland Security on its employees. Bidder shall not employ unauthorized aliens and shall not assign services to be performed to any supplier or subcontractor who are unauthorized aliens. If any personnel performing any services hereunder are discovered to be an unauthorized alien, then Bidder will immediately remove such personnel from performing services hereunder and shall replace such personnel with personnel who are not unauthorized alien(s).
- f. State and Federal Law Compliance: Bidder agrees to comply with all other State and Federal laws and regulations applicable to the provision of services under this contract.
- g. The Contractor shall comply with the Age Discrimination Act of 1975 which provides that no person in the United States shall on the basis of age be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.

#### 61. RECORD RETENTION AND RIGHT TO AUDIT

Bidder shall keep and maintain all records associated with this contract for a minimum of five (5) years from the close of the contract or as required by Federal or State law or regulation, whichever period is longer. If awarded this contract, Bidder shall allow the County reasonable access to the records in Bidder's possession, custody, or control that the County deems necessary to assist it in auditing the services, costs, and payments provided hereunder. If this contract involves the use of Federal or State funds, then Bidder shall also allow reasonable access to representatives of the Office of Inspector General, the General Accounting Office, the State Auditor's Office, and the other Federal and/or State agencies overseeing the funds that such entities deem necessary to facilitate review by such agencies and Bidder shall maintain fiscal records and supporting documentation for all expenditures in a manner that conforms with OMB Circular A-87 (relocated to 2 C.F.R. Part 225) and this contract.

#### 62. TITLE VI ASSURANCES/TxDOT

The County is subject to Title VI of the Civil Rights Act of 1964 and the Federal and State laws and regulations of the United States Department of Transportation and Texas Department of Transportation (TxDOT). Pursuant to these requirements, the County must have its contractors provide required assurances on compliance with non-discrimination by itself and its subcontractors. The Title VI Assurances within this Subsection are not exhaustive – whenever any Federal, State, or Local requirement requires additional clauses, this list shall not be construed as limiting. Contractor agrees as follows:

- (1) **Compliance with Regulations:** The Contractor shall comply with the Regulations relative to nondiscrimination in Federally assisted programs of the Department of Transportation (hereinafter, DOT)

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Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are incorporated herein by reference and made a part of this contract.

- (2) **Non-discrimination:** The Contractor, with regard to the work performed by it during the contract, shall not discriminate on the basis of race, color, national origin, religion, sex, age, disability or Veteran status in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.
- (3) **Solicitations for Subcontractors, Including Procurement of Materials and Equipment:** In all solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, national origin, religion, sex, age, disability or Veteran status.
- (4) **Information and Reports:** The Contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information and its facilities as may be determined by the Galveston County or the Texas Department of Transportation to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of the Contractor is in the exclusive possession of another who fails or refuses to furnish this information the Contractor shall so certify to Galveston County or the Texas Department of Transportation as appropriate and shall set forth what efforts it has made to obtain the information.
- (5) **Sanctions for Non-compliance:** In the event of the Contractor's noncompliance with the nondiscrimination provisions of this contract, Galveston County shall impose such contract sanctions as it or the Texas Department of Transportation may determine to be appropriate, including, but not limited to:
  - (a) withholding of payments to the Contractor under the contract until the Contractor complies, and/or;
  - (b) cancellation, termination, or suspension of the contract, in whole or in part.
- (6) **Incorporation of Provisions.** The Contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurement of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as Galveston County or the Texas Department of Transportation may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that, in the event Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request Galveston County to enter into such litigation to protect the interests of Galveston County, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

## GENERAL PROVISIONS

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## 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

### 63. ASSURANCES FOR CONSTRUCTION PROGRAMS - TEXAS GENERAL LAND OFFICE (GLO)

The County is subject to Federal and State laws and regulations of the United States and The Texas General Land Office (GLO). Pursuant to these requirements, the County must have its contractors provide required assurances on compliance with non-discrimination by itself and its subcontractors. These Assurances within this Subsection are not exhaustive – whenever any Federal, State, or Local requirement requires additional clauses, this list shall not be construed as limiting. Contractor agrees as follows:

- (1) Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
- (2) Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
- (3) Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other non-discrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
- (4) Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
- (5) Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
- (6) Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits

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discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other non-discrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

- (7) Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal and federally assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
- (8) Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.
- (9) Will comply, as applicable, with the provisions of the Davis- Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333) regarding labor standards for federally assisted construction sub agreements.
- (10) Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
- (11) Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as

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amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93205).

- (12) Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
- (13) Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
- (14) Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
- (15) Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.
- (16) Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. 7104) which prohibits grant award recipients or a sub-recipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

#### **64. GENERAL AFFIRMATIONS – TEXAS GENERAL LAND OFFICE (GLO)**

To the extent they apply, affirms, and agrees to the following, without exception:

1. represents and warrants that, in accordance with Section 2155.005 of the Texas Government Code, neither nor the firm, corporation, partnership, or institution represented by , or anyone acting for such a firm, corporation, partnership, or institution has (1) violated any provision of the Texas Free Enterprise and Antitrust Act of 1983, Chapter 15 of the Texas Business and Commerce Code, or the federal antitrust laws, or (2) communicated directly or indirectly the contents of this Contract or any solicitation response upon which this Contract is based to any competitor or any other person engaged in the same line of business as .
2. If the Contract is for services, shall comply with Section 2155.4441 of the Texas Government Code, requiring the purchase of products and materials produced in the State of Texas in performing service contracts.
3. Under Section 231.006 of the Family Code, the vendor or applicant  certifies that the individual or business entity named in this Contract, bid or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this Contract may be terminated and payment may be withheld if this certification is inaccurate.



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4. A bid or an application for a contract, grant, or loan paid from state funds must include the name and social security number of the individual or sole proprietor and each partner, shareholder, or owner with an ownership interest of at least 25 percent of the business entity submitting the bid or application. certifies it has submitted this information to the GLO.
5. If the Contract is for the purchase or lease of computer equipment, as defined by Texas Health and Safety Code Section 361.952(2), certifies that it is in compliance with Subchapter Y, Chapter 361 of the Texas Health and Safety Code, related to the Computer Equipment Recycling Program and the Texas Commission on Environmental Quality rules in Title 30 Texas Administrative Code Chapter 328.
6. Pursuant to Section 2155.003 of the Texas Government Code, represents and warrants that it has not given, offered to give, nor intends to give at any time hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to a public servant in connection with the Contract.
7. Payments due under the Contract shall be directly applied towards eliminating any debt or delinquency owes to the State of Texas including, but not limited to, delinquent taxes, delinquent student loan payments, and delinquent child support.
8. Upon request of the GLO, shall provide copies of its most recent business continuity and disaster recovery plans.
9. If the Contract is for consulting services governed by Texas Government Code Chapter 2254, Subchapter B, in accordance with Section 2254.033 of the Texas Government Code, relating to consulting services, certifies that it does not employ an individual who has been employed by The GLO or another agency at any time during the two years preceding the 's submission of its offer to provide consulting services to the GLO or, in the alternative, , in its offer to provide consulting services to the GLO, disclosed the following: (i) the nature of the previous employment with the GLO or other state agency; (ii) the date the employment was terminated; and (iii) the annual rate of compensation for the employment at the time of its termination.
10. If the Contract is not for architecture, engineering, or construction services, except as otherwise provided by statute, rule, or regulation, must use the dispute resolution process provided for in Chapter 2260 of the Texas Government Code to attempt to resolve any dispute arising under the Contract. **NOTHING IN THIS SECTION SHALL BE CONSTRUED AS A WAIVER OF SOVEREIGN IMMUNITY BY THE GLO.**
11. If the Contract is for architecture, engineering, or construction services, subject to Texas Government Code, Section 2260.002 and Texas Civil Practice and Remedies Code Chapter 114, and except as otherwise provided by statute, rule, or regulation, shall use the dispute resolution process provided for in Chapter 2260 of the Texas Government Code to attempt to resolve all disputes arising under this Contract. Except as otherwise provided by statute, rule, or regulation, in accordance with the Texas Civil Practice and Remedies Code, Section 114.005, claims encompassed by Texas Government Code, Section 2260.002(3) and Texas Civil Practice and Remedies Code Section 114.002 shall be governed by the dispute resolution process set forth below in subsections (a)-(d). **NOTHING IN THIS SECTION SHALL BE CONSTRUED AS A WAIVER OF SOVEREIGN IMMUNITY BY THE GLO.**

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- a. Notwithstanding Texas Government Code, Chapter 2260.002(3) and Chapter 114.012 and any other statute or applicable law, if the 's claim for breach of contract cannot be resolved by the parties in the ordinary course of business, may make a claim against the GLO for breach of contract and the GLO may assert a counterclaim against the as is contemplated by Texas Government Code, Chapter 2260, Subchapter B. In such event, must provide written notice to the GLO of a claim for breach of the Contract not later than the 180th day after the date of the event giving rise to the claim. The notice must state with particularity: (1) the nature of the alleged breach; (2) the amount the seeks as damages; and (3) the legal theory of recovery.
  - b. The chief administrative officer, or if designated in the Contract, another officer of the GLO, shall examine the claim and any counterclaim and negotiate with the in an effort to resolve them. The negotiation must begin no later than the 120th day after the date the claim is received, as is contemplated by Texas Government Code, Chapter 2260, Section 2260.052.
  - c. If the negotiation under paragraph (b) above results in the resolution of some disputed issues by agreement or in a settlement, the parties shall reduce the agreement or settlement to writing and each party shall sign the agreement or settlement. A partial settlement or resolution of a claim does not waive a party's rights under this Contract as to the parts of the claim that are not resolved.
  - d. If a claim is not entirely resolved under paragraph (b) above, on or before the 270th day after the date the claim is filed with the GLO, unless the parties agree in writing to an extension of time, the parties may agree to mediate a claim made under this dispute resolution procedure. This dispute resolution procedure is the 's sole and exclusive process for seeking a remedy for an alleged breach of contract by the GLO if the parties are unable to resolve their disputes as described in this section.
  - e. Nothing in the Contract shall be construed as a waiver of the state's or the GLO's sovereign immunity. This Contract shall not constitute or be construed as a waiver of any of the privileges, rights, defenses, remedies, or immunities available to the State of Texas. The failure to enforce, or any delay in the enforcement, of any privileges, rights, defenses, remedies, or immunities available to the State of Texas under this Contract or under applicable law shall not constitute a waiver of such privileges, rights, defenses, remedies or immunities or be considered as a basis for estoppel. The GLO does not waive any privileges, rights, defenses, or immunities available to it by entering into this Contract or by its conduct, or by the conduct of any representative of the GLO, prior to or subsequent to entering into this Contract.
  - f. Except as otherwise provided by statute, rule, or regulation, compliance with the dispute resolution process provided for in Texas Government Code, Chapter 2260, subchapter B and incorporated by reference in subsection (a)-(d) above is a condition precedent to the: (1) filing suit pursuant to Chapter 114 of the Civil Practices and Remedies Code; or (2) initiating a contested case hearing pursuant to Subchapter C of Chapter 2260 of the Texas Government Code.
12. If Texas Government Code Chapter 2270 prohibiting state contracts with companies boycotting Israel applies to and this Contract, then verifies it does not boycott Israel and will not boycott Israel during the term of this Contract.
  13. This Contract is contingent upon the continued availability of lawful appropriations by the Texas Legislature. understands that all obligations of the GLO under this Contract are subject to the availability of state funds. If such funds are not appropriated or become unavailable, the GLO may terminate the

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Contract. The Contract shall not be construed as creating a debt on behalf of the GLO in violation of Article III, Section 49a of the Texas Constitution.

14. certifies that it is not listed on the federal government's terrorism watch list as described in Executive Order 13224.
15. In accordance with Section 669.003 of the Texas Government Code, relating to contracting with the executive head of a state agency, certifies that it is not (1) the executive head of the GLO, (2) a person who at any time during the four years before the effective date of the Contract was the executive head of the GLO, or (3) a person who employs a current or former executive head of the GLO.
16. represents and warrants that all statements and information prepared and submitted in connection with this Contract are current, complete, true, and accurate. Submitting a false statement or making a material misrepresentation during the performance of this Contract is a material breach of contract and may void the Contract or be grounds for its termination.
17. Pursuant to Section 2155.004(a) of the Texas Government Code, certifies that neither nor any person or entity represented by has received compensation from the GLO to participate in the preparation of the specifications or solicitation on which this Contract is based. Under Section 2155.004(b) of the Texas Government Code, certifies that the individual or business entity named in this Contract is not ineligible to receive the specified contract and acknowledges that the Contract may be terminated and payment withheld if this certification is inaccurate. This Section does not prohibit from providing free technical assistance.
18. represents and warrants that it is not engaged in business with Iran, Sudan, or a foreign terrorist organization, as prohibited by Section 2252.152 of the Texas Government Code.
19. If the Contract is for professional or consulting services governed by Texas Government Code Chapter 2254, represents and warrants that none of its employees including, but not limited to, those authorized to provide services under the Contract, were former employees of the GLO during the twelve (12) month period immediately prior to the date of execution of the Contract.
20. The Contract shall be governed by and construed in accordance with the laws of the State of Texas, without regard to the conflicts of law provisions. The venue of any suit arising under the Contract is fixed in any court of competent jurisdiction of Travis County, Texas, unless the specific venue is otherwise identified in a statute which directly names or otherwise identifies its applicability to the GLO.
21. IF THE CONTRACT IS NOT FOR ARCHITECTURE OR ENGINEERING SERVICES GOVERNED BY TEXAS GOVERNMENT CODE CHAPTER 2254, , TO THE EXTENT ALLOWED BY LAW, SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS THE STATE OF TEXAS AND THE GLO, AND/OR THEIR OFFICERS, AGENTS, EMPLOYEES, REPRESENTATIVES, CONTRACTORS, ASSIGNEES, AND/OR DESIGNEES FROM ANY AND ALL LIABILITY, ACTIONS, CLAIMS, DEMANDS, OR SUITS, AND ALL RELATED COSTS, ATTORNEY FEES, AND EXPENSES ARISING OUT OF, OR RESULTING FROM ANY ACTS OR OMISSIONS OF OR ITS AGENTS, EMPLOYEES, SUBCONTRACTORS, ORDER FULFILLERS, OR SUPPLIERS OF SUBCONTRACTORS IN THE EXECUTION OR PERFORMANCE OF THE CONTRACT AND ANY PURCHASE ORDERS ISSUED UNDER THE CONTRACT. THE DEFENSE SHALL BE COORDINATED BY WITH THE OFFICE OF THE TEXAS ATTORNEY GENERAL WHEN TEXAS

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STATE AGENCIES ARE NAMED DEFENDANTS IN ANY LAWSUIT AND MAY NOT AGREE TO ANY SETTLEMENT WITHOUT FIRST OBTAINING THE CONCURRENCE FROM THE OFFICE OF THE TEXAS ATTORNEY GENERAL. AND THE GLO SHALL FURNISH TIMELY WRITTEN NOTICE TO EACH OTHER OF ANY SUCH CLAIM.

22. IF THE CONTRACT IS FOR ARCHITECTURE OR ENGINEERING SERVICES GOVERNED BY TEXAS GOVERNMENT CODE CHAPTER 2254, , TO THE EXTENT ALLOWED BY LAW, SHALL INDEMNIFY AND HOLD HARMLESS THE STATE OF TEXAS AND THE GLO, AND/OR THEIR OFFICERS, AGENTS, EMPLOYEES, REPRESENTATIVES, CONTRACTORS, ASSIGNEES, AND/OR DESIGNEES FROM ANY AND ALL LIABILITY, ACTIONS, CLAIMS, DEMANDS, OR SUITS, AND ALL RELATED DAMAGES, COSTS, ATTORNEY FEES, AND EXPENSES TO THE EXTENT CAUSED BY, ARISING OUT OF, OR RESULTING FROM ANY ACTS OF NEGLIGENCE, INTENTIONAL TORTS, WILLFUL MISCONDUCT, PERSONAL INJURY OR DAMAGE TO PROPERTY, AND/OR OTHERWISE RELATED TO 'S PERFORMANCE, AND/OR FAILURES TO PAY A SUBCONTRACTOR OR SUPPLIER BY THE OR ITS AGENTS, EMPLOYEES, SUBCONTRACTORS, ORDER FULFILLERS, CONSULTANTS UNDER CONTRACT TO , OR ANY OTHER ENTITY OVER WHICH THE CONTRACTOR EXERCISES CONTROL, OR SUPPLIERS OF SUBCONTRACTORS IN THE EXECUTION OR PERFORMANCE OF THE CONTRACT. THE DEFENSE SHALL BE COORDINATED BY WITH THE OFFICE OF THE TEXAS ATTORNEY GENERAL WHEN TEXAS STATE AGENCIES ARE NAMED DEFENDANTS IN ANY LAWSUIT AND MAY NOT AGREE TO ANY SETTLEMENT WITHOUT FIRST OBTAINING THE CONCURRENCE FROM THE OFFICE OF THE TEXAS ATTORNEY GENERAL. AND THE GLO SHALL FURNISH TIMELY WRITTEN NOTICE TO EACH OTHER OF ANY SUCH CLAIM.
23. TO THE EXTENT ALLOWED BY LAW, SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE GLO AND THE STATE OF TEXAS FROM AND AGAINST ANY AND ALL CLAIMS, VIOLATIONS, MISAPPROPRIATIONS OR INFRINGEMENT OF ANY PATENT, TRADEMARK, COPYRIGHT, TRADE SECRET OR OTHER INTELLECTUAL PROPERTY RIGHTS AND/OR OTHER INTANGIBLE PROPERTY, PUBLICITY OR PRIVACY RIGHTS, AND/OR IN CONNECTION WITH OR ARISING FROM: (1) THE PERFORMANCE OR ACTIONS OF PURSUANT TO THIS CONTRACT; (2) ANY DELIVERABLE, WORK PRODUCT, CONFIGURED SERVICE OR OTHER SERVICE PROVIDED HEREUNDER; AND/OR (3) THE GLO'S AND/OR 'S USE OF OR ACQUISITION OF ANY REQUESTED SERVICES OR OTHER ITEMS PROVIDED TO THE GLO BY OR OTHERWISE TO WHICH THE GLO HAS ACCESS AS A RESULT OF 'S PERFORMANCE UNDER THE CONTRACT. AND THE GLO SHALL FURNISH TIMELY WRITTEN NOTICE TO EACH OTHER OF ANY SUCH CLAIM. SHALL BE LIABLE TO PAY ALL COSTS OF DEFENSE, INCLUDING ATTORNEYS' FEES. THE DEFENSE SHALL BE COORDINATED BY WITH THE OFFICE OF THE TEXAS ATTORNEY GENERAL (OAG) WHEN TEXAS STATE AGENCIES ARE NAMED DEFENDANTS IN ANY LAWSUIT AND MAY NOT AGREE TO ANY SETTLEMENT WITHOUT FIRST OBTAINING THE CONCURRENCE FROM OAG. IN ADDITION, WILL REIMBURSE THE GLO AND THE STATE OF TEXAS FOR ANY CLAIMS, DAMAGES, COSTS, EXPENSES OR OTHER AMOUNTS, INCLUDING, BUT NOT LIMITED TO, ATTORNEYS' FEES AND COURT COSTS, ARISING FROM ANY SUCH CLAIM. IF THE GLO DETERMINES THAT A CONFLICT EXISTS BETWEEN ITS INTERESTS AND THOSE OF OR IF THE GLO IS REQUIRED BY APPLICABLE LAW TO SELECT SEPARATE COUNSEL, THE GLO WILL BE PERMITTED TO SELECT SEPARATE COUNSEL AND WILL PAY ALL REASONABLE COSTS OF THE GLO'S COUNSEL.

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24. has disclosed in writing to the GLO all existing or potential conflicts of interest relative to the performance of the Contract.
25. Sections 2155.006 and 2261.053 of the Texas Government Code prohibit state agencies from accepting a solicitation response or awarding a contract that includes proposed financial participation by a person who, in the past five years, has been convicted of violating a federal law or assessed a penalty in connection with a contract involving relief for Hurricane Rita, Hurricane Katrina, or any other disaster, as defined by Section 418.004 of the Texas Government Code, occurring after September 24, 2005. Under Sections 2155.006 and 2261.053 of the Texas Government Code, certifies that the individual or business entity named in this Contract is not ineligible to receive the specified contract and acknowledges that this Contract may be terminated and payment withheld if this certification is inaccurate.
26. understands that the GLO will comply with the Texas Public Information Act (Chapter 552 of the Texas Government Code) as interpreted by judicial rulings and opinions of the Attorney General of the State of Texas. Information, documentation, and other material related to this Contract may be subject to public disclosure pursuant to the Texas Public Information Act. In accordance with Section 2252.907 of the Texas Government Code, shall make any information created or exchanged with the State/GLO pursuant to the Contract, and not otherwise excepted from disclosure under the Texas Public Information Act, available in a format that is accessible by the public at no additional charge to the State or the GLO.
27. The person executing this Contract certifies that he/she is duly authorized to execute this Contract on his/her own behalf or on behalf of and legally empowered to contractually bind to the terms and conditions of the Contract and related documents.
28. If the Contract is for architectural or engineering services, pursuant to Section 2254.0031 of the Texas Government Code, which incorporates by reference Section 271.904(d) of the Texas Local Government Code, shall perform services (1) with professional skill and care ordinarily provided by competent engineers or architects practicing under the same or similar circumstances and professional license, and (2) as expeditiously as is prudent considering the ordinary professional skill and care of a competent engineer or architect.
29. The state auditor may conduct an audit or investigation of any entity receiving funds from the state directly under the Contract or indirectly through a subcontract under the Contract. The acceptance of funds directly under the Contract or indirectly through a subcontract under the Contract acts as acceptance of the authority of the state auditor, under the direction of the legislative audit committee, to conduct an audit or investigation in connection with those funds. Under the direction of the legislative audit committee, an entity that is the subject of an audit or investigation by the state auditor must provide the state auditor with access to any information the state auditor considers relevant to the investigation or audit. shall ensure that this paragraph concerning the authority to audit funds received indirectly by subcontractors through the Contract and the requirement to cooperate is included in any subcontract it awards. The GLO may unilaterally amend the Contract to comply with any rules and procedures of the state auditor in the implementation and enforcement of Section 2262.154 of the Texas Government Code.
30. certifies that neither it nor its principals are debarred, suspended, proposed for debarment, declared ineligible, or otherwise excluded from participation in the Contract by any state or federal agency.

## GENERAL PROVISIONS

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31. expressly acknowledges that state funds may not be expended in connection with the purchase of an automated information system unless that system meets certain statutory requirements relating to accessibility by persons with visual impairments. Accordingly, represents and warrants to the GLO that any technology provided to the GLO for purchase pursuant to this Contract is capable, either by virtue of features included within the technology or because it is readily adaptable by use with other technology, of: providing equivalent access for effective use by both visual and non-visual means; presenting information, including prompts used for interactive communications, in formats intended for non-visual use; and being integrated into networks for obtaining, retrieving, and disseminating information used by individuals who are not blind or visually impaired. For purposes of this Section, the phrase “equivalent access” means a substantially similar ability to communicate with or make use of the technology, either directly by features incorporated within the technology or by other reasonable means such as assistive devices or services which would constitute reasonable accommodations under the Americans With Disabilities Act or similar state or federal laws. Examples of methods by which equivalent access may be provided include, but are not limited to, keyboard alternatives to mouse commands and other means of navigating graphical displays, and customizable display appearance.
32. If the Contract is for the purchase or lease of covered television equipment, as defined by Section 361.971(3) of the Texas Health and Safety Code, certifies its compliance with Subchapter Z, Chapter 361 of the Texas Health and Safety Code, related to the Television Equipment Recycling Program.
33. Pursuant to Section 572.069 of the Texas Government Code, certifies it has not employed and will not employ a former state officer or employee who participated in a procurement or contract negotiations for the GLO involving within two (2) years after the date that the contract is signed or the procurement is terminated or withdrawn. This certification only applies to former state officers or employees whose state service or employment ceased on or after September 1, 2015.
34. The GLO does not tolerate any type of fraud. GLO policy promotes consistent, legal, and ethical organizational behavior by assigning responsibilities and providing guidelines to enforce controls. Any violations of law, agency policies, or standards of ethical conduct will be investigated, and appropriate actions will be taken. shall report any possible fraud, waste, or abuse that occurs in connection with the Contract to the GLO’s Fraud Reporting hotline at (877) 888-0002.
35. The requirements of Subchapter J, Chapter 552, Government Code, may apply to this contract and agrees that the Contract can be terminated if knowingly or intentionally fails to comply with a requirement of that subchapter.
36. If, in its performance of the Contract, has access to a state computer system or database, must complete a cybersecurity training program certified under Texas Government Code Section 2054.519, as selected by the GLO. must complete the cybersecurity training program during the initial term of the Contract and during any renewal period. must verify in writing to the GLO its completion of the cybersecurity training program.
37. Under Section 2155.0061, Texas Government Code, certifies that the entity named in this contract is not ineligible to receive the specified contract and acknowledges that this contract may be terminated and payment withheld if this certification is inaccurate.

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**65. SECTION 231.006, FAMILY CODE/DELINQUENT CHILD SUPPORT**

Pursuant to Title 5, Section 231.006 of the Texas Family Code, as applicable, Bidder certifies that it, including all of its principals, is/are current in child support payments and that it is eligible to receive payments from State funds under a contract for property, materials, or services. Bidder acknowledges and agrees that if it is awarded this contract, then the ensuing agreement may be terminated, and payment withheld if this certification is inaccurate. Finally, by the submission of its Bid, the Bidder certifies that it has included the names and social security numbers of each person with at least 25% ownership interest in Bidder within its response to the request for Bid and that all such persons are current in child support payments.

**66. ANTITRUST**

Pursuant to 15 U.S.C. § 1, et seq., and Texas Business and Commerce Code, Chapter 15, Contractor, by the submission of its Bid, certifies that neither Contractor nor any natural person, proprietorship, firm, corporation, partnership, association, or institution represented by Contractor or anyone acting for such natural person, proprietorship, firm, corporation, partnership, association, or institution has violated any Federal or State antitrust laws or communicated the nature of the offer, directly or indirectly, to any competitor or other person engaged in a similar line of business.

**67. LABOR STANDARDS**

On contracts funded under a federal grant: Bidder acknowledges that the contract to be awarded pursuant to this solicitation is on a grant program funded with Federal funds. Bidder shall comply with the requirements of 29 CFR Part 5 and Part 30 and shall be in conformity with Executive Order 11246, entitled "Equal Employment Opportunity", Copeland, "Anti-Kickback" Act (40 U.S.C. 3145, 29 C.F.R. Part 3), the Davis-Bacon and Related Acts (40 U.S.C. 3141-3148, 29 C.F.R. Parts 1,3, and 5), the Contract Work Hours and Safety Standards Act (40 U.S.C. 3701 et seq.), and all other applicable Federal, State, and local laws and regulations pertaining to labor standards, insofar as those acts apply to the performance of this Agreement. Bidder is also responsible for ensuring that all subcontractors comply with the requirements of 29 CFR Part 5 and Part 30 and shall be in conformity with Executive Order 11246, entitled "Equal Employment Opportunity", Copeland "Anti-Kickback" Act, the Davis-Bacon and Related Acts (29 CFR Parts 1, 3 and 5), the Contract Work Hours and Safety Standards Act (40 U.S.C. 3701 et seq.), and all other applicable Federal, State, and local laws and regulations pertaining to labor standards, insofar as those acts apply to the performance of this Agreement.

**Contractor is encouraged to use local labor, but not at the expense of poor workmanship and higher cost. Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. Contractor agrees to post in a conspicuous place a notice setting forth provisions of this non-discrimination clause.**

**68. PROCUREMENT STANDARDS - 2 C.F.R. §§ 200.317 – 200.326 & 2 C.F.R. PART 200, APPENDIX II**

The Office of Management and Budget (OMB) revised the Uniform Guidance for grants (2 C.F.R. part 200) on August 13, 2020. This was the first major updating of the Uniform Guidance since 2014.

**Effective Date:**

- The full suite of changes became effective November 12, 2020. They will apply to all new Grants to States awards issued after that date, including the FY2021 awards.

**Procurement:**

New provisions for procurements by States (2 C.F.R. § 200.317):

When procuring property and services under an award, a State will continue to follow the same policies and procedures it uses for procurement from its non-Federal funds. A State must now also comply with §§ 200.321

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(contracting with small and minority businesses, women's business enterprises, and labor surplus area firms) and 200.322 (domestic preferences for procurements); and continue to comply with § 200.323 (procurement of recovered materials).

New provisions for all other non-Federal entities, including subrecipients of a State:

The OMB explains in the Aug. 13, 2020, Federal Register notice for the Uniform Guidance revisions, the following changes were made to 2 C.F.R § 200.320 (methods of procurement):

- The procurement types are now grouped into three categories:
  - (1) Informal (micro-purchase, small purchase);
  - (2) Formal (sealed bids, proposals); and
  - (3) Non-Competitive (sole source).

The micro-purchase threshold is raised from \$3,500 to \$10,000. Micro-purchase thresholds higher than \$10,000 are based on certain conditions that include a requirement to maintain records for threshold up to \$50,000 and a formal approval process by the Fed. Govt. for threshold above \$50,000.

More specifically, for Grants to States:

- (1) the subrecipient may self-certify an increase of the micro-purchase threshold up to \$50,000 (based on certain requirements).
- (2) micro-purchase thresholds higher than \$50,000 must be approved by the cognizant agency for indirect costs. (for details, see 2 C.F.R § 200.320 (a) (1) (iii) and (iv)).

The simplified acquisition threshold is raised from \$150,000 to \$250,000.

Two contract clauses were added to Appendix II of 2 C.F.R. Part 200. In addition to the previous contract clauses contained in the 2014 version of Appendix II of 2 C.F.R. Part 200, FEMA award recipient and subrecipient contracts and purchase orders must now include contract provisions for *Domestic Preferences for Procurements* (2 C.F.R. 200.322) and the *Prohibition on Contracting for Covered Telecommunications or Services* (2 C.F.R. 200.316)

**2 C.F.R. § 200.317. Procurements by states.**

When procuring property and services under a Federal award, a state must follow the same policies and procedures it uses for procurements from its non-Federal funds. The state will comply with §200.322 Procurement of recovered materials and ensure that every purchase order or other contract includes any clauses required by section §200.326 Contract provisions. All other non-Federal entities, including subrecipients of a state, will follow §§ 200.318 General procurement standards through 200.326 Contract provisions.

69 FR 26280, May 11, 2004; 78 FR 78608, Dec. 26, 2013

**2 C.F.R. § 200.318. General procurement standards.**

(a) The non-Federal entity must use its own documented procurement procedures which reflect applicable State, local and tribal laws and regulations, provided that the procurements conform to applicable Federal law and the standards identified in this part.



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(b) Non-Federal entities must maintain oversight to ensure that contractors perform in accordance with the terms, conditions, and specifications of their contracts or purchase orders.

(c)

(1) The non-Federal entity must maintain written standards of conduct covering conflicts of interest and governing the actions of its employees engaged in the selection, award and administration of contracts. No employee, officer, or agent may participate in the selection, award, or administration of a contract supported by a Federal award if he or she has a real or apparent conflict of interest. Such a conflict of interest would arise when the employee, officer, or agent, any member of his or her immediate family, his or her partner, or an organization which employs or is about to employ any of the parties indicated herein, has a financial or other interest in or a tangible personal benefit from a firm considered for a contract. The officers, employees, and agents of the non-Federal entity may neither solicit nor accept gratuities, favors, or anything of monetary value from contractors or parties to subcontracts. However, non-Federal entities may set standards for situations in which the financial interest is not substantial or the gift is an unsolicited item of nominal value. The standards of conduct must provide for disciplinary actions to be applied for violations of such standards by officers, employees, or agents of the non-Federal entity.

(2) If the non-Federal entity has a parent, affiliate, or subsidiary organization that is not a state, local government, or Indian tribe, the non-Federal entity must also maintain written standards of conduct covering organizational conflicts of interest. Organizational conflicts of interest means that because of relationships with a parent company, affiliate, or subsidiary organization, the non-Federal entity is unable or appears to be unable to be impartial in conducting a procurement action involving a related organization.

(d) The non-Federal entity's procedures must avoid acquisition of unnecessary or duplicative items. Consideration should be given to consolidating or breaking out procurements to obtain a more economical purchase. Where appropriate, an analysis will be made of lease versus purchase alternatives, and any other appropriate analysis to determine the most economical approach.

(e) To foster greater economy and efficiency, and in accordance with efforts to promote cost-effective use of shared services across the Federal Government, the non-Federal entity is encouraged to enter into state and local intergovernmental agreements or inter-entity agreements where appropriate for procurement or use of common or shared goods and services.

(f) The non-Federal entity is encouraged to use Federal excess and surplus property in lieu of purchasing new equipment and property whenever such use is feasible and reduces project costs.

(g) The non-Federal entity is encouraged to use value engineering clauses in contracts for construction projects of sufficient size to offer reasonable opportunities for cost reductions. Value engineering is a systematic and creative analysis of each contract item or task to ensure that its essential function is provided at the overall lower cost.

(h) The non-Federal entity must award contracts only to responsible contractors possessing the ability to perform successfully under the terms and conditions of a proposed procurement. Consideration will be given to such matters as contractor integrity, compliance with public policy, record of past performance, and financial and technical resources. See also § 200.213 Suspension and debarment.

(i) The non-Federal entity must maintain records sufficient to detail the history of procurement. These records will include, but are not necessarily limited to the following: rationale for the method of procurement, selection of contract type, contractor selection or rejection, and the basis for the contract price.

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(j)

(1) The non-Federal entity may use a time and materials type contract only after a determination that no other contract is suitable and if the contract includes a ceiling price that the contractor exceeds at its own risk. Time and materials type contract means a contract whose cost to a non-Federal entity is the sum of:

(i) The actual cost of materials; and

(ii) Direct labor hours charged at fixed hourly rates that reflect wages, general and administrative expenses, and profit.

(2) Since this formula generates an open-ended contract price, a time-and-materials contract provides no positive profit incentive to the contractor for cost control or labor efficiency. Therefore, each contract must set a ceiling price that the contractor exceeds at its own risk. Further, the non-Federal entity awarding such a contract must assert a high degree of oversight in order to obtain reasonable assurance that the contractor is using efficient methods and effective cost controls.

(k) The non-Federal entity alone must be responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of procurements. These issues include, but are not limited to, source evaluation, protests, disputes, and claims. These standards do not relieve the non-Federal entity of any contractual responsibilities under its contracts. The Federal awarding agency will not substitute its judgment for that of the non-Federal entity unless the matter is primarily a Federal concern. Violations of law will be referred to the local, state, or Federal authority having proper jurisdiction.

78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75885, Dec. 19, 2014; 80 FR 43309, July 22, 2015; 80 FR 45395, July 30, 2015

**2 C.F.R. § 200.319. Competition.**

(a) All procurement transactions must be conducted in a manner providing full and open competition consistent with the standards of this section. In order to ensure objective contractor performance and eliminate unfair competitive advantage, contractors that develop or draft specifications, requirements, statements of work, or invitations for bids or requests for proposals must be excluded from competing for such procurements. Some of the situations considered to be restrictive of competition include but are not limited to:

(1) Placing unreasonable requirements on firms in order for them to qualify to do business;

(2) Requiring unnecessary experience and excessive bonding;

(3) Noncompetitive pricing practices between firms or between affiliated companies;

(4) Noncompetitive contracts to consultants that are on retainer contracts;

(5) Organizational conflicts of interest;

(6) Specifying only a "brand name" product instead of allowing "an equal" product to be offered and describing the performance or other relevant requirements of the procurement; and

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(7) Any arbitrary action in the procurement process.

(b) The non-Federal entity must conduct procurements in a manner that prohibits the use of statutorily or administratively imposed state, local, or tribal geographical preferences in the evaluation of bids or proposals, except in those cases where applicable Federal statutes expressly mandate or encourage geographic preference. Nothing in this section preempts state licensing laws. When contracting for architectural and engineering (A/E) services, geographic location may be a selection criterion provided its application leaves an appropriate number of qualified firms, given the nature and size of the project, to compete for the contract.

(c) The non-Federal entity must have written procedures for procurement transactions. These procedures must ensure that all solicitations:

(1) Incorporate a clear and accurate description of the technical requirements for the material, product, or service to be procured. Such description must not, in competitive procurements, contain features which unduly restrict competition. The description may include a statement of the qualitative nature of the material, product or service to be procured and, when necessary, must set forth those minimum essential characteristics and standards to which it must conform if it is to satisfy its intended use. Detailed product specifications should be avoided if at all possible. When it is impractical or uneconomical to make a clear and accurate description of the technical requirements, a “brand name or equivalent” description may be used as a means to define the performance or other salient requirements of procurement. The specific features of the named brand which must be met by offers must be clearly stated; and

(2) Identify all requirements which the offerors must fulfill and all other factors to be used in evaluating bids or proposals.

(d) The non-Federal entity must ensure that all prequalified lists of persons, firms, or products which are used in acquiring goods and services are current and include enough qualified sources to ensure maximum open and free competition. Also, the non-Federal entity must not preclude potential bidders from qualifying during the solicitation period.

78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75885, Dec. 19, 2014

**2 C.F.R. § 200.320. Methods of procurement to be followed.**

The non-Federal entity must use one of the following methods of procurement.

(a) Procurement by micro-purchases. Procurement by micro-purchase is the acquisition of supplies or services, the aggregate dollar amount of which does not exceed the micro-purchase threshold (§200.67 Micro-purchase). To the extent practicable, the non-Federal entity must distribute micro-purchases equitably among qualified suppliers. Micro-purchases may be awarded without soliciting competitive quotations if the non-Federal entity considers the price to be reasonable.

(b) Procurement by small purchase procedures. Small purchase procedures are those relatively simple and informal procurement methods for securing services, supplies, or other property that do not cost more than the Simplified Acquisition Threshold. If small purchase procedures are used, price or rate quotations must be obtained from an adequate number of qualified sources.

(c) Procurement by sealed bids (formal advertising). Bids are publicly solicited and a firm fixed price contract (lump sum or unit price) is awarded to the responsible bidder whose bid, conforming with all the material terms

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and conditions of the invitation for bids, is the lowest in price. The sealed bid method is the preferred method for procuring construction, if the conditions in paragraph (c)(1) of this section apply.

(1) In order for sealed bidding to be feasible, the following conditions should be present:

- (i) A complete, adequate, and realistic specification or purchase description is available;
- (ii) Two or more responsible bidders are willing and able to compete effectively for the business;  
and
- (iii) The procurement lends itself to a firm fixed price contract and the selection of the successful bidder can be made principally on the basis of price.

(2) If sealed bids are used, the following requirements apply:

- (i) Bids must be solicited from an adequate number of known suppliers, providing them sufficient response time prior to the date set for opening the bids, for local, and tribal governments, the invitation for bids must be publicly advertised;
- (ii) The invitation for bids, which will include any specifications and pertinent attachments, must define the items or services in order for the bidder to properly respond;
- (iii) All bids will be opened at the time and place prescribed in the invitation for bids, and for local and tribal governments, the bids must be opened publicly;
- (iv) A firm fixed price contract award will be made in writing to the lowest responsive and responsible bidder. Where specified in bidding documents, factors such as discounts, transportation cost, and life cycle costs must be considered in determining which bid is lowest. Payment discounts will only be used to determine the low bid when prior experience indicates that such discounts are usually taken advantage of; and
- (v) Any or all bids may be rejected if there is a sound documented reason.

(d) Procurement by competitive proposals. The technique of competitive proposals is normally conducted with more than one source submitting an offer, and either a fixed price or cost-reimbursement type contract is awarded. It is generally used when conditions are not appropriate for the use of sealed bids. If this method is used, the following requirements apply:

- (1) Requests for proposals must be publicized and identify all evaluation factors and their relative importance. Any response to publicized requests for proposals must be considered to the maximum extent practical;
- (2) Proposals must be solicited from an adequate number of qualified sources;
- (3) The non-Federal entity must have a written method for conducting technical evaluations of the proposals received and for selecting recipients;
- (4) Contracts must be awarded to the responsible firm whose proposal is most advantageous to the program, with price and other factors considered; and

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(5) The non-Federal entity may use competitive proposal procedures for qualifications-based procurement of architectural/engineering (A/E) professional services whereby competitors' qualifications are evaluated and the most qualified competitor is selected, subject to negotiation of fair and reasonable compensation. The method, where price is not used as a selection factor, can only be used in procurement of A/E professional services. It cannot be used to purchase other types of services though A/E firms are a potential source to perform the proposed effort.

(e) [Reserved]

(f) Procurement by noncompetitive proposals. Procurement by noncompetitive proposals is procurement through solicitation of a proposal from only one source and may be used only when one or more of the following circumstances apply:

(1) The item is available only from a single source;

(2) The public exigency or emergency for the requirement will not permit a delay resulting from competitive solicitation;

(3) The Federal awarding agency or pass-through entity expressly authorizes noncompetitive proposals in response to a written request from the non-Federal entity; or

(4) After solicitation of a number of sources, competition is determined inadequate.

78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75885, Dec. 19, 2014; 80 FR 54409, Sept. 10, 2015

**2 C.F.R. § 200.321. Contracting with small and minority businesses, women's business enterprises, and labor surplus area firms.**

(a) The non-Federal entity must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

(b) Affirmative steps must include:

(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;

(4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;

(5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce; and

(6) Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in paragraphs (1) through (5) of this section.

69 FR 26280, May 11, 2004; 78 FR 78608, Dec. 26, 2013, unless otherwise noted

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**2 C.F.R. § 200.322. Procurement of recovered materials.**

A non-Federal entity that is a state agency or agency of a political subdivision of a state and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75885, Dec. 19, 2014

**2 C.F.R. § 200.323. Contract cost and price.**

(a) The non-Federal entity must perform a cost or price analysis in connection with every procurement action in excess of the Simplified Acquisition Threshold including contract modifications. The method and degree of analysis is dependent on the facts surrounding the particular procurement situation, but as a starting point, the non-Federal entity must make independent estimates before receiving bids or proposals.

(b) The non-Federal entity must negotiate profit as a separate element of the price for each contract in which there is no price competition and in all cases where cost analysis is performed. To establish a fair and reasonable profit, consideration must be given to the complexity of the work to be performed, the risk borne by the contractor, the contractor's investment, the amount of subcontracting, the quality of its record of past performance, and industry profit rates in the surrounding geographical area for similar work.

(c) Costs or prices based on estimated costs for contracts under the Federal award are allowable only to the extent that costs incurred or cost estimates included in negotiated prices would be allowable for the non-Federal entity under Subpart E—Cost Principles of this part. The non-Federal entity may reference its own cost principles that comply with the Federal cost principles.

(d) The cost plus a percentage of cost and percentage of construction cost methods of contracting must not be used.

69 FR 26280, May 11, 2004; 78 FR 78608, Dec. 26, 2013, unless otherwise noted

**2 C.F.R. § 200.324. Federal awarding agency or pass-through entity review.**

(a) The non-Federal entity must make available, upon request of the Federal awarding agency or pass-through entity, technical specifications on proposed procurements where the Federal awarding agency or pass-through entity believes such review is needed to ensure that the item or service specified is the one being proposed for acquisition. This review generally will take place prior to the time the specification is incorporated into a solicitation document. However, if the non-Federal entity desires to have the review accomplished after a solicitation has been developed, the Federal awarding agency or pass-through entity may still review the specifications, with such review usually limited to the technical aspects of the proposed purchase.

(b) The non-Federal entity must make available upon request, for the Federal awarding agency or pass-through entity pre-procurement review, procurement documents, such as requests for proposals or invitations for bids, or independent cost estimates, when:

(1) The non-Federal entity's procurement procedures or operation fails to comply with the procurement standards in this part;

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- (2) The procurement is expected to exceed the Simplified Acquisition Threshold and is to be awarded without competition or only one bid or offer is received in response to a solicitation;
  - (3) The procurement, which is expected to exceed the Simplified Acquisition Threshold, specifies a “brand name” product;
  - (4) The proposed contract is more than the Simplified Acquisition Threshold and is to be awarded to other than the apparent low bidder under a sealed bid procurement; or
  - (5) A proposed contract modification changes the scope of a contract or increases the contract amount by more than the Simplified Acquisition Threshold.
- (c) The non-Federal entity is exempt from the pre-procurement review in paragraph (b) of this section if the Federal awarding agency or pass-through entity determines that its procurement systems comply with the standards of this part.
- (1) The non-Federal entity may request that its procurement system be reviewed by the Federal awarding agency or pass-through entity to determine whether its system meets these standards in order for its system to be certified. Generally, these reviews must occur where there is continuous high-dollar funding, and third party contracts are awarded on a regular basis;
  - (2) The non-Federal entity may self-certify its procurement system. Such self-certification must not limit the Federal awarding agency's right to survey the system. Under a self-certification procedure, the Federal awarding agency may rely on written assurances from the non-Federal entity that it is complying with these standards. The non-Federal entity must cite specific policies, procedures, regulations, or standards as being in compliance with these requirements and have its system available for review.

69 FR 26280, May 11, 2004; 78 FR 78608, Dec. 26, 2013, unless otherwise noted

**2 C.F.R. § 200.325. Bonding requirements.**

For construction or facility improvement contracts or subcontracts exceeding the Simplified Acquisition Threshold, the Federal awarding agency or pass-through entity may accept the bonding policy and requirements of the non-Federal entity provided that the Federal awarding agency or pass-through entity has made a determination that the Federal interest is adequately protected. If such a determination has not been made, the minimum requirements must be as follows:

- (a) A bid guarantee from each bidder equivalent to five percent of the bid price. The “bid guarantee” must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of the bid, execute such contractual documents as may be required within the time specified.
- (b) A performance bond on the part of the contractor for 100 percent of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.
- (c) A payment bond on the part of the contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

69 FR 26280, May 11, 2004; 78FR 78608, Dec. 26, 2013, unless otherwise noted

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**2 C.F.R. § 200.326. Contract provisions.**

The non-Federal entity's contracts must contain the applicable provisions described in Appendix II to Part 200—Contract Provisions for non-Federal Entity Contracts Under Federal Awards.

69 FR 26280, May 11, 2004; 78 FR 78608, Dec. 26, 2013, unless otherwise note

**2 C.F.R. Part, 200, Appendix II**

In addition to other provisions required by the Federal agency or non-Federal entity, all contracts made by the non-Federal entity under the Federal award must contain provisions covering the following, as applicable.

(A) Contracts for more than the simplified acquisition threshold currently set at \$150,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

(B) All contracts in excess of \$10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be affected and the basis for settlement.

(C) Equal Employment Opportunity. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of “federally assisted construction contract” in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, “Equal Employment Opportunity” (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” and implementing regulations at 41 CFR part 60, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor.”

(D) Davis-Bacon Act, as amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of \$2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, “Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction”). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland “Anti-Kickback” Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

(E) Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are



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unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

(F) Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the definition of “funding agreement” under 37 CFR §401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.

(G) Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended—Contracts and subgrants of amounts in excess of \$150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

(H) Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

(I) Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)—Contractors that apply or bid for an award exceeding \$100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

(J) See §200.322 Procurement of recovered materials.

78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75888, Dec. 19, 2014

**DOMESTIC PREFERENCES FOR PROCUREMENTS** (*All State and non-State entity purchase orders must adhere to the following*)

**§ 200.322 Domestic preferences for procurements.**

(a) As appropriate and to the extent consistent with law, the non-Federal entity should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.

(b) For purposes of this section:

(1) “Produced in the United States” means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

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(2) "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

**PROHIBITION ON CONTRACTING FOR COVERED TELECOMMUNICATIONS OR SERVICES**  
*(Effective August 13, 2020 for new, extended, or renewed procurements under all open FEMA awards)*

**§ 200.216 Prohibition on certain telecommunications and video surveillance services or equipment.**

(a) Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:

(1) Procure or obtain;

(2) Extend or renew a contract to procure or obtain; or

(3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(ii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

(b) In implementing the prohibition under Public Law 115-232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

(c) See Public Law 115-232, section 889 for additional information.

(c) See also § 200.471.

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**69. PROCUREMENT LAWS**

- a. Bidder shall comply with all applicable local, State, and Federal laws, rules, and regulations.
- b. If this contract is made pursuant to a federal award, then Contractor acknowledges that the contract is subject, without limitation, to applicable provisions within 2 C.F.R. Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards. Contractor shall comply with applicable provisions within 2 C.F.R., Sections 200.319 through 200.326, including but not limited to the following:
  - 1.) **Equal Employment Opportunity**, 41 C.F.R. Part 60-1.4(b) (applicable to federally assisted construction contracts).
    - (a) During the performance of this contract, the contractor agrees as follows:
      - (1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national original, disability, or veteran status. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, national original, disability or veteran status. Such action shall include, but not be 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 for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
      - (2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national original, disability, or veteran status.
      - (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 advising the said labor union or workers' representatives of the contractor's commitments under this section 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 11246 of September 24, 1965, and by rules, regulations, and relevant orders of the Secretary of Labor.
      - (5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to contractor's books, records, and accounts by the administering 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 the said rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions as may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
      - (7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (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 11246 of September 24, 1965, 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 administering

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agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

- 2.) **Small and minority business, women’s business enterprises, and labor surplus area firms (2 C.F.R. § 200.321).** The County is required to take affirmative steps to assure that minority businesses, women’s business enterprises, and labor surplus area firms are used when possible. This includes requiring the prime contractor, if subcontracts are to be let in the performance of this contract, to itself take affirmative steps in letting the subcontract. Accordingly, if subcontracts are to be let in the performance of this contract, the contractor must take affirmative steps in the letting of the subcontract(s), which must include:
- (a) placing qualified small and minority businesses and women’s business enterprises on solicitation lists;
  - (b) assuring that small and minority businesses, and women’s business enterprises are solicited whenever they are potential sources;
  - (c) dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women’s business enterprises; and
  - (d) using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

In accordance with FEMA procurement guidance:

A small business is a business that is independently owned and operated, not dominant in the field of operation in which it is bidding on Galveston County contracts and qualified as a small business under the Small Business Administration criteria and size standards at 13 C.F.R. Part 121.

A women’s business enterprise is a business enterprise that is: (a) at least 51 percent owned by one or more women or, in the case of a publicly owned business, at least 51 percent of the stock is owned by one or more women; and (b) whose management and daily operations are controlled by one or more women.

A minority business is a business that is (a) at least 51 percent owned by one or more minority group members or, in the case of a publicly owned business, at least 51 percent of the stock is owned by one or more minority group members; and (b) whose management and daily operations are controlled by one or more minority group members.

- 3.) **Davis-Bacon Act as amended (40 U.S.C. 3141-3148).** When required by Federal program legislation, all prime construction contracts in excess of \$2,000 must include a provision for compliance with the Davis-Bacon Act as supplemented by the Department of Labor regulations (29 C.F.R. Part 5, “Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction”). In accordance with the statute, contractor must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity (the County) must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be condition upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contract must also include a provision for compliance with the Copeland Anti-Kickback Act (40 U.S.C. § 3145) as supplemented by the Department of Labor regulations (29 C.F.R. Part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”).
- 4.) **Compliance with the Copeland “Anti-Kickback” Act.** Contractor is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which the person is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. “Whoever, by force, intimidation, or threat of procuring dismissal from employment, or by any other manner whatsoever induces any person employed in the construction, prosecution, completion or repair of

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any public building, public work, or building or work financed in whole or in part by loans or grants from the United States, to give up any part of the compensation to which he is entitled under his contract of employment, shall be fined under this title [Title 18, U.S.C.] or imprisoned not more than five years, or both.” 18 U.S.C. § 874.

- (a) Contractor shall comply with 18 U.S.C. § 874, 40 U.S.C. § 3145, and the requirements of 29 C.F.R. Part 3 as may be applicable, which are incorporated by reference into this contract.
- (b) The contractor or subcontractor shall insert in any subcontracts the clause above and such other clauses as the Federal awarding agency may be appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all of these contract clauses.
- (c) Breach. A breach of the contract clause above may be grounds for termination of the contract, and for debarment as a contractor and subcontractor as provided in 29 C.F.R. § 5.12.

**5.) Contract Work Hours and Safety Standards Act.**

- (a) Where applicable, all contracts awarded by the County in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. §§ 3702 and 3704, as supplemented by the Department of Labor regulations at 29 C.F.R. Part 5. Under 40 U.S.C. § 3702 of the Contract Work Hours and Safety Standards Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.S. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchase of supplies or material or articles ordinarily available on the open market, or contractors for transportation or transmission of intelligence.
- (b) Compliance with the Contract Work Hours and Safety Standards Act.
  - (1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
  - (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) of this subsection the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this subsection, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard work week of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this subsection.
  - (3) Withholding for unpaid wages and liquidated damages. The awarding Federal agency, State agency, or the County shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy

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any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this subsection.

- (4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1) through (4) of this subsection and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this subsection.

**6.) Rights to Inventions Made Under a Contractor Agreement.**

- (a) If the Federal award meets the definition of “funding agreement” under 37 C.F.R. § 401.2(a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under the “funding agreement,” the recipient or subrecipient must comply with the requirements of 37 C.F.R. Part 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.
- (b) Stafford Act Disaster Grants. This requirement does not apply to Public Assistance, Hazard Mitigation Grant Program, Crisis Counseling Assistance and Training Grant program, Disaster Case Management Grant Program, and Federal Assistance to Individuals and Households – Other Needs Assistance Grant Program, as FEMA awards under these programs do not meet the definition of “funding agreement.”
- (c) The regulations and 37 C.F.R. § 401.2(a) currently defines “funding agreement” as any contract, grant, or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal government. This term also includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under a funding agreement as defined in the first sentence of this paragraph.

**7.) Clean Air Act (42 U.S.C. §§ 7401 – 7671q) and the Federal Water Pollution Control Act 933 U.S.C. §§ 1251-1387), as amended.**

- (a) The contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401, et seq., and agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. § 1251, et seq.
- (b) The contractor agrees to report each violation of the Clean Air Act and/or the Federal Water Pollution Control Act to the Federal awarding agency, the State agency administering the grant, and the Regional Office of the Environmental Protection Agency (EPA) and understands and agrees that the Federal awarding agency, the State agency, and the EPA will, in turn, report each violation as required to assure notification to Galveston County, the Federal Emergency Management Agency, and the appropriate EPA Regional Office.

- 8.) Debarment and Suspension (Executive Orders 12549 and 12689).** A contract award must not be made to parties listed on the government-wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 C.F.R. Part 180 that implement Executive Orders 12549 and 12689. The Contractor is required to verify that none of the contractor, its principals (defined at 2 C.F.R. § 180.995), or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935).

Contractor must comply with 2 C.F.R. Part 180, Subpart C and 2 C.F.R. Part 3000, Subpart C, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into. Bidder agrees to comply with the requirements of 2 C.F.R. Part 180, Subpart C, and 2 C.F.R. Part 3000, Subpart C, while this offer is

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valid and through the period of any contract that may arise from this offer. The Bidder further agrees to include a provision requiring such compliance in its lower tier covered transactions.

**9.) Domestic Preferences for Procurements (2 C.F.R. § 200.323)**

(a) As appropriate and to the extent consistent with law, the non-Federal entity should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.

(c) For purposes of this section:

(1) “Produced in the United States” means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

(2) “Manufactured products” means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

**10.) Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment.  
(2 C.F.R. § 200.216)**

(a) Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:

(1) Procure or obtain;

(2) Extend or renew a contract to procure or obtain; or

(2) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(ii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

(b) In implementing the prohibition under Public Law 115-232, section 889 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (FY 2019 NDAA), Pub. L. No. 115-232 (2018) and 2 C.F.R.

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200.216, 200.327, 200.471, and Appendix II to C.F.R. Part 200, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

(c) See Public Law 115-232, section 889 for additional information.

(d) See also § 200.471.

**11.) Procurement of Recovered Materials (2 C.F.R. § 200.323)**

(a.) A non-Federal entity that is a State agency or agency of a political subdivision of the State and its contractors must comply with Section 6002 of the Solid Waste Disposal Act, Public Law No. 89-272 (1965) (codified as amended by the Resource Conservation and Recovery Act at 42 U.S.C. § 6962).

The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

(b.) In the performance of this contract, the contractor shall make maximum use of products containing recovered materials that are EPA-designated items unless the product cannot be acquired:

- (1) Competitively within a timeframe providing for compliance with the contract performance schedule;
- (2) Meeting contract performance requirements; or
- (3) At a reasonable price.

(e) Information about this requirement is available at EPA's Comprehensive Procurement Guidelines website, <http://www.epa.gov/cpg/>. The list of EPA-designated items is available at <https://www.epa.gov/cpg/products.htm>.

In the event of any discrepancy between the provisions in this Section 63 of General Provisions and provisions on the same subject elsewhere within this procurement, the most stringent shall control.

**70. SECTION 3 CLAUSE (§ 135.38) – HOUSING AND URBAN DEVELOPMENT (HUD)**

**SECTION 3 ACT OF 1968 (12 U.S.C. 1701u and 24 CFR Part 135)**

**DISCLAIMER: THIS CONTRACT [IS NOT] HUD-FUNDED AND THEREFORE SECTION 3 [DOES NOT] APPLY TO THIS CONTRACT.**

For any HUD-funded contract with a value in excess of \$100,000, Contractor and subcontractors must comply with the Section 3 Act of 1968. The purpose of Section 3 is to ensure that employment and other economic opportunities generated by certain HUD financial assistance shall, to the greatest extent feasible, and consistent with existing Federal, State and local laws and regulations, be directed to low- and very low-income persons, particularly those who



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are recipients of government assistance for housing, and to business concerns which provide economic opportunities to low- and very low-income persons.

Section 3 is triggered when the normal completion of construction and rehabilitation projects creates the need for new employment, contracting, or training opportunities.

For any Section 3 Covered Contracts, Contractor and subcontractors must comply with all provisions of the Section 3 Act of 1968, contained under 24 CFR 135. Contractor and subcontractors must include the Section 3 Clause in its entirety, in every subcontract subject to compliance with regulations in 24 CFR 135.

Contractor and subcontractors must assure that to the greatest extent feasible, contracts for work to be performed in connection with the project are awarded to Section 3 Business Concerns. Contractor and subcontractors must post all new hire opportunities with the local Workforce Solutions Center and/or Work-in-Texas, in accordance with 24 CFR 135. The minimum numeric goals for Section 3 utilization are:

- 30 percent of total number of new hires are Section 3 Residents (i.e. 1 out of 3 new hires); 10 percent of all awarded construction contracts are awarded to Section 3 Business Concerns;
- 3 percent of all awarded non-construction contracts are awarded to Section 3 Business Concerns.

A. The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

B. The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

C. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

D. The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.

E. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.

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F. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

G. With respect to work performed in connection with section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and sub contracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of section 3 and section 7(b) agree to comply with section 3 to the maximum extent feasible, but not in derogation of compliance with section

**71. REQUIRED CONTRACT PROVISIONS**

The Part 200 Uniform Requirements require that non-Federal entities' contracts contain the applicable provisions described in Appendix II to Part 200 — "Contract Provisions for Non-Federal Entity Contracts Under Federal Awards." Violations of law will be referred to the proper authority in the applicable jurisdiction. All Prime Contractors awarded contracts by Galveston County which are federally funded, in whole or in part, are required to comply with the provisions below. Additionally, Prime Contractors with Galveston County are required to include the provisions below in any contracts executed with subcontractors performing the scope of work and shall pass these requirements on to its subcontractors and third-party contractors, as applicable. In addition to other provisions required by the relevant Federal agency, State of Texas, or Galveston County, all contracts made by Galveston County under the Federal award shall contain provisions covering the following, as applicable.

**ACCESS TO RECORDS & RECORD RETENTION (2 CFR 200.336)**

Contractor must provide Galveston County, the State of Texas, the Texas General Land Office (GLO), the U.S. Department of Housing and Urban Development (HUD), the FEMA Administrator, the Inspectors General, the Comptroller General of the United States, or any of their pass-through entities or authorized representatives access to any books, documents, papers, and records of the Contractor and its subcontractors which are directly pertinent to this contract/project for the purposes of making/responding to audits, examinations, excerpts, and transcriptions. The right also includes timely and reasonable access to the Contractor's personnel for the purpose of interview and discussion related to such documents. Contractor must keep records within Galveston County or note in bid that records will be available within the boundaries of Galveston County to those representatives within twenty-four (24) hours of request by the County. Contractor must maintain all records pertaining to the project for seven (7) years after receiving final payment and after all other pending matters have been closed.

**ACCESSIBILITY (24 CFR 570.614) & SECTION 504 (29 U.S.C. Section 794 and 24 CFR Parts 8-9)**

Contractor shall comply with all federal, state and local laws and regulations which prohibit recipients of federal funding from discriminating against individuals with disabilities. Applicable laws and regulations with which Contractor shall comply shall include, but are not limited to, the following: Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. Section 794) (24 CFR Parts 8-9); Title II of the Americans with Disabilities Act of 1990; the Architectural Barriers Act of 1968 (42 U.S.C. 4151-4157); the Uniform Federal Accessibility Standards (Appendix A to 24 CFR Part 40 and Appendix A to 41 CFR Part 101-19, subpart 101-19.6); the Americans with Disabilities Act (42 U.S.C. 12131; 47 U.S.C. 155, 201, 218, and 225); Texas Administrative Code, Title 10, Chapter 60, Subchapter (B) the Texas Architectural Barriers Act (TABAA); the Architectural Barriers (AB) Rules; and the Texas Accessibility Standards (TAS).

**BYRD ANTI-LOBBYING AGREEMENT (2 CFR 200 APPENDIX II (J) AND 24 CFR 570.303)**

Pursuant to 31 U.S.C.A. § 1352 (2003), if at any time during the contract term funding to contract exceeds \$100,000.00, the Contractor shall file with the County the Federal Standard Form LLL titled "Disclosure Form to Report Lobbying." Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a

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member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-federal award.

**CIVIL RIGHTS ACT OF 1964 (Title VI 42 U.S.C. § 2000d)**

Title VI of the Civil Rights Act of 1964, Section 109 of the Community Development Act of 1974, Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. Section 794) (24 CFR Parts 8-9), and the Americans with Disabilities Act of 1990 (42 U.S.C. 12131; 47 U.S.C. 155, 201, 218, and 225), prohibits Contractors from excluding or denying individuals benefits or participation in this project on the basis of race, color, religion, national origin, sex, or disability. The provisions require that no person in the United States shall on the ground of race, color, religion, national origin, sex, or disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with community development funds made available pursuant to these Acts.

For purposes of this Part “program or activity” is defined as any function conducted by an identifiable administrative unit of the recipient, or private Contractor receiving community development funds or loans from the recipient. “Funded in whole or in part with community development funds” means that community development funds in any amount in the form of grants or proceeds from HUD guaranteed loans have been transferred by the recipient or a subrecipient to an identifiable administrative unit and disbursed in a program or activity. A Contractor may not, under any program or activity to which the regulations of this Part may apply directly or through contractual or other arrangements, on the grounds of race, color, national origin, or sex:

- a. Deny any facilities, services, financial aid or other benefits provided under the program or activity;
- b. Provide any facilities, services, financial aid or other benefits, which are different, or are provided in a different form from that provided to others under the program or activity;
- c. Subject to segregated or separate treatment in any facility in, or in any matter of process related to receipt of any service or benefit under the program or activity;
- d. Restrict in any way access to, or in the enjoyment of any advantage or privilege enjoyed by others in connection with facilities, services, financial aid or other benefits under the program or activity;
- e. Treat an individual differently from others in determining whether the individual satisfies any admission, enrollment, eligibility, membership, or other requirement or condition which the individual must meet in order to be provided any facilities, services or other benefit provided under the program or activity; and
- f. Deny an opportunity to participate in a program or activity as an employee.

**CLEAN AIR ACT (2 CFR Appendix II to Part 200 (G))**

Pursuant to 2 CFR Appendix II to Part 200 (G), if at any time during the contract term funding to contract exceeds \$150,000, the Contractor must comply with all provisions of the Clean Air Act (42 U.S.C. 85) and Section 308 of the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended. Contractors securing a contract in excess of \$150,000.00 shall not expend such funds by making use of subcontracting with facilities included on the Environmental Protection Agency List of Violating Facilities as per Section 306 of the Clean Air Act, Section 508 of The Clean Water Act, Executive Order 11738, and Environmental Protection Agency Regulations 40 CFR. For any subcontractors under this contract receiving contracts in excess of \$150,000 Contractor is required to include a provision that requires compliance with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 85) and Section 308 Federal Water Pollution Control Act as amended (33

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U.S.C. 1251-1387). Violations shall be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

**CONTRACT WORK HOURS AND SAFETY STANDARDS ACT (2 CFR Appendix II to Part 200 (E))**

Pursuant to 2 CFR 200 Appendix II (E), if at any time during the contract term funding to contract exceeds \$100,000, the Contractor must comply with the Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708). Where applicable, all contracts awarded in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence

- (1) Overtime Requirements – No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
- (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.
- (3) Withholding for unpaid wages and liquidated damages. The (write in the name of the Federal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.
- (4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section.

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**COPELAND “ANTI-KICKBACK” ACT (40 U.S.C. 3145)**

Pursuant to 2 CFR Appendix II to Part 200 (D), Contractor must comply with the provisions of the Copeland “Anti-Kickback” Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). The Act provides that each vendor, contractor, subcontractor, or subrecipient shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. Contractor shall include this provision in all contracts between itself and any subcontractors in connection with the services performed under this Contract. Galveston County shall report all suspected or reported violations to the Federal awarding agency.

**COST PLUS CONTRACTING PROHIBITED (2 CFR 200.323(D))**

Cost-plus-a-percentage-of-cost (CPPC) contracts are prohibited by 2 CFR 200.323(d). The cost plus a percentage of cost and percentage of construction cost methods of contracting must never be used, including in subcontracts and third-party contracts. A cost-plus contract is one that is structured to pay the contractor or subcontractor their actual costs incurred, plus a fixed percent for profit or overhead.

A cost-plus-a-percentage-of-cost (CPPC) contract is a contract containing some element that obligates Galveston County or Contractor to pay a contractor or subcontractor an amount (in the form of either profit or cost), undetermined at the time the contract was made, to be incurred in the future, and based on a percentage of future costs. The inclusion of an overall contract ceiling price does not make these forms of contracts acceptable. This type of contract is prohibited because there is no incentive for the contractor or subcontractor to keep its incurred costs low. Instead, there is a reverse incentive for the contractor or subcontractor to continue to incur additional costs in order to continue to drive the percentage of cost up. In other words, increased spending by the contractor will yield higher profits. This prohibition applies to all work, regardless of the circumstances, and applies to subcontracts of the contractor cases where the prime contract is a cost-reimbursement type contract or subject to price redetermination.

**DAVIS BACON AND RELATED ACTS (2 CFR 200 APPENDIX II (D))**

Pursuant to 2 CFR 200 Appendix II (D), for any contract in excess of \$2,000, Contractor must comply with the Davis Bacon and Related Acts, and the requirements shall be applicable to any labor or mechanic work completed in connection with this contract which fall under the Davis Bacon Act. Any Contractor awarded under this contract is required to comply with the Davis Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR part 5) and with the Copeland “Anti-Kickback” Act (18 U.S.C. 874; 40 U.S.C. 3145) as supplemented in Department of Labor regulations (29 CFR part 3). In accordance with the statute, Contractors are required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week.

If Davis Bacon is applicable, Galveston County will provide a copy of the current Davis Bacon Wage Decision with the solicitation. The decision to award a contract or subcontract shall be conditioned upon the acceptance of the wage determination. Contractor shall submit certified payroll of contractor and all subcontractors on a weekly basis in the format required by the County. At County’s request, Contractor shall make available and shall require its subcontractors to make available, copies of cancelled checks and check stubs for comparisons by the County or its agents.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR Part 5.5(a)(1)(ii)) and the Davis Bacon poster (WH-

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1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following. The Statement of Compliance can be found on page 2 of the WH-347 form, and/or additional certifications of compliance may be required by Galveston County. Any Statement of Compliance is subject to the penalties provided by 18 U.S.C. § 1001, namely, a fine, possible imprisonment of not more than 5 years, or both. Accordingly, the party signing the statement should have knowledge of the facts represented as true. Contractor must include this provision in all contracts between itself and any subcontractors in connection with the services performed under this Contract. Galveston County shall report all suspected or reported violations to the Federal awarding agency, as applicable.

**DEBARMENT / SUSPENSION AND VOLUNTARY EXCLUSION (2 CFR Appendix II to Part 200 (I))**

Pursuant to 2 CFR Appendix II to Part 200 (I), a Contract meeting the definition in 2 C.F.R. § 180.220 must not be made to parties listed on the System for Award Management (SAM) Exclusion lists, in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

Pursuant to Executive Orders 12549 and 12689, a contract award shall not be made to parties listed on the government-wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235). SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549. A contract award must not be made to parties listed in the SAM Exclusions. SAM exclusions can be accessed at [www.sam.gov](http://www.sam.gov).

Additionally, no contracts shall be awarded to any Contractor that has been debarred, suspended, or otherwise excluded from or ineligible for participation in any federal programs, including but not limited to the Department of Health and Human Work (DHHS), Office of Inspector General (OIG) - List of Excluded Individuals & Entities (LEIE); U.S. General Services Administration (GSA) – Excluded Parties List System (EPLS); All States (50) Health & Human Work Commission Medicaid OIG Sanction List; Government Terrorist Watch List (OFAC / Patriot Act); Department of Commerce, Bureau of Industry and Security, Denied Persons List; and Department of Homeland Security, Immigration and Customs Enforcement (ICE) Most Wanted.

This contract is a covered transaction for purposes of compliance with Title 2 C.F.R. parts 180 and 3000, and as such the Contractor is required to verify that none of the contractor, its principals (as defined at 2 C.F.R. § 180.995), or its affiliates (as defined at 2 C.F.R. § 180.905) are excluded (as defined at 2 C.F.R. § 180.940) or disqualified (as defined at 2 C.F.R. § 180.935). These regulations restrict awards, subawards, and contracts with certain parties that are debarred, suspended, or otherwise excluded from or ineligible for participation in Federal assistance programs and activities (See 2 C.F.R Part 200, Appendix II). The Contractor must comply with 2 C.F.R. part 180, subpart C and 2 C.F.R. part 3000, subpart C and shall include this requirement and similar certification in all contracts between itself and any subcontractors in connection with the services performed under this Contract.

The Contractor confirms that it is eligible or otherwise not disqualified or prohibited from participation in federal or state assistance programs under Executive Order 12549, Debarment and Suspension. Additionally, the Contractor warrants that it is not debarred, suspended, or otherwise excluded from or ineligible for participation in any federal programs, including but not limited to the following: Department of Health and Human Work (DHHS), Office of Inspector General (OIG) - List of Excluded Individuals & Entities (LEIE); U.S. General Services Administration (GSA) – Excluded Parties List System (EPLS); All States (50) Health & Human Work Commission Medicaid OIG

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Sanction List; Government Terrorist Watch List (OFAC / Patriot Act); Department of Commerce, Bureau of Industry and Security, Denied Persons List; and Department of Homeland Security, Immigration and Customs Enforcement (ICE) Most Wanted. Galveston County reserves the right to verify any contractor's status and document instances of debarment, suspension, or other ineligibility.

Contractor shall verify that all subcontractors performing work under this Contract are not debarred, disqualified, or otherwise prohibited from participation in accordance with the requirements above. The Contractor further must notify Galveston County in writing immediately if Contractor or its subcontractors are not in compliance with Executive Order 12549 during the term of this contract. Contractor shall include this provision in all contracts between itself and any subcontractors in connection with the services performed under this Contract.

If it is found that the Contractor did not comply or is not in compliance with Executive Order 12549 (2 C.F.R. part 180, subpart C and 2 C.F.R. part 3000, subpart C), the Contractor may be subject to available remedies, including but not limited to, refunding Galveston County for any payments made to the Contractor while ineligible, and also acknowledges that the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.

**EQUAL EMPLOYMENT OPPORTUNITY (41 CFR 60-1.4(b) and 2 CFR 200 APPENDIX II (C))**

Contractor must comply with, and incorporate or cause to be incorporated into any contract for construction work, or modification thereof, the Equal Employment Opportunity provisions as follows:

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be 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 for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination 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, color, religion, sex, sexual orientation, gender identity, or national origin.
3. The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
4. 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 advising the said labor

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union or workers' representatives of the contractor's commitments under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

5. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
6. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
7. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said 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 or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
8. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) 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 11246 of September 24, 1965, 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 administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The Contractor further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The Contractor agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The Contractor further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the Contractor agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the Contractor under



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the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such Contractor; and refer the case to the Department of Justice for appropriate legal proceedings. Contractor must include the equal opportunity clause in each of its nonexempt subcontracts, and to require all non-exempt subcontractors to include the equal opportunity clause in each of its nonexempt subcontracts.

**EQUAL EMPLOYMENT OPPORTUNITY FOR WORKERS WITH DISABILITIES (48 CFR 52.22236)**

During the performance of this contract, the Contractor must comply with required Equal Employment Opportunity for Workers with Disabilities provisions.

Contractor shall include the following equal opportunity clause in each of its covered Government contracts or subcontracts (and modifications, renewals, or extensions thereof if not included in the original contract):

- a. Equal opportunity clause. The Contractor shall abide by the requirements of the equal opportunity clause at 41 CFR 60-741.5(a), as of March 24, 2014. This clause prohibits discrimination against qualified individuals on the basis of disability and requires affirmative action by the Contractor to employ and advance in employment qualified individuals with disabilities.
- b. Subcontracts. The Contractor shall include the terms of this clause in every subcontract or purchase order in excess of \$15,000 unless exempted by rules, regulations, or orders of the Secretary, so that such provisions will be binding upon each subcontractor or vendor. The Contractor shall act as specified by the Director, Office of Federal Contract Compliance Programs of the U.S. Department of Labor, to enforce the terms, including action for noncompliance. Such necessary changes in language may be made as shall be appropriate to identify properly the parties and their undertakings.

**EQUAL EMPLOYMENT OPPORTUNITY FOR VEVRAA PROTECTED VETERANS (41 CFR 60.300)**

Galveston County is an equal opportunity employer of protected veterans. During the performance of this contract, the Contractor must comply with required Equal Employment Opportunity for VEVRAA Protected Veterans provisions. Contractor shall include the following equal opportunity clause in each of its covered Government contracts or subcontracts (and modifications, renewals, or extensions thereof if not included in the original contract):

- a. The definitions set forth in 41 CFR 60-300.2 apply to the terms used throughout this Clause, and they are incorporated herein by reference.
- b. The contractor shall not discriminate against any employee or applicant for employment because he or she is a disabled veteran, recently separated veteran, active-duty wartime or campaign badge veteran, or Armed Forces service medal veteran (hereinafter collectively referred to as "protected veteran(s)") in regard to any position for which the employee or applicant for employment is qualified. The contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified individuals without discrimination based on their status as a protected veteran in all employment practices, including the following:
  - i Recruitment, advertising, and job application procedures.
  - ii Hiring, upgrading, promotion, award of tenure, demotion, transfer, layoff, termination, right of return from layoff and rehiring.
  - iii Rates of pay or any other form of compensation and changes in compensation.
  - iv Job assignments, job classifications, organizational structures, position descriptions, lines of progression, and seniority lists.

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- v Leaves of absence, sick leave, or any other leave.
  - vi Fringe benefits available by virtue of employment, whether or not administered by the contractor.
  - vii Selection and financial support for training, including apprenticeship, and on-the-job training under 38 U.S.C. 3687, professional meetings, conferences, and other related activities, and selection for leaves of absence to pursue training.
  - viii Activities sponsored by the contractor including social or recreational programs.
  - ix Any other term, condition, or privilege of employment.
- c. The contractor shall immediately list all employment openings which exist at the time of the execution of this contract and those which occur during the performance of this contract, including those not generated by this contract and including those occurring at an establishment of the contractor other than the one where the contract is being performed, but excluding those of independently operated corporate affiliates, with the appropriate employment service delivery system where the opening occurs. Listing employment openings with the state workforce agency job bank or with the local employment service delivery system where the opening occurs will satisfy the requirement to list jobs with the appropriate employment service delivery system. In order to satisfy the listing requirement described herein, contractors must provide information about the job vacancy in any manner and format permitted by the appropriate employment service delivery system which will allow that system to provide priority referral of veterans protected by VEVRAA for that job vacancy. Providing information on employment openings to a privately run job service or exchange will satisfy the contractor's listing obligation if the privately run job service or exchange provides the information to the appropriate employment service delivery system in any manner and format that the employment service delivery system permits which will allow that system to provide priority referral of protected veterans.
- d. Listing of employment openings with the appropriate employment service delivery system pursuant to this clause shall be made at least concurrently with the use of any other recruitment source or effort and shall involve the normal obligations which attach to the placing of a bona fide job order, including the acceptance of referrals of veterans and nonveterans. The listing of employment openings does not require the hiring of any particular job applicants or from any particular group of job applicants, and nothing herein is intended to relieve the contractor from any requirements in Executive orders or regulations regarding nondiscrimination in employment.
- e. Whenever a contractor, other than a state or local governmental contractor, becomes contractually bound to the listing provisions in paragraphs 2 and 3 of this clause, it shall advise the employment service delivery system in each state where it has establishments that: (a) It is a Federal contractor, so that the employment service delivery systems are able to identify them as such; and (b) it desires priority referrals from the state of protected veterans for job openings at all locations within the state. The contractor shall also provide to the employment service delivery system the name and location of each hiring location within the state and the contact information for the contractor official responsible for hiring at each location. The "contractor official" may be a chief hiring official, a Human Resources contact, a senior management contact, or any other manager for the contractor that can verify the information set forth in the job listing and receive priority referrals from employment service delivery systems. In the event that the contractor uses any external job search organizations to assist in its hiring, the contractor shall also provide to the employment service delivery system the contact information for the job search organization(s). The disclosures required

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by this paragraph shall be made simultaneously with the contractor's first job listing at each employment service delivery system location after the effective date of this final rule. Should any of the information in the disclosures change since it was last reported to the employment service delivery system location, the contractor shall provide updated information simultaneously with its next job listing. As long as the contractor is contractually bound to these provisions and has so advised the employment service delivery system, there is no need to advise the employment service delivery system of subsequent contracts. The contractor may advise the employment service delivery system when it is no longer bound by this contract clause.

- f. The provisions of paragraphs 2 and 3 of this clause do not apply to the listing of employment openings which occur and are filled outside of the 50 states, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, Wake Island, and the Trust Territories of the Pacific Islands.
- g. As used in this clause:
  - i. All employment openings include all positions except executive and senior management, those positions that will be filled from within the contractor's organization, and positions lasting three days or less. This term includes full-time employment, temporary employment of more than three days' duration, and part-time employment.
  - ii. Executive and senior management means: (1) Any employee (a) compensated on a salary basis at a rate of not less than \$455 per week (or \$380 per week, if employed in American Samoa by employers other than the Federal Government), exclusive of board, lodging or other facilities; (b) whose primary duty is management of the enterprise in which the employee is employed or of a customarily recognized department or subdivision thereof; (c) who customarily and regularly directs the work of two or more other employees; and (d) who has the authority to hire or fire other employees or whose suggestions and recommendations as to the hiring, firing, advancement, promotion or any other change of status of other employees are given particular weight; or (2) any employee who owns at least a bona fide 20-percent equity interest in the enterprise in which the employee is employed, regardless of whether the business is a corporate or other type of organization, and who is actively engaged in its management.
  - iii. Positions that will be filled from within the contractor's organization means employment openings for which no consideration will be given to persons outside the contractor's organization (including any affiliates, subsidiaries, and parent companies) and includes any openings which the contractor proposes to fill from regularly established "recall" lists. The exception does not apply to a particular opening once an employer decides to consider applicants outside of his or her own organization.
- h. The contractor shall comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.
- i. In the event of the contractor's noncompliance with the requirements of this clause, actions for noncompliance may be taken in accordance with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

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- j. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Director, Office of Federal Contract Compliance Programs, provided by or through the contracting officer. Such notices shall state the rights of applicants and employees as well as the contractor's obligation under the law to take affirmative action to employ and advance in employment qualified employees and applicants who are protected veterans. The contractor must ensure that applicants or employees who are disabled veterans are provided the notice in a form that is accessible and understandable to the disabled veteran (e.g., providing Braille or large print versions of the notice, posting the notice for visual accessibility to persons in wheelchairs, providing the notice electronically or on computer disc, or other versions). With respect to employees who do not work at a physical location of the contractor, a contractor will satisfy its posting obligations by posting such notices in an electronic format, provided that the contractor provides computers that can access the electronic posting to such employees, or the contractor has actual knowledge that such employees otherwise are able to access the electronically posted notices. Electronic notices for employees must be posted in a conspicuous location and format on the company's intranet or sent by electronic mail to employees. An electronic posting must be used by the contractor to notify job applicants of their rights if the contractor utilizes an electronic application process. Such electronic applicant notice must be conspicuously stored with, or as part of, the electronic application.
- k. The contractor will notify each labor organization or representative of workers with which it has a collective bargaining agreement or other contract understanding that the contractor is bound by the terms of VEVRAA and is committed to take affirmative action to employ and advance in employment, and shall not discriminate against, protected veterans.
- l. The contractor will include the provisions of this clause in every subcontract or purchase order of \$100,000 or more, unless exempted by the rules, regulations, or orders of the Secretary issued pursuant to VEVRAA 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 Director, Office of Federal Contract Compliance Programs, may direct to enforce such provisions, including action for noncompliance.
- m. The contractor must, 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 their protected veteran status.
- n. The Contractor shall forfeit as a penalty to the County who administers the subject Project receiving Federal assistance, Sixty Dollars (\$60.00) for each worker, employed for each calendar day, or a portion thereof, such worker is paid less than the said stipulated rates for any work done under this Project, by him/her or by any contractor under him/her.
- o. All contractors shall keep, or cause to be kept, an accurate record showing the names of all workers, also the actual per diem wages paid to each of such workers.

**FAIR LABOR STANDARDS ACT**

Contractor must comply the Fair Labor Standards Act of 1938 (29 U.S.C. Section 201 et seq.) as now or hereafter amended, which regulates wage, hour and other employment practices that govern the use of funds provided and the employment of personnel under this contract. The Contractor warrants that it will pay all its workers all monies earned by its workers including, but not limited to regular wages, any overtime compensation, or any additional payments pursuant to the Fair Labor Standards Act, 29 United States Code (U.S.C.) Section 207 9a(1), as amended; the Texas Pay Day Act; the Equal Pay Act; Title VII of the Civil Rights Act of 1964, 42 U.S.C. Section 2000, et al., as amended; or any provisions of the Texas Labor Code Ann., as amended.

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**FLOOD DISASTER PROTECTION ACT OF 1973 (24 CFR 570.605)**

Contractor must comply with the provisions in 24 CFR 570.605, Section 202(a) of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4106), and the regulations in 44 CFR Parts 59-79.

**GREEN BUILDING STANDARDS**

At a minimum, Contractors and subcontractors must comply with local codes and any applicable national building codes for any work involving rehabilitation or construction, including design. When a contract is funded, in whole or in part, by HUD funding, Contractors must comply with applicable Green Building standards to the maximum extent feasible. Green Building standards may apply to single-family properties, multifamily properties, or both and may include, but are not limited to best practices defined under LEED, Enterprise Green Communities, or NAHB National Green Building Standards and may include specific measures for water conservation, energy efficiency, and indoor air quality. Contractor and subcontractors must comply with the following standards, as applicable:

- 2009 ICC International Energy Conservation Code (IECC)
- ASHRAE 90.1-2007, which sets minimum energy standards for buildings except low-rise residential buildings
- ASHRAE 62.1-2010 and 62.2-2010, which set minimum standards for ventilation for indoor air quality for common areas in mid- and high-rise buildings, and low-rise residential buildings, respectively.
- New or replacement residential housing, when funded by CDBG-DR grants, must adhere to Green Building standards, including Energy Star Certified Homes or Energy Star for Multifamily High Rise and other applicable green building requirements.
- Moderate residential housing rehabilitation, when funded by CDBG-DR grants, must comply with the Community Planning & Development (CPD) Retrofit Checklist and provide Energy Star appliances, Water Sense or FEMP products if replaced.
- New or replacement residential housing, when funded by CDBG-DR grants, must adhere to Green Building standards, including Energy Star Certified Homes or Energy Star for Multifamily High Rise and other applicable green building requirements.

**HOLD HARMLESS AGREEMENT**

Contractor shall indemnify, defend, and hold harmless Galveston County from all claims for personal injury, death and/or property damage resulting directly or indirectly from contractor's performance. Contractor shall procure and maintain, with respect to the subject matter of this Invitation for Bids, appropriate insurance coverage including, at a minimum, public liability and property damage with adequate limits to cover contractor's liability as may arise directly or indirectly from work performed under terms of this Invitation to Bid. Certification of such coverage must be provided to the County upon request.

The Federal Government is not a party to this contract and is not subject to any obligations or liabilities to the non-Federal entity, contractor, or any other party pertaining to any matter resulting from the contract.

**LEAD-BASED PAINT (24 CFR 570.608)**

Contractor and subcontractors must comply with the provisions found in 24 CFR 570.608, the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4821-4846), the Residential Lead Based Paint Hazard Reduction Act of 1992 (U.S.C. 4851-4856, and 24 CFR Part 35, subparts A, B, J, K, and R. This Article 2(f) is to be included in all subcontracts, for work in connection with this Contract, which relate to residential structures.

**NON-COLLUSION (The Sherman Act)**

Contractor must comply with the requirements of The Sherman Act, which prohibit collusion. Collusion occurs when two persons or representatives of an entity or organization make an agreement to deceive or mislead another. Such

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agreements are usually secretive and involve fraud or gaining an unfair advantage over a third party, competitors, consumers or others with whom they are negotiating. The collusion, therefore, makes the bargaining process inherently unfair. Collusion can involve promises of future benefits, price or wage fixing, kickbacks, or misrepresenting the independence of the relationship between the colluding parties.

The Sherman Act prohibits any agreement among competitors to fix prices, rig bids, or engage in other anticompetitive activity. Collusion, bid rigging, or other anticompetitive activity is considered a felony. Contractor shall not in any way, directly or indirectly:

- a. Collude, conspire, or agree with any other person, firm, corporation, Bidder or potential Bidder to the amount of this Bid or the terms or conditions of this Bid.
- b. Pay or agree to pay any other person, firm, corporation Bidder or potential Bidder any money or anything of value in return for assistance in procuring or attempting to procure a contract or in return for establishing the prices in the attached Bid or the Bid of any other Bidder.
- c. Assemble in coordination with any other organization in an attempt to fix the price of the work.

Contractors are expected to report any suspected fraud, collusion, or impropriety from the inception of solicitation through the end of the contract term.

**NON-SEGREGATED FACILITIES**

“Prohibition of Segregated Facilities”

- a. Segregated facilities means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

Sexual orientation has the meaning given by the Department of Labor's Office of Federal Contract Compliance Programs and is found at [www.dol.gov/ofccp/LGBT/LGBT\\_FAQs.html](http://www.dol.gov/ofccp/LGBT/LGBT_FAQs.html).

- b. The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Opportunity clause in this contract.
- c. The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Opportunity clause of this contract.

**PARTICIPATION BY MINORITY & WOMEN-OWNED BUSINESS ENTERPRISES (2 CFR 200.321)**

Contractor must comply with the Minority and Women-owned Business Enterprise participation requirements under 2 CFR 200.321. Contractors must take all affirmative steps necessary to subcontract with Minority and Women-owned Business Enterprises (MWBES) to assure that MWBES are used when possible. These affirmative steps shall include:

- A. Placing qualified small and minority businesses and women’s business enterprises on solicitation lists;
- B. Assuring that small and minority businesses, and women’s business enterprises are solicited whenever they are potential sources;

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- C. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
- D. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and
- E. Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

The State of Texas maintains a Historically Underutilized Business Program, which identifies any business at least 51 percent owned by an Asian Pacific American, Black American, Hispanic American, Native American, American woman and/or Service-Disabled Veteran, who resides in Texas and actively participate in the control, operations and management of the entity's affairs as a Historically Underutilized Business (also considered MWBE). Contractors who wish to check the status of a firm may visit <https://comptroller.texas.gov/purchasing/vendor/hub/>.

Contractors and subcontractors are required to facilitate Minority & Women-Owned Business Enterprise participation. Contractors are encouraged to utilize MWBEs / HUB firms as subcontractors, subconsultants, or suppliers in order to comply with the requirements and may check for firms who perform relevant work by searching <https://comptroller.texas.gov/purchasing/vendor/hub/>.

Contractor and subcontractors must facilitate Minority & Women-Owned Business Enterprise participation and take all affirmative steps to utilize MWBEs / HUB firms as subcontractors, subconsultants, or suppliers throughout the life of the Contract.

**POTENTIAL CONFLICTS OF INTEREST**

Pursuant to 2 CFR 200.112, Contractor must comply with disclosure requirements in accordance with Texas Local Government Code, Chapter 176. Contractor shall not use funds to directly or indirectly pay any person for influencing or attempting to influence any public employee or official in connection with the awarding of any contract or the extension, continuation, renewal, amendment or modification of any contract. By law, the Conflict of Interest Questionnaire (provided by the Texas Ethics Commission at [www.ethics.state.tx.us](http://www.ethics.state.tx.us)) must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the Contractor becomes aware of facts that require the statement to be filed.

This law requires persons desiring to do business with the County to disclose any gifts valued in excess of \$250 given to any County Official or the County Official's family member, or employment of any County Official or the County Official's family member during the preceding twelve (12) month period. The disclosure questionnaire must be filed with the Galveston County Clerk. Refer to Texas Local Government Code, Chapter 176 for the details of this law.

An outside consultant or contractor is prohibited from submitting a bid for services on a Galveston County project of which the consultant or contractor was a designer or other previous contributor, or was an affiliate, subsidiary, joint venture or was in any other manner associated by ownership to any party that was a designer or other previous contributor. If such a consultant or contractor submits a prohibited bid, that bid shall be disqualified on the basis of conflict of interest, no matter when the conflict is discovered by Galveston County.

**PREVAILING WAGES (2 CFR 200 APPENDIX II (D) and TGC 2258)**

Pursuant to 2 CFR 200 Appendix II (D), Contractor must comply with Texas Government Code (TGC) 2258, Prevailing Wage Rates. Accordingly, Contractor must submit a certified payroll records as required, and compensate any worker employed on a public works project not less than as applicable. As noted under "Davis Bacon and Related

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Acts”, when required by Federal program legislation, construction contracts in excess of \$2,000 awarded by Galveston County shall require compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, “Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction”). In accordance with the statute, Contractor must pay wages to laborers and mechanics at a rate not less than the local prevailing wages, or Davis Bacon wages, as applicable. If both Texas prevailing wages and Davis Bacon provide rates for a particular class, Contractors must pay the greater wage rate. In addition, Contractor must pay wages not less than once a week.

In compliance with Section 2258 of the Texas Government Code, Contractor and any subcontractor hired by Contractor for the construction of any project, shall pay not less than the rates set forth in the Schedule of Prevailing Wages attached and incorporated by reference. In submitting a Bid, Contractor warrants that it and its subcontractors shall comply with all requirements and worker ratios per the applicable Schedule of Prevailing Wages and Texas state law.

Contractor must submit certified payroll of contractor and all subcontractors on a weekly basis. At County’s request, Contractor must make available and shall require its subcontractors to make available, copies of cancelled checks and check stubs for comparisons by the County or its agents. Regardless of whether Davis Bacon or Texas Prevailing Wages apply, the County reserves the right for its agents to visit the project site and to interview contractor, its subcontractors and employees of each on any date or time, as often as desired during the construction period, without prior notification.

Galveston County will ascertain if proper wage rates are being paid to the employees as required. In the event of a discrepancy between the work performed and the wages paid, the County shall document same and notify Contractor. If, for any length of time and as determined by Galveston County, discrepancies appear between the certified payrolls and the actual wage paid, the County shall require check stubs to be attached to each weekly certified payroll. Pursuant to Texas Government Code Section 2258.051, the County reserves the right to withhold any monies due Contractor until such discrepancy is resolved and the necessary adjustment made. The Contractor shall forfeit as a penalty, in accordance with Texas Government Code Section 2258.023(b), to the County or entity who administers the subject Project receiving Federal assistance, Sixty Dollars (\$60.00) for each worker, employed for each calendar day, or a portion thereof, such worker is paid less than the said stipulated rates for any work done under this Project, by him/her or by any contractor/subcontractor under him/her.

All contractor/subcontractor shall keep, or cause to be kept, an accurate record showing the names of all workers, also the actual per diem wages paid to each of such workers. Contractor shall impose these same obligations upon its Subcontractors. Contractor understands that with weekly or monthly certified payrolls, contractor is responsible for any and all penalties that shall accrue during the month, regardless of the fact that any error could not be discovered by the Contract Compliance Officer until the following certified payroll.

**PROCUREMENT OF RECOVERED MATERIALS (2 CFR 200.322)**

Pursuant to 2 CFR 200.322, Contractor must comply with Section 6002 of the Solid Waste Disposal Act, Pub. L. No. 89-272 (1965) (codified as amended by the Resource Conservation and Recovery Act at 42 U.S.C. § 6962). As such, any contractors awarded under this contract opportunity is subject to the requirements of Section 6002, which include procuring only items designated in guidelines of the EPA at 40 C.F.R. Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired by the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.



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**PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS**

Contractor must comply with 31 U.S.C. Chapter 38, Administrative Remedies for False Claims and Statements, which shall apply to the activities and actions of the Contractor and its subcontractors pertaining to any matter resulting from the contract.

**RESTRICTIONS ON PUBLIC BUILDINGS AND PUBLIC WORKS PROJECTS CERTIFICATION**

- b. Definitions. The definitions pertaining to this provision are those that are set forth on the clause entitled “Restrictions on Public Works Projects.” (Set out under “Contract Clauses” below.)
- c. Certification. Except as provided in paragraph (C) of this provision, by submission of its bid or proposal, Bidder certifies that it:
  - i. Is not a Contractor of a foreign country included on the list of countries that discriminate against U.S. firms published by the Office of the United States Trade Representative (USTR) (see paragraph (H) of this provision);
  - ii. Has not or will not enter into any subcontract with a subcontractor of a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR, and
  - iii. Will not provide any product of a country included on the list of foreign countries that discriminate against the U.S. firms published by the USTR.
- d. Inability to certify. A Bidder unable to certify in accordance with paragraph (b) of this provision shall submit with its offer a written explanation fully describing the reasons for its inability to make the certification.
- e. Applicability of 18 U.S.C. 1001. This certification is paragraph (B) of this provision concerns a matter within the jurisdiction of an agency of the United States, and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18 U.S.C. 1001.
- f. Notice. Bidder shall provide written notice to the Contracting Officer if, at any time before the contract award, Bidder learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- g. Restrictions on contract award. Unless a waiver to these restrictions is granted by the Secretary of Housing and Urban Development, no contract will be awarded to a Bidder (1) who is owned or controlled by a citizen or national of a foreign country included on the list of foreign countries that discriminate against U.S. firms published by the USTR, (2) whose subcontractors are owned or controlled by citizens or national of a foreign country on the USTR list or, (3) who incorporates any product of a foreign country on the USTR list in the public works project.
- h. USTR List. The USTR published an initial list in the Federal Register on December 30, 1987 (53 FR 49244), which identified one country-Japan. The USTR can add countries to the list, and remove countries from it, in accordance with section 109 (C) of PUB. L. 100-202.

**RESTRICTIONS ON PUBLIC BUILDINGS AND PUBLIC WORKS PROJECTS**

- a. Definitions. “Component”, as used in this clause, means those articles, materials, and supplies incorporated directly into the product. “Contractor or subcontractor of a foreign country,” as used in this clause, means any Contractor or subcontractor that is a citizen or national of a foreign country or is controlled directly or indirectly by citizens or nationals of a foreign country. A contractor or subcontractor shall be considered to

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be a citizen or national of a foreign country, or controlled directly or indirectly by citizens or nationals of a foreign country:

- i. If 50 percent or more of the Contractor or subcontractor is owned by a citizen or a national of the foreign country;
  - ii. If the title to 50 percent or more of the stock of the Contractor or subcontractor is held subject to trust or fiduciary obligation in favor of citizens or nationals of the foreign country.
  - iii. If 50 percent or more of the voting power in the Contractor or subcontractor is vested in or exercisable on behalf of a citizen or national of the foreign country; iv. In the case of a partnership, if any general partner is a citizen of the foreign country;
  - v. In the case of a corporation. If its presidents or other chief executive officer or the chairman of its board of directors is a citizen of the foreign country or the majority of any number of its directors necessary to constitute a quorum are citizens of the foreign country or the corporation is organized under the laws of the foreign country or any subdivision, territory, or possession thereof; or
  - vi. In case of a contractor or subcontractor who is a joint venture, if any participant firm is a citizen or national of a foreign country or meets any of the criteria in subparagraphs (A) 1 through 5 of this clause. "Product", as used in this clause, means construction materials, i.e. articles, materials and supplies brought to the construction site for incorporation into the public works project, including permanently affixed equipment, instruments, utilities, electronic or other devices, but not including vehicles or construction equipment. In determining the origin of a product, Galveston County will consider a product as produce in a foreign country if it has been assembled or manufactured in the foreign country, or if the cost of the components mined, produced, or manufactured in the foreign country exceed 50 percent of the cost of all its components.
- b. Restrictions. The Contractor shall not (1) knowingly enter into any subcontract under this contract with a subcontractor of a foreign country included on the list of countries that discriminate against U.S. firms published by the United States Trade Representative (see paragraph (C) of this clause, or (2) supply any product under this contract of a country included on the list of foreign countries that discriminate against U.S. firms published by the USTR.
- c. USTR List. The USTR published an initial list in the Federal Register on December 30, 1987 (53 FR 49244), which identified one country-Japan. The USTR can add other countries to the list, or remove countries from it, in accordance with section 109 (C) of PUB. L. 100-102.
- d. Certification. The Contractor may rely upon the certification of a prospective subcontractor that it is not a subcontractor of a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR and that products supplied by such subcontractor for use on the Federal public works project under this contract are not products of a foreign country included on the list of foreign countries that discriminate against U.S. firms published by the USTR, unless such Contractor has knowledge that the certification is erroneous.

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e. Subcontractors. The Contractor shall incorporate this clause, modified only for the purpose of properly identifying the parties, in all subcontracts. This paragraph (E) shall also be incorporated in all subcontracts.

**RIGHTS TO INVENTIONS (2 CFR Appendix II to Part 200 (F))**

Any discovery or invention that arises during the course of the contract shall be reported to Galveston County. This clause requires the Contractor to disclose promptly inventions to the County (within 2 months) after the inventor discloses it in writing to Contractor personnel responsible for patent matters. The awarding agency shall determine how rights in the invention/discovery shall be allocated consistent with "Government Patent Policy" and Title 37 C.F.R. § 401.

If the Federal award meets the definition of "funding agreement" under 37 C.F.R. §.401.2(a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of Title 37 C.F.R. § 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

**SECTION 109 OF THE HOUSING AND COMMUNITY DEVELOPMENT ACT OF 1974 (24 CFR 570.602)**

Section 109 of the Act requires that no person in the United States shall on the grounds of race, color, national origin, religion, or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance made available pursuant to the Act. Section 109 also directs that the prohibitions against discrimination on the basis of age under the Age Discrimination Act and the prohibitions against discrimination on the basis of disability under Section 504 shall apply to programs or activities receiving Federal financial assistance under Title I programs. The policies and procedures necessary to ensure enforcement of section 109 are codified in 24 CFR part 6.

**TERMINATION FOR CAUSE & CONVENIENCE (2 CFR Appendix II to Part 200 (A) and (B))**

Pursuant to 2 CFR Appendix II to Part 200 (A), Contracts for more than the simplified acquisition threshold currently set at \$150,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, shall address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

Pursuant to 2 CFR Appendix II to Part 200 (B), all contracts in excess of \$10,000 shall address termination for cause and for convenience by the non-Federal entity including the manner by which it will be affected and the basis for settlement. Galveston County shall have the right to terminate this contract for cause and convenience.

In the event of a failure by Contractor to satisfactorily perform the services specified herein and/or a default by Contractor in abiding by the other terms and conditions of this Contract, Galveston County may terminate the Contract on written notice to Contractor and Contractor shall be liable for all damages, costs, and expenses (including attorney fees) incurred by County related to this default. Such termination is in addition to and not in lieu of any other remedies that Galveston County may have in law or equity. Administrative remedies for nonperformance, violation or breach of contract terms, or termination of contract for default may include suspension and debarment. Galveston County may assess liquidated damages for failure to meet completion deadlines, contract breaches, or performance failures of the Contractor or its Subcontractors.

Contractor shall be provided the opportunity to cure certain performance failures or instances of default as described in the contract documents. The legal dispute resolution process as applicable under the Texas Civil Practice and Remedies Code shall include, but is not limited to, Texas and Civil Practice and Remedies Section 38 – Attorney's

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Fees, Texas Civil Practice and Remedies Section 41 – Damages, and Texas Civil Practice and Remedies Section 154 – General Provisions. Galveston County and Contractor(s) should attempt to resolve any claim for breach of contract made by Contractor, to the extent it is applicable to the Contract and not preempted by other law. Except as otherwise provided by law, nothing herein is a waiver by the County or the State of Texas of the right to seek redress in a court of law.

Termination provisions are included in the Contract Requirements & Payment, Section VIII, portion of this IFB.

**WHISTLEBLOWER PROTECTION ACT**

Contractor, subcontractors, and employees working on this Project shall be subject 41 U.S. Code § 4712, which requires that an employee of a contractor, subcontractor, grantee, or subgrantee or personal services contractor may not be discharged, demoted, or otherwise discriminated against as a reprisal for disclosing information that the employee reasonably believes is evidence of gross mismanagement of a Federal contract or grant, a gross waste of Federal funds, an abuse of authority relating to a Federal contract or grant, a substantial and specific danger to public health or safety, or a violation of law, rule, or regulation related to a Federal contract (including the competition for or negotiation of a contract) or grant.

The Contractor shall inform its employees and subcontractors in writing, in the predominant language of the workforce, of employee whistleblower rights and protections under 41 U.S.C. 4712, as described in section 3.908 of the Federal Acquisition Regulation. The Contractor shall insert the substance of this clause, including this paragraph, in all subcontracts providing services for this Project.

**72. NON-EXCLUSIVE LIST OF APPLICABLE LAWS, RULES, AND REGULATIONS – TEXAS GENERAL LAND OFFICE (GLO)**

If applicable to the Project, Provider must be in compliance with the following laws, rules, and regulations; and any other state, federal, or local laws, rules, and regulations as may become applicable throughout the term of the Contract, and Provider acknowledges that this list may not include all such applicable laws, rules, and regulations. Provider and is deemed to have read and understands the requirements of each of the following, if applicable to the Project under this Contract:

**GENERALLY**

The Acts and Regulations specified in this Contract;

Continuing Appropriations Act, 2018 and Supplemental Appropriations for Disaster Relief Requirements Act, 2017 (Public Law 115-56);

The Housing and Community Development Act of 1974 (12 U.S.C. § 5301 et seq.);

The United States Housing Act of 1937, as amended, 42 U.S.C. § 1437f(o)(13) (2016) and related provisions governing Public Housing Authority project-based assistance, and implementing regulations at 24 C.F.R. Part 983 (2016);

Cash Management Improvement Act regulations (31 C.F.R. Part 205);

Community Development Block Grants (24 C.F.R. Part 570);

Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (2 C.F.R. Part 200);

Disaster Recovery Implementation Manual; and State of Texas Plan for Disaster Recovery: Hurricane Harvey – Round 1, dated April 6, 2018, as amended.

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**CIVIL RIGHTS**

Title VI of the Civil Rights Act of 1964, (42 U.S.C. § 2000d et seq.); 24 C.F.R. Part 1, "Nondiscrimination in Federally Assisted Programs of the Department of Housing and Urban Development - Effectuation of Title VI of the Civil Rights Act of 1964";

Title VII of the Civil Rights Act of 1964, as amended by the Equal Employment Opportunity Act of 1972 (42 U.S.C. § 2000e, et seq.);

Title VIII of the Civil Rights Act of 1968, "The Fair Housing Act of 1968" (42 U.S.C. §3601, et seq.), as amended;

Executive Order 11063, as amended by Executive Order 12259, and 24 C.F.R. Part 107, "Nondiscrimination and Equal Opportunity in Housing under Executive Order 11063"; The failure or refusal of Provider to comply with the requirements of Executive Order 11063 or 24 C.F.R. Part 107 shall be a proper basis for the imposition of sanctions specified in 24 C.F.R. 107.60;

The Age Discrimination Act of 1975 (42 U.S.C. § 6101, et seq.); and

Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794.) and "Nondiscrimination Based on Handicap in Federally-Assisted Programs and Activities of the Department of Housing and Urban Development", 24 C.F.R. Part 8. By signing this Contract, Provider understands and agrees that the activities funded shall be performed in accordance with 24 C.F.R. Part 8; and the Architectural Barriers Act of 1968 (42 U.S.C. § 4151, et seq.), including the use of a telecommunications device for deaf persons (TDDs) or equally effective communication system.

**LABOR STANDARDS**

The Davis-Bacon Act, as amended (originally, 40 U.S.C. §§ 276a-276a-5 and re-codified at 40 U.S.C. §§ 3141-3148); 29 C.F.R. Part 5;

The Copeland "Anti-Kickback" Act (originally, 18 U.S.C. § 874 and re-codified at 40 U.S.C. § 3145); 29 C.F.R. Part 3;

Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (originally, 40 U.S.C. §§ 327A and 330 and re-codified at 40 U.S.C. §§ 3701-3708);

Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (Also Labor Standards Provisions Applicable to Non-construction Contracts Subject to the Contract Work Hours and Safety Standards Act) (29 C.F.R. Part 5); and  
Federal Executive Order 11246, as amended.

**EMPLOYMENT OPPORTUNITIES**

Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. § 1701u); 24 C.F.R. §§ 135.3(a)(2) and (a)(3);

The Vietnam Era Veterans' Readjustment Assistance Act of 1974 (38 U.S.C. § 4212);

Title IX of the Education Amendments of 1972 (20 U.S.C. §§ 1681-1688); and

Federal Executive Order 11246, as amended.

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**GRANT AND AUDIT STANDARDS**

Single Audit Act Amendments of 1996, 31 U.S.C. § 7501;

Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (2 C.F.R. Part 200);

Uniform Grant and Contract Management Act (Texas Government Code Chapter 783) and the Uniform Grant Management Standards, issued by Governor's Office of Budget and Planning; and

Title 1 Texas Administrative Code § 5.167(c).

**LEAD-BASED PAINT**

Section 302 of the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. § 4831(b)).

**HISTORIC PROPERTIES**

The National Historic Preservation Act of 1966 as amended (16 U.S.C. § 470, et seq.), particularly sections 106 and 110 (16 U.S.C. §§ 470 and 470h-2), except as provided in §58.17 for Section 17 projects;

Executive Order 11593, Protection and Enhancement of the Cultural Environment, May 13, 1971 (36 FR 8921), 3 C.F.R., 1971-1975 Comp., p. 559, particularly section 2(c);

Federal historic preservation regulations as follows: 36 C.F.R. Part 800 with respect to HUD programs; and The Reservoir Salvage Act of 1960, as amended by the Archeological and Historic Preservation Act of 1974 (16 U.S.C. § 469, et seq.), particularly section 3 (16 U.S.C. §469a-1).

**ENVIRONMENTAL LAW AND AUTHORITIES**

Environmental Review Procedures for Recipients assuming HUD Environmental Responsibilities (24 C.F.R. Part 58, as amended);

National Environmental Policy Act of 1969, as amended (42 U.S.C. §§ 4321-4347); and Council for Environmental Quality Regulations for Implementing NEPA (40 C.F.R. Parts 1500-1508).

**FLOODPLAIN MANAGEMENT AND WETLAND PROTECTION**

Executive Order 11988, Floodplain Management, May 24, 1977 (42 FR 26951), 3 C.F.R., 1977 Comp., p. 117, as interpreted in HUD regulations at 24 C.F.R. Part 55, particularly Section 2(a) of the Order (For an explanation of the relationship between the decision-making process in 24 C.F.R. Part 55 and this part, see § 55.10.); and

Executive Order 11990, Protection of Wetlands, May 24, 1977 (42 FR 26961), 3 C.F.R., 1977 Comp., p. 121 particularly Sections 2 and 5.

**COASTAL ZONE MANAGEMENT**

The Coastal Zone Management Act of 1972 (16 U.S.C. § 1451, et seq.), as amended, particularly sections 307(c) and (d) (16 U.S.C. § 1456(c) and (d)).

**SOLE SOURCE AQUIFERS**

The Safe Drinking Water Act of 1974 (42 U.S.C. §§ 201, 300(f), et seq., and 21 U.S.C. §349) as amended; particularly section 1424(e)(42 U.S.C. § 300h-3(e)); and

Sole Source Aquifers (Environmental Protection Agency-40 C.F.R. part 149.).

**ENDANGERED SPECIES**

The Endangered Species Act of 1973 (16 U.S.C. § 1531, et seq.) as amended, particularly section 7 (16 U.S.C. § 1536).

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**WILD AND SCENIC RIVERS**

The Wild and Scenic Rivers Act of 1968 (16 U.S.C. § 1271, et seq.) as amended, particularly sections 7(b) and (c) (16 U.S.C. § 1278(b) and (c)).

**AIR QUALITY**

The Clean Air Act (42 U.S.C. § 7401, et seq.) as amended, particularly sections 176(c) and (d) (42 U.S.C. § 7506(c) and (d)).

Determining Conformity of Federal Actions to State or Federal Implementation Plans  
(Environmental Protection Agency-40 C.F.R. Parts 6, 51, and 93).

**FARMLAND PROTECTION**

Farmland Protection Policy Act of 1981 (7 U.S.C. § 4201, et seq.) particularly sections 1540(b) and 1541 (7 U.S.C. §§ 4201(b) and 4202); and

Farmland Protection Policy (Department of Agriculture-7 C.F.R. part 658).

**HUD ENVIRONMENTAL STANDARDS**

Applicable criteria and standards specified in HUD environmental regulations (24 C.F.R. Part 51)(other than the runway clear zone and clear zone notification requirement in 24 C.F.R. § 51.303(a)(3); and

HUD Notice 79-33, Policy Guidance to Address the Problems Posed by Toxic Chemicals and Radioactive Materials, September 10, 1979.

**ENVIRONMENTAL JUSTICE**

Executive Order 12898 of February 11, 1994—Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, (59 FR 7629), 3 C.F.R., 1994 Comp. p. 859.

**SUSPENSION AND DEBARMENT**

Use of debarred, suspended, or ineligible contractors or subrecipients (24 C.F.R. § 570.609);

General HUD Program Requirements; Waivers (24 C.F.R. Part 5); and

Nonprocurement Suspension and Debarment (2 C.F.R. Part 2424).

**OTHER REQUIREMENTS**

Environmental Review Procedures for Entities Assuming HUD Environmental Responsibilities (24 C.F.R. Part 58).

**ACQUISITION / RELOCATION**

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. § 4601, et seq.), 24 C.F.R. Part 42, and 24 C.F.R. § 570.606.

**FAITH-BASED ACTIVITIES**

Executive Order 13279 of December 12, 2002 - Equal Protection of the Laws for Faith-Based and Community Organizations, (67 FR 77141).

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**73. SPECIAL CONDITIONS – TEXAS GENERAL LAND OFFICE (GLO)**

If applicable to a Project or Activity, Subrecipient must be in compliance with the following Special Conditions and any other State, Federal, or local laws, rules, and regulations as may be applicable, throughout the term of the Contract, prior to the release of any grant funds for the Projects or Activities anticipated.

Subrecipient is deemed to have read and to understand the requirements of each of the following, if applicable to the Project or any Activity under this Contract:

**A. REIMBURSEMENT, GENERALLY**

As provided for in Public Law 115-56, the Contract funds may not be used for activities that are eligible to be reimbursed by, or for which funds are made available by, (a) the Federal Emergency Management Agency (FEMA); (b) the Army Corps of Engineers (Corps); (c) any other federal funding source; or (d) covered by insurance, and Subrecipient shall ensure compliance with all such requirements.

**B. NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE**

- (1) Subrecipient must provide documentation which indicates they have received approval from the Texas Water Development Board (TWDB), the National Flood Insurance Program (NFIP) State Coordinating Agency, that appropriate ordinances or orders necessary for Subrecipient to be eligible to participate in the NFIP have been adopted.
- (2) Where Activities specified in a Performance Statement, involve structures that are located in Special Flood Hazard Areas (SFHA), flood insurance may be required, and Subrecipient shall obtain such insurance, and shall maintain documentation evidencing compliance with such requirements.
- (3) Subrecipient acknowledges and agrees that if any property that is the subject of an Activity under this Contract located within a floodplain, that the following terms and conditions shall apply:
  - a. Under the Flood Disaster Protection Act of 1973, as amended (42 U.S.C. 4001-4128), Federal financial assistance for acquisition and construction purposes (including rehabilitation) may not be used in an area identified by the Federal Emergency Management Agency (FEMA) as having special flood hazards, unless:
    - i. The community in which the area is situated is participating in the National Flood Insurance Program ("NFIP") (44 CFR parts 59 through 79), or less than one (1) year has passed since the FEMA notification regarding such hazards; and
    - ii. The community is participating in the NFIP, or that flood insurance protection is to be obtained as a condition of the approval of financial assistance to the property owner.
  - b. Where the community is participating in the NFIP and the recipient provides financial assistance for acquisition or construction purposes (including rehabilitation) for property located in an area identified by FEMA as having special flood hazards, Subrecipient is responsible for ensuring that flood insurance under the NFIP is obtained and maintained.
  - c. Under Section 582 of the National Flood Insurance Reform Act of 1994, 42 U.S.C. 515a, HUD disaster assistance that is made available in a special flood hazard area may not be used to make a payment (including any loan assistance payment) to a person for repair, replacement, or restoration for flood damage to any personal, residential, or commercial property if:
    - i. The person had previously received Federal flood disaster assistance conditioned on obtaining and maintaining flood insurance; and
    - ii. The person failed to obtain and maintain flood insurance.



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- d. Subrecipient understands and agrees that it has a responsibility to inform homeowners receiving disaster assistance that triggers the flood insurance purchase requirement of their statutory responsibility to notify any transferee of the requirement to obtain and maintain flood insurance, and that the transferring owner may be liable if he or she fails to do so.

**C. PROJECT MAPPING/DESIGN INFORMATION**

For construction projects, Subrecipient shall require and maintain copies, in written and/or digital format, of final Project record drawing(s) and engineering schematics, as constructed.

**D. WATER SYSTEM IMPROVEMENTS**

- (1) Prior to the GLO's release of funds for the construction of any water system improvements, Subrecipient shall provide certification to the GLO that plans, specifications, and related documents for the specified water system improvements have been prepared by the engineer selected for such activities, or the engineer's duly authorized representative, and that the review of such plans, specifications, and related documents meet the applicable Texas Commission on Environmental Quality (TCEQ) review requirements described in Title 30 of the Texas Administrative Code.
- (2) Prior to construction, Subrecipient shall provide documentation to the GLO that an approved new or amended Certificate of Convenience and Necessity (CCN), or the equivalent permit or authority for the area to be served, has been issued by the TCEQ.
- (3) Prior to Subrecipient submission of the Project Completion Report for any water system improvements described in Attachment A, Subrecipient shall provide a letter from the TCEQ that the constructed well is approved for interim use and may be temporarily placed into service pursuant to 30 Texas Administrative Code, Chapter 290—Rules and Regulations for Public Water Systems.

**E. SEWER SYSTEM IMPROVEMENTS**

Prior to the construction of any sewer system improvements described, Subrecipient shall provide certification that plans, specifications, and related documents for the specified sewer system improvements have been prepared by the engineer selected for such activities, or the engineer's duly authorized representative, and that the review of such plans, specifications, and related documents meet the Texas Commission on Environmental Quality (TCEQ) review requirements described in 30 Texas Administrative Code, Chapter 217, Subchapter D.

Further, prior to the construction of any sewer lines or additional service connections described in Attachment A, Subrecipient shall provide notification of the start of construction on any sewer treatment plant of other system-related improvements included in this Contract.

**F. WASTEWATER TREATMENT CONSTRUCTION**

Prior to incurring costs for any wastewater treatment construction in Attachment A, Subrecipient shall provide documentation of an approved permit or amendment(s) to an existing permit for such activities from the TCEQ's Water Quality Division.

In addition, Subrecipient shall provide documentation to the GLO that an approved new or amended Certificate of Convenience and Necessity (CCN), or equivalent permit or authority for the area to be served has been issued by the TCEQ.

**G. SEPTIC SYSTEM IMPROVEMENTS**

- (1) Subrecipient shall provide documentation that final plans, specifications, and installation of its septic system improvements have been reviewed and approved by the City or County Health Department through authority granted by the TCEQ.
- (2) Subrecipient shall mitigate all existing septic systems in accordance with 30 Texas Administrative Code Chapter 285, Subchapter D, §285.36(b), which states, "All tanks, boreholes, cesspools, seepage pits, holding tanks, and pump tanks shall have the wastewater removed by a waste transporter, holding a current registration with the executive director. All tanks, boreholes, cesspools, seepage pits, holding

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tanks, and pump tanks shall be filled to ground level with fill material (less than three inches in diameter), which is free of organic and construction debris."

- (3) Prior to the selection of program recipients for proposed On-Site Sewer Facilities (OSSF), Subrecipient shall provide a copy of its proposed program guidelines to for GLO review. All proposed OSSF programs must meet or exceed guidelines set forth in 30 Texas Administrative Code Chapter 285 Subchapter D.

**H. BUILDING CONSTRUCTION**

Subrecipient shall provide documentation that the construction of a new building and facilities are in compliance with the Texas Accessibility Standards (TAS) of the Architectural Barriers Act, Chapter 469, Texas Government Code, and the Texas Department of Licensing and Regulation (TDLR) Architectural Barriers Administrative Rules, 16 Texas Administrative Code, Part 4, Chapter 68. If estimated construction costs exceed Fifty Thousand Dollars (\$50,000.00), Construction Documents must be submitted to the Texas Department of Licensing and Regulation (TDLR) for an accessibility plan review.

**I. BRIDGE CONSTRUCTION/REHABILITATION**

Subrecipient shall use the minimum design requirements of the Texas Department of Transportation (TxDOT) for bridge construction/rehabilitation. Final plans and specifications must be submitted to TxDOT for review and approval prior to the start of construction, and documentation of such approval must be provided to the GLO.

**J. DISASTER SHELTERS**

Subrecipient shall ensure that the primary purpose of the facility, as described in Attachment A, is to serve as a disaster shelter, and shall ensure the facility is operated at all times in a manner that ensures that the priority use is to serve as a disaster shelter regardless of any other scheduled uses or commitments that existed at the time of the disaster or emergency situation. In addition, Subrecipient shall prepare or be incorporated into an approved emergency management plan, as prescribed by the Texas Division of Emergency Management, identifying the shelter as a facility that provides short-term lodging for evacuees during and immediately after an emergency situation. Subrecipient shall submit a copy of Subrecipient's Emergency Management Plan Annex for Shelter and Mass Care to the GLO.

**K. DEBRIS REMOVAL**

Subrecipient shall ensure that any debris to be removed consists primarily of vegetation, construction and demolition materials from damaged or destroyed structures, and personal property. Only debris identified as the responsibility of the local jurisdiction will be eligible for the reimbursement of cost of removal.

Prior to beginning debris collection operations, Subrecipient shall address all pertinent environmental concerns, adhere to all applicable regulations, and obtain all required permits. Further, Subrecipient shall adhere to the methods described herein for the collection and storage of debris prior to proper disposal.

While construction and demolition debris may be collected and disposed of at an appropriately rated landfill, woody and/or vegetative debris must be stored prior to disposal by use of temporary debris storage and reduction sites (TDSR). Subrecipient will prepare and operate the TDSR sites, or local jurisdictions choosing to conduct their own debris operations may review Chapter 7 of the FEMA Debris Management Guide regarding the use of TDSR sites. This document may be obtained <https://www.fema.gov/pdf/government/grant/pa/demagde.pdf>.

In order to maintain the life expectancy of landfills, Subrecipients disposing of woody and/or vegetative debris must choose burning, chipping, or grinding as the method of disposal. Any project disposing of woody and/or vegetative debris must be approved in writing by the GLO.

**L. USE OF BONDS**

Subrecipient must notify the GLO of its issuance and sale of bonds for completion of the project funded under this Contract.

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**M. PROGRAM GUIDELINES**

Prior to the selection of program beneficiaries, Subrecipient shall provide to the GLO, for GLO review and approval, a copy of its proposed guidelines for the program. The guidelines must meet or exceed to requirements in the Federal Registers. The guidelines must include provisions for compliance with the Federal Fire Prevention and Control Act of 1974 (which requires that any housing unit rehabilitated with grant funds be protected by a hard-wired or battery-operated smoke detector) and provisions for compliance with 24 CFR 35 (HUD lead-based paint regulation).

**N. AFFORDABILITY PERIODS FOR SINGLE-FAMILY HOUSING REHABILITATION, RECONSTRUCTION, OR NEW CONSTRUCTION ASSISTANCE**

For single-family non-rental housing assistance provided by Subrecipient, Subrecipient shall implement the following affordability period: for rehabilitation or reconstruction of housing projects, a minimum<sup>1</sup> three-year affordability period guaranteed by an unsecured forgivable promissory note and for new construction housing projects, a minimum<sup>□</sup> five-year affordability period guaranteed by an unsecured forgivable promissory note.

**O. UNSECURED FORGIVABLE PROMISSORY NOTE (“NOTE”)**

An unsecured forgivable promissory note shall be issued at an interest rate of zero-percent (0%). Provided that all terms and conditions contained in the Note continue to be fulfilled, a Note will be forgiven according to the following terms, as applicable, until the applicant fulfills their note requirement (the requirements are defined in the promissory note document): for a three-year Note, at a rate of 33 percent per year, for the first two years, and 34 percent after the third year; and for a five-year Note, at a rate of 20% per year.

- (1) If the homeowner occupies the home for the full Note term, the Note expires and no repayment is required, nor will any conditions be imposed relative to the disposition of the property. If any of the terms and conditions under which the assistance was provided are breached or if the property is sold, leased, transferred, or vacated by the homeowner for any consecutive thirty (30) day period during the Note term, the repayment provisions of the promissory note and DOT shall be enforced.
- (2) If, during the Note term, the homeowner vacates the unit for any consecutive thirty (30) day period, the locality may forgive, as evidenced by the program director, city council, or commissioner court action, the remaining loan balance. Prior to forgiveness of all or any portion of the assistance provided, the request for forgiveness must be approved by the local governing body and be based on documented and justifiable conditions or circumstances that would result in an unnecessary hardship to the homeowner and the determination that the national objective of benefiting low to moderate-income persons was met.
- (3) The national objective will be considered met only when the program director, city council, or county commissioners court determines that a low- to moderate-income person has occupied the rehabilitated or reconstructed home for a time sufficient to meet the national objective. If the national objective was not achieved, Subrecipient is liable for repayment of an amount equal to the difference in the appraised value of the home prior to reconstruction and the sales price when the home is sold during the term of the forgivable Note.
- (4) If the property is sold or transferred to a person other than an eligible LMI person, the remaining pro-rated balance of the DPL must be repaid by the Subrecipient from the sales proceeds. Notwithstanding the preceding, Subrecipient shall be held liable for any balance remaining over and above the sales proceeds. In all instances, upon completion of the Note or repayment of the assistance (in full or in part), the Subrecipient shall prepare and record a release of lien document in the land records of the applicable county.
- (5) Monitoring of the Note is performed during and after the grant is closed. Subrecipient must utilize non-CDBG-DR funds to fulfill the monitoring obligations for its impacted recovered community.

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- (6) The subrecipient will maintain a list of homeowners that do not maintain flood insurance as documented in their promissory note. These applicants will not be allowed to received future assistance as outlined in Section B of this document.

**P. RENTAL HOUSING REHABILITATION, RECONSTRUCTION, OR NEW CONSTRUCTION ASSISTANCE**

The rental housing assistance will provided be provided in the following forms: for rehabilitation or reconstruction of multi-family rental projects with eight or more units, a minimum fifteen (15) year forgivable loan or grant at zero interest; and for new construction multi-family rental projects with five or more units, a minimum twenty (20) year forgivable loan or grant at zero interest. Provided all terms and conditions under which the assistance was provided continue to be fulfilled, the note will be forgiven at a rate of 5 percent per year until the applicant fulfills their note requirement (the requirements are defined in the promissory note document).

The purpose of the program is to facilitate the rehabilitation, reconstruction, and/or new construction of affordable rental housing needs within the service area of the disaster event. A minimum of 51% of the multi-family units must be restricted during the affordability period of twenty (20) years for low to moderate income (LMI) persons. The rents, at a minimum, must comply with High HOME Investment Partnership (HOME) Rents and other existing Land Use Restriction Agreement (LURA) restrictions if applicable. HOME rent limits are defined by HUD and must equal the lesser of fair market rents or 30% of the adjusted income for people earning 65% of the AMFI.

**Q. COASTAL MANAGEMENT**

Subrecipient acknowledges and agrees that any Project that may impact a Coastal Natural Resource Area must be consistent with the goals and policies of the Texas Coastal Management Program as described in 31 Texas Administrative Code, Part 16, Chapter 501.

**74. ENERGY EFFICIENCY (42 U.S.C. 6201 and 2 CFR 200 APPENDIX II (H))**

Contractor must comply with the mandatory standards and policies relating to energy efficiency, which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6201). Contractor must include this provision in all contracts between itself and any subcontractors in connection with the services performed under this Contract.

**75. LEAD AND ASBESTOS**

If this request for Bid involves remediation, demolition, reconstruction, rehabilitation, repair, or construction, or other applicable activities, the Contractor shall be responsible for performing investigations of lead and asbestos containing materials, and any required lead and asbestos abatement in compliance with Federal, State, and local laws, rules, regulations, ordinances and orders, relating to lead abatement and asbestos abatement as applicable, including but not limited to the Texas Asbestos Health Protection Act, codified as Chapter 1954 of the Occupations Code; the Texas Asbestos Health Protection Regulations, located at Title 25, Part 1, Chapter 295, Subchapter C of the Texas Administrative Code; Chapter 1955 of the Texas Occupations Code (lead-based paint abatement); the Texas Environmental Lead Reduction regulations, located at Title 25, Part 1, Chapter 295, Subchapter I of the Texas Administrative Code; the federal National Emission Standards for Asbestos regulations, located at Title 40, Part 61, Subpart M of the Code of Federal Regulations, and the National Emission Standards for Hazardous Air Pollutants. Contractor shall perform such inspections, encapsulation, remediation, or other actions as required by federal, State, or local requirements in accordance with the federal Environmental Protection Agency (EPA), Texas Department of State Health Services (TXDSHS), and Texas Commission on Environmental Quality (TCEQ) requirements.

**INFORMATION TO BID**  
**23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION**  
**GALVESTON COUNTY, TEXAS**

**76. USE OF DHS SEAL, LOGO, AND FLAGS PROHIBITED WITHOUT PRIOR APROVAL**

Contractor must obtain permission from the U.S. Department of Homeland Security financial assistance office (DHS FAO) **prior** to using DHS seals(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials, including use of the United States Coast Guard seal, logo, crests or reproductions of flags or likenesses of Coast Guard Officials.

**77. FEDERAL GOVERNMENT NOT A PARTY**

Contractor acknowledges that the Federal Government is not a party to the contract and is not subject to any obligations or liabilities to Galveston County, contractor, or any other party pertaining to any matter resulting from the contract.

**78. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS**

In contracts funded through Federal grants, Contractor acknowledges that 31 U.S.C. Chapter 38, Administrative Remedies for False Claims and Statements (31 U.S.C. § 3801, et seq.) and the implementing regulations thereunder, 49 C.F.R. Part 79, apply to Contractors actions pertaining to the contract.

**79. ACKNOWLEDGMENT OF GOVERNMENT RECORD**

Bidder acknowledges that its submission in this Request for Bids, including its Bid, certifications, affidavits, Vendor Forms (i.e., PEID, W-9, CIQ, etc.) constitutes government records under Chapter 37 of the Texas Penal Code.

**80. COMPLIANCE WITH GALVESTON COUNTY PURCHASING POLICIES AND PROCEDURES**

Bidder acknowledges, by its submission in this request for bids, that it shall comply with the Galveston County Purchasing Policies & Procedures Manual approved by Order of the Galveston County Commissioners' Court on March 7, 2018.

**81. ENTIRETY OF AGREEMENT AND MODIFICATION**

This contract contains the entire agreement between the parties. Any prior agreement, promise, negotiation, or representation not expressly set forth in this contract has no force or effect. Any subsequent modification to this contract must be in writing, signed by both parties.

An official representative, employee, or agent of the County does not have the authority to modify or amend this contract except pursuant to specific authority to do so granted by the Galveston County Commissioners' Court.

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**INFORMATION TO BID**  
**23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION**  
**GALVESTON COUNTY, TEXAS**

**82. NOTICE**

All notices or other communications required or permitted under this contract shall be in writing and shall be deemed to have been duly given if delivered personally in hand, transmitted by facsimile, or mailed certified mail, return receipt requested with proper postage affixed and addressed to the appropriate party at the following address or at such other address as may have been previously given in writing to the parties (Bidder shall provide its notice information with its Bid submission). If mailed, the notice shall be deemed delivered when actually received, or if earlier, on the third day following deposit in a United States Postal Service post office or receptacle, duly certified, return receipt requested, with proper postage affixed. If delivered in person, notice shall be deemed delivered when receipted for by, or actually received by the receiving Party. If transmitted by facsimile, notice shall be deemed delivered when receipt of such transmission is acknowledged.

**To the County at:**

Hon. Mark Henry,  
County Judge of Galveston County  
722 Moody (21<sup>st</sup> Street), Second (2<sup>nd</sup>) Floor  
Galveston, Texas 77550  
Fax: (409) 765-2653

**With copies to:**

Rufus Crowder, CPPO CPPB,  
Galveston County Purchasing Agent  
722 Moody (21<sup>st</sup> Street), Fifth (5<sup>th</sup>) Floor  
Galveston, Texas 77550  
Fax: (409) 621-7997

**To the Contractor at:**

*End of General Provisions*

**SPECIAL PROVISIONS**

**INVITATION TO BID  
23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION  
GALVESTON COUNTY, TEXAS**

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## SPECIAL PROVISIONS

### INVITATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

**The General Provisions and the Special Provisions of this Invitation to Bid and the Exhibits attached hereto are made a part of this agreement between the Parties. In the event of a conflict between the General Provisions and the Special Provisions, the terms of the Special Provisions shall control.**

#### A. PURPOSE

Galveston County is seeking a contractor for the construction of the paving, drainage, and utility rehabilitation of 23<sup>rd</sup> Street in Galveston, Texas from Broadway to Seawall Boulevard. This will entail the removal of the existing road and replacing it with concrete along with the construction of ADA ramps and sidewalk upgrades. The project includes water, sanitary sewer system and storm sewer system upgrades on 23<sup>rd</sup> Street as well as on Avenue K from 23<sup>rd</sup> to 21<sup>st</sup> Street.

The engineer's construction cost and estimate to complete this project is \$9,500,000.00.

#### B. EXCEPTIONS TO BID CONDITIONS

**The Bidder will list on a separate sheet of paper any exceptions to the conditions of this Invitation to Bid.** This sheet will be labeled, "Exceptions to Bid Conditions", and will be attached to the Bid submittal.

If no exceptions are stated, **it will be understood that all general and special conditions will be complied with, without exception.**

The Bidder must specify in its Bid any alternatives it wishes to propose for consideration by the County. Each alternative should be sufficiently described and labeled within the Bid and should indicate its possible or actual advantage to the program being offered.

The County reserves the right to offer these alternatives to other Bidders.

#### C. PROCUREMENT TIMELINE

A timeline for this solicitation and initial process is included below. Galveston County reserves the right to change these dates and will notify Bidders of any changes:

Advertise Solicitation (first date of publication)	Wednesday, March 16, 2022
Advertise Solicitation (second date of publication)	Wednesday, March 23, 2022
<b>Pre-Bid Conference</b>	<b>Tuesday, March 29, 2022, at 10:00 a.m.</b>
<b>Deadline for Questions &amp; Inquiries</b>	<b>Friday, April 1, 2022, by 5:00 p.m.</b>
<b>Submission Deadline / Bid Opening</b>	<b>Thursday, April 14, 2022, at 2:00 p.m.</b>

#### **Virtual Bid Opening:**

Interested parties can attend the Thursday, April 14, 2022, at 2:00 p.m. bid opening virtually. Instructions are listed below:

#### **Join from Meeting Link:**

<https://galvestoncountytexas.webex.com/galvestoncountytexas/j.php?MTID=mdc263e22fa02105103f86f6058045233>

#### **Join by meeting number**

Meeting number (access code): 2499 997 2436

Meeting password: B221010



## **SPECIAL PROVISIONS**

### **INVITATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS**

**Tap to join from a mobile device (attendees only)**

+1-415-655-0001,,24999972436## US Toll

**Join by phone**

+1-415-655-0001 US Toll

Global call-in numbers

**Join from a video system or application**

Dial 24999972436@galvestoncountytexas.webex.com

**D. PRE-BID CONFERENCE**

A non-mandatory Pre-Bid conference will be held on Tuesday, March 29, 2022, at 10:00 a.m.

Interested parties can attend the pre-Bid conference virtually. Instructions are listed below.

**Join from the meeting link**

<https://galvestoncountytexas.webex.com/galvestoncountytexas/j.php?MTID=m7bc811f79c75cc823adab5f3dd9fc2f5>

**Join by meeting number**

Meeting number (access code): 2494 173 0238

**Meeting password: B221010**

**Tap to join from a mobile device (attendees only)**

+1-415-655-0001,,24941730238## US Toll

**Join by phone**

+1-415-655-0001 US Toll

Global call-in numbers

**Join from a video system or application**

Dial 24941730238@galvestoncountytexas.webex.com

You can also dial 173.243.2.68 and enter your meeting number.

## SPECIAL PROVISIONS

### INVITATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

#### E. SUBMISSION INSTRUCTIONS

One (1) unbound original Bid and three (3) Bid copies must be submitted no later than **2:00 P.M. CST**, on **Thursday, April 14, 2022**, to the following address:

**Rufus G. Crowder, CPPO CPPB**  
**Purchasing Agent**  
**County of Galveston**  
**722 Moody Avenue (21<sup>st</sup> Street), Fifth (5<sup>th</sup>) Floor**  
**Galveston, TX 77550**

The time stamp clock located in the Purchasing Agent's office shall serve as the official time keeping piece for this solicitation process. Any bids received after **2:00 P.M. CST** on the specified date will be returned unopened.

Specifications can be obtained at the office of the Galveston County Purchasing Agent, located in the Galveston County Courthouse, 722 Moody, (21<sup>st</sup> Street), Floor 5, Purchasing, Galveston, Texas 77550, or by visiting the Galveston County website @ <http://www.galvestoncountytexas.gov/county-offices/purchasing>

#### F. BID SURETY

A surety / bid bond *is a requirement* of this solicitation.

#### G. PERFORMANCE AND PAYMENT BONDS

Performance and Payment Bonds *are requirements* of this solicitation.

#### H. BEST AND FINAL OFFERS (BAFO)

The Best and Final Offer process *is not applicable* to this solicitation.

#### I. DAVIS-BACON WAGE RATES

Davis-Bacon Wage Rates *are requirements* of this solicitation.

Attention is called to the fact that not less than, the federally determined prevailing (Davis-Bacon and Related Acts) wage rates are required to be paid to laborers and mechanics. When required by Federal program legislation, all prime construction contracts in excess of \$2,000 must include a provision for compliance with the Davis-Bacon Act as supplemented by the Department of Labor regulations (29 C.F.R. Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractor must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. In addition, contractors must be required to pay wages not less than once a week. In addition, the successful bidder must ensure that employees and applicants for employment are not discriminated against because of race, color, religion, sex, age, or national origin. Please reference the General Provisions, item 69, Procurement Laws, sub-item 3, **Davis-Bacon Act as amended (40 U.S.C. 3141-3148)**.

## SPECIAL PROVISIONS

### INVITATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

#### J. PERSONNEL TO CONTACT

Bidders desiring an explanation or interpretation relative to this solicitation must request it in writing. Oral explanations or instructions will not be binding. Any information given to a Bidder, which in the opinion of the County affects all Bidders or would be prejudicial to other Bidders if not communicated, shall be furnished to all Bidders as an addendum to the solicitation. Bidders **must** direct all inquiries to the following:

**Rufus G. Crowder, CPPO CPPB**  
**Purchasing Agent**  
**722 21<sup>st</sup> Street (Moody)**  
**Galveston, Texas 77550**  
**e-mail: [purchasing.bids@co.galveston.tx.us](mailto:purchasing.bids@co.galveston.tx.us)**

Bidders must e-mail their requests (with the subject line “23<sup>rd</sup> Street Paving, Drainage & Utility Rehabilitation – ITB #B221010– Questions”) for additional information and/or clarification to the address listed above. The request must include the Bidder’s name and the solicitation number and title.

*Any request for additional information or clarification must be received in writing no later than ten (10) calendar days prior to the solicitation due date.* Late requests or those not delivered to the proper address may not receive a reply. Bidders shall not attempt to contact the County by any other means. The Purchasing Agent shall post the answers on the County website from the procurement web page and via addendum.

The County will issue responses to inquiries and any other corrections or amendments, it deems necessary, in the form of a written addendum, issued prior to the solicitation Submission Deadline / Solicitation Opening date. The County, at its sole discretion, may not issue a response to an RFI submittal. Bidders should not rely on any oral or written representations, statements, or explanations, other than those made in this solicitation or in any written addendum to this solicitation. Where there appears to be conflict between the solicitation and any issued addenda, the last addendum issued will prevail.

Addenda will be posted and made available on the County’s procurement web page. **It is the Bidder’s sole responsibility to ensure receipt of all addenda prior to submitting its response.** All Bidders should check the County’s procurement web page for all addenda prior to submitting a response.

The County’s procurement web page is located at <http://www.galvestoncountytexas.gov/county-offices/purchasing>

The Bidder must acknowledge the receipt of all addenda on the forms provided. In the event a Bidder fails to acknowledge receipt of such addenda, the County may, at its sole discretion, determine that such failure to acknowledge any or all addenda does not materially affect the solicitation and waive the acknowledgement of one or more addenda.

Bidders who submit inquiries *after* the deadline date for receipt of questions indicated on the Procurement Timeline, risk that its response in the procurement will not be responsive or competitive because the County is not able to respond before the solicitation receipt date or in sufficient time for the Bidder to prepare a responsive or competitive submittal.

All questions and responses as posted on the County website pertaining to this solicitation are considered an addendum to, and part of, this solicitation. Each Bidder shall be responsible to monitor the County website for new or revised solicitation information. The County shall not be bound by any verbal information, nor shall it be bound by any written information that is not either contained within the solicitation or formally issued as an addendum by the Purchasing Agent.

## SPECIAL PROVISIONS

### INVITATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

#### K. PROGRAM ADMINISTRATION & CONTRACT MANAGEMENT

The Program Administrator/Contract Manager that will manage the work to be performed under the resultant contract for the purpose of this solicitation is:

**Michael Shannon**  
**County Engineer**  
**722 Moody, (21<sup>st</sup> St.), 1<sup>st</sup> Floor**  
**Galveston, TX 77550**

The Galveston County Commissioners' Court, and/or authorized designees will be responsible for negotiating with the successful Vendor the scope of work, the standards of performance, the specific technology provided, and the support services required for the proposed projects. All contractual amendments will be processed in accordance with Galveston County Purchasing Policies. Amendments will also be brought to Galveston County Commissioners Court for approval as deemed necessary. The approval process serves to ensure the project technology and/or service is within the scope of the resultant contract, and that pricing meets the agreed upon pricing methodology as specified in the contract, and that funds are available.

#### L. REQUIREMENTS OF INVITATION TO BID

Bidder shall provide one (1) original and three (3) hard copies of its response, to the Purchasing Agent on or before the submission deadline specified herein. Font size is limited to no smaller than font size 11, except that organizational charts, other graphics, and footers may be as small as font size 9.

Bidders shall clearly indicate which project or projects are being submitted for consideration in their cover letter.

#### M. INSURANCE

Bidder must submit, with its response, a current certificate of insurance evidencing coverage in the amounts specified below or greater. In lieu of submitting a certificate of insurance, Bidders may submit a notarized statement from an insurance company authorized to conduct business in the State of Texas guaranteeing that Bidder has such insurance. Provided however, that successful Bidder(s) shall be required to provide a current certificate of insurance to the Galveston County Purchasing Agent's Office before Bidder commences any work hereunder. **Insurance shall be placed with insurers having an A.M. Best's rating of no less than A.** Such insurance must be issued by a casualty company authorized to do business in the State of Texas, and in standard form approved by the Board of Insurance Commissioners of the State of Texas, with coverage provisions ensuring the public from loss or damage that may arise to any person or property by reason of services rendered by Contractor.

**Galveston County shall be listed as an additional insured on each policy and all certificates of insurance and Contractor shall provide Galveston County with no less than thirty (30) calendar days prior notice of any changes to the policy during the contractual period.**

Certificates of Insurance, fully executed by a licensed representative of the insurance company written or countersigned by an authorized Texas state agency, shall be filed with the County Purchasing Agent within ten (10) calendar days of the execution of this Agreement as written proof of such insurance and further provided that Contractor shall not commence work under this Agreement until Contractor has obtained all insurance required herein, provided written proof as required herein, and received written notice to proceed issued from the County Purchasing Agent. **Failure to provide such evidence of insurance within the ten (10) calendar day period shall constitute an event of default.**

Workers' Compensation Insurance. Bidder shall carry in full force Workers' Compensation Insurance Policy(ies), if there is more than one employee, for all its employees, including but not limited to full time, part time, and emergency employees employed by the Contractor.

## SPECIAL PROVISIONS

### INVITATION TO BID 23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION GALVESTON COUNTY, TEXAS

Commercial General Liability. Bidder shall carry in full force commercial general liability insurance with a limit of not less than \$1,000,000 each occurrence and \$2,000,000 in the aggregate. The Policy shall, minimally, cover liability for bodily injury, personal injury, and property damage.

**Business Automobile Liability.** Bidder shall carry in full force business automobile liability coverage with a combined bodily injury/property damage limit of not less than \$1,000,000 each accident. The policy shall cover liability arising from the operation of licensed vehicles by policyholder.

**Subrogation Waiver.** Contractor and Contractor's insurance carrier shall waive any and all rights to subrogation against Galveston County in regard to any suit or claim arising out of personal injury or property damage resulting from Contractor's performance under this Agreement.

#### N. AWARDED PRICES

Any unit prices submitted by the Bidder shall include all costs to the County, including the material, delivery, current freight rate, state tax, or any other cost.

Award prices include all royalties and costs arising from patents, trademarks, and copyrights in any way involved in the work. Whenever the Awardee is required or desires to use any design, device, material or process covered by letters of patent or copyright, the Awardee shall indemnify and save harmless the County, its officers, agents and employees from any and all claims for infringement by reason of the use of any such patented design, tool, material, equipment, or process, to be performed under the contract, and shall indemnify the County its officers, agents, and employees for any costs, expenses and damages which may be incurred by reason of any infringement at any time during the prosecution or after the completion of the work.

#### O. INVOICES:

Invoices must be itemized indicating all materials and supplies used. Invoices must be submitted to:

**Galveston County Auditor's Office  
Attn: Accounts Payable  
P.O. Box 1418  
Galveston, Texas 77553**

Failure to submit invoices to the above address or failure to include the Purchase Order Number will result in delay in payment.

**Contractor must accept purchase order numbers for specified supplies, equipment, and/or services. Contractor shall not perform any work or release any supplies and/or equipment to any authorized representative of the County of Galveston unless a valid purchase order number issued by the office of the Galveston County Purchasing Agent accompanies the order or if vendor can comply with the provision as stated in the General Provisions, page 8, item 13, Procurement Card Program.**

**Payment for any items issued without prior receipt of a valid purchase order number may become the sole responsibility of the successful contractor.**



## Prohibition on Contracts with Certain Companies

Prohibition on contracts with certain companies per Government Code 2252.151 Definitions:

(1) "Company" has the meaning assigned by Section 806.001.

(2) "Foreign terrorist organization" means an organization designated as a foreign terrorist organization by the United States secretary of state as authorized by 8 U.S.C. Section 1189.

(3) "Governmental contract" means a contract awarded by a governmental entity for general construction, an improvement, a service, or a public works project for a purchase of supplies, materials, or equipment. The term includes a contract to obtain a professional or consulting service subject to Government Code, Chapter 2254.

(4) "Governmental entity" has the meaning assigned by Government Code, Section 2252.001.

**Section 2252.152 – CONTRACTS WITH COMPANIES ENGAGED IN BUSINESS WITH IRAN, SUDAN, OR FOREIGN TERRORIST ORGANIZATION PROHIBITED.** A governmental entity may not enter into a governmental contract with a company that is identified on a list prepared and maintained under Section 806.051, 807.051, or 2252.153.

**Section 2252.153 – Listed Companies.** The comptroller shall prepare and maintain, and make available to each governmental entity, a list of companies known to have contracts with or provide supplies or services to a foreign terrorist organization.

Pursuant to Chapter 2252, Texas Government Code, **VENDOR** represents and certifies that, at the time of execution of this Agreement, neither Vendor, nor any wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of the same (i) engages in business with Iran, Sudan, or any foreign terrorist organization as described in Chapters 806 or 807 of the Texas Government Code, or Subchapter F of Chapter 2252 of the Texas Government Code, or (ii) is a company listed by the Texas Comptroller of Public Accounts under Sections 806.051, 807.051, or 2252.153 of the Texas Government Code. The term "foreign terrorist organization" in this paragraph has the meaning assigned to such term in Section 2252.151 of the Texas Government Code.

Individual by oath swears that the following statements are factual and true:

1. Individual is authorized by the Contractor to make this statement for the Contractor.
2. Individual has read and is fully aware of the facts stated in this statement.
3. Individual can read and comprehend the English language.
4. As required by GOVERNMENT CODE, CHAPTER 2252.152, CONTRACTOR hereby verifies that it is not identified on a list prepared and maintained under Section 806.051, 807.051, or 2252.153, or contracting with a company doing business with Iran, Sudan, or any foreign terrorist organizations.

Date: \_\_\_\_\_

Business Name of Contractor: \_\_\_\_\_

Company Address: \_\_\_\_\_

County of Contractor: \_\_\_\_\_

Name of Individual: \_\_\_\_\_

Signature of Individual: \_\_\_\_\_



## Prohibition on Contracts with Companies Boycotting Israel

Prohibition on contracts with companies boycotting Israel per Government Code 2271.001 Definitions:

- (1) "Boycott Israel" has the meaning assigned by Section 808.001.
- (2) "Company" has the meaning assigned by Section 808.001; except that the term does not include a sole proprietorship.
- (2) "Governmental entity" has the meaning assigned by Government Code, Section 2251.001.

PROVISION REQUIRED IN CONTRACT. (a) This section applies only to a contract that:

- (1) is between a governmental entity and a company with 10 or more full-time employees; and
- (2) has a value of \$100,000 or more that is to be paid wholly or partly from public funds of the governmental entity.

(b) A governmental entity may not enter into a contract with a company for goods or services unless the contract contains a written verification from the company that it:

- (1) does not boycott Israel; and
- (2) will not boycott Israel during the term of the contract.

As required by GOVERNMENT CODE, CHAPTER 2271, CONTRACTOR hereby verifies that it does not boycott Israel and will not boycott Israel throughout the term of this Agreement. For the purposes of this verification, "Boycott Israel" means refusing to deal with, terminating business activities, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes.

Individual by oath swears that the following statements are factual and true:

1. Individual is authorized by the Contractor to make this statement for the Contractor.
2. Individual has read and is fully aware of the facts stated in this statement.
3. Individual can read and comprehend the English language.
4. In accordance with Texas Government Code Section 2271.002, this company does not boycott Israel and will not boycott Israel during the term of this contract/agreement.

Date: \_\_\_\_\_

Business Name of Contractor: \_\_\_\_\_

Company Address: \_\_\_\_\_

County of Contractor: \_\_\_\_\_

A Individual: \_\_\_\_\_

Signature of Individual: \_\_\_\_\_

**CERTIFICATION REGARDING LOBBYING**  
**(31 U.S.C.A. § 1352)**  
**This Certification must be completed, signed, dated and**  
**returned to the Galveston County Purchasing Agent**

**Procurement Number and Description:** \_\_\_\_\_

ITB #B221010, 23<sup>rd</sup> Street Paving, Drainage & Utility Rehabilitation

Proposer **CERTIFIES**, to the best of its knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the proposer, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the proposer shall complete and submit **Standard Form LLL**, "Disclosure Form to Report Lobbying", in accordance with its instructions.
3. Proposer shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Name of Organization/Corporation: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Signature of Authorized Signatory for Proposer: \_\_\_\_\_ Date Signed: \_\_\_\_\_

Title of Authorized Signatory of Proposer: \_\_\_\_\_



State of Texas

§

§

County of Galveston

§

**NON-COLLUSION AFFIDAVIT**

Before me, the undersigned notary, on this day personally appeared \_\_\_\_\_ (Affiant), whom being first duly sworn, deposes and certifies that:

- Affiant is the \_\_\_\_\_ of \_\_\_\_\_, that  
(Individual, Partner, Corporate Officer) (Name of Qualifier)  
submitted the attached Qualification in **ITB #B221010, 23<sup>rd</sup> Street Paving, Drainage & Utility Rehabilitation**
- Affiant is a duly authorized representative of Qualifier and is authorized to make this Non-Collusion Affidavit;
- The attached Qualification is genuine and is not a collusive or sham Qualification;
- The attached Qualification has been independently arrived at without collusion with any other qualifier, bidder, proposer, person, firm, competitor, or potential competitor;
- Qualifier has not colluded, conspired, connived or agreed, directly or indirectly, with any other qualifier, bidder, proposer, person, firm, competitor, or potential competitor, to submit a collusive or sham qualification or that such other qualifier, bidder, proposer, person, firm, competitor, or potential competitor shall refrain from qualifying;
- Qualifier has not in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other qualifier, bidder, proposer, person, firm, competitor, or potential competitor to fix the price or prices in the attached Qualification or of the qualification any other qualifier;
- Qualifier has not in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other qualifier bidder, proposer, person, firm, competitor, or potential competitor to fix the overhead, profit or cost element of the Qualification price or prices of any other qualifier, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against Galveston County or any person interested in the proposed contract;
- Affiant has not in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other qualifier, bidder, proposer, person, firm, competitor, or potential competitor, paid or agreed to pay any other qualifier, bidder, proposer, person, firm, competitor, or potential competitor any money or anything of value in return for assistance in procuring or attempting to procure a contract or in return for establishing the price or prices in the attached Qualification or the qualification of any other Qualifier; and
- Affiant certifies that Affiant is fully informed regarding the accuracy of the statements contained herein, and under penalties of perjury, certifies and affirms the truth of the statements herein, such penalties being applicable to the Qualifier as well as to Affiant signing on its behalf.

\_\_\_\_\_  
**Signature of Affiant**

**SWORN TO and SUBSCRIBED** before me this \_\_\_\_\_ day of \_\_\_\_\_, 2022.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

**CONTRACTOR'S CERTIFICATION of RECOVERED MATERIAL**

**ACKNOWLEDGEMENT**

I, \_\_\_\_\_ (Principal's Name) \_\_\_\_\_ of \_\_\_\_\_ (Company Name) \_\_\_\_\_, (hereinafter called "Contractor"), acknowledge the recovered material bidding requirements found in 2 CFR 200.322 that requires the Contractor to procure those items designated in the guidelines of the Environmental Protection Agency (EPA) at 40 CFR 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition.

I also acknowledge that this requirement shall apply to items purchased (1) where the Contractor purchases in excess of \$10,000 of the item under this contract; or (2) where during the preceding fiscal year, the value of the quantity acquired was in excess of \$10,000.

Finally, I acknowledge the attached list of recovered materials included in the bid documents. (For up-to-date listing, please go to <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program#directory>)

\_\_\_\_\_  
Printed Name and Title

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**USE OF RECOVERED MATERIAL**

**Please check one:**

- Recovered materials are included in this bid:  
Materials included \_\_\_\_\_
- Recovered materials are not reasonably available in a reasonable period of time.
- Recovered materials fail to meet reasonable performance standards, which are determined on the basis of the guidelines of the National Institute of Standards and Technology, if applicable.
- Recovered materials are only available at an unreasonable price.

\_\_\_\_\_  
Printed Name and Title

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**BID FORM**  
**23<sup>rd</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION**  
**COUNTY OF GALVESTON, TEXAS**

By signing here, the firm does hereby attest that it has fully read the instructions, conditions and general and special provisions and understands them.

THE COMPANY OF: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

FEIN (TAX ID): \_\_\_\_\_

The following shall be returned with your bid. Failure to do so may be ample cause for rejection of bid as non-responsive. It is the responsibility of the Bidder to ensure that bidder has received all addenda.

Items:	Confirmed (X):
1. References (if required)	_____
2. Addenda, if any	#1 _____ #2 _____ #3 _____ #4 _____
3. One (1) original and three (3) copies of submittal	_____
4. Bid Form	_____
5. Vendor Qualification Packet	_____
6. Debarment Certification Form	_____
7. Non-Collusion Affidavit	_____
8. Payment Terms:	_____ net 30 _____ Other
9. Lobbyist Certification	_____
10. Bid Bond	_____
11. Boycotting Israel Form	_____
12. Contracts with other companies form	_____
13. Contractor's Certification of Recovered Material	_____

Person to contact regarding this bid: \_\_\_\_\_

Title: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail address: \_\_\_\_\_

Name of person authorized to bind the Firm: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail address: \_\_\_\_\_

**BID FORM**  
**23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION**  
**GALVESTON COUNTY, TEXAS**

Bidder shall use this form to provide the information for notice.

1. Contact information for notice:

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
Telephone Number: \_\_\_\_\_ Facsimile number: \_\_\_\_\_

2. If a copy of notice is requested, please complete below:

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
Telephone Number: \_\_\_\_\_ Facsimile number: \_\_\_\_\_

3. If second or more copies are requested for notice, please supplement this form and clearly mark the supplement as "Supplementary Notice Information."

Bidder to submit reference information. Bidder shall use this form to provide minimum required reference information. If Bidder wishes to provide more than the minimum, Bidder should supplement this form and should clearly mark the supplement as "Supplementary Reference Information."

1. References who can attest to the Bidder's capability to carry out the requirements set forth in this bid:

Business Name of Organization: \_\_\_\_\_  
Name of Person: \_\_\_\_\_  
Title of Individual within Organization, if applicable \_\_\_\_\_  
Business address: \_\_\_\_\_  
\_\_\_\_\_  
Telephone number: \_\_\_\_\_ Facsimile number: \_\_\_\_\_

Business Name of Organization: \_\_\_\_\_  
Name of Person: \_\_\_\_\_  
Title of Individual within Organization, if applicable \_\_\_\_\_  
Business address: \_\_\_\_\_  
\_\_\_\_\_  
Telephone number: \_\_\_\_\_ Facsimile number: \_\_\_\_\_

Business Name of Organization: \_\_\_\_\_  
Name of Person: \_\_\_\_\_  
Title of Individual within Organization, if applicable \_\_\_\_\_  
Business address: \_\_\_\_\_  
\_\_\_\_\_  
Telephone number: \_\_\_\_\_ Facsimile number: \_\_\_\_\_

**BID FORM**  
**23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION**  
**GALVESTON COUNTY, TEXAS**

References of major supplier of Bidder who can speak to the financial capability of the Bidder to carry out the requirements set forth in this bid:

- 1. Business Name of Supplier \_\_\_\_\_  
Name of Person: \_\_\_\_\_  
Title of Individual within business: \_\_\_\_\_  
Business address: \_\_\_\_\_  
\_\_\_\_\_  
Telephone number: \_\_\_\_\_ Facsimile number: \_\_\_\_\_
  
- 2. Business Name of Supplier \_\_\_\_\_  
Name of Person: \_\_\_\_\_  
Title of Individual within business: \_\_\_\_\_  
Business address: \_\_\_\_\_  
\_\_\_\_\_  
Telephone number: \_\_\_\_\_ Facsimile number: \_\_\_\_\_
  
- 3. Business Name of Supplier \_\_\_\_\_  
Name of Person: \_\_\_\_\_  
Title of Individual within business: \_\_\_\_\_  
Business address: \_\_\_\_\_  
\_\_\_\_\_  
Telephone number: \_\_\_\_\_ Facsimile number: \_\_\_\_\_

*The remainder of this page intentionally left blank*



## County of Galveston

### ACKNOWLEDGMENT AND CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER INELIGIBILITY Executive Orders 12549 & 12689 Certification, Debarment and Suspension

Solicitation Number: ITB #B221010

Solicitation Title: 23<sup>rd</sup> Street Paving, Drainage & Utility Rehabilitation

#### Contractor hereby CERTIFIES that:

Contractor, and all of its principals, is not presently debarred, suspended, proposed for debarment, proposed for suspension, or declared ineligible under Executive Order 12549 or Executive Order 12689, Debarment and Suspension, and is not in any other way ineligible for participation in Federal or State assistance programs;

Contractor, and all of its principals, were not and have not been debarred, suspended, proposed for debarment, proposed for suspension, or declared ineligible under Executive Order 12549 or Executive Order 12689, Debarment and Suspension, and were not and have not been in any other way ineligible for participation in Federal or State assistance programs at the time its' proposal was submitted in the procurement identified herein and at any time since submission of its' proposal;

Contractor has included, and shall continue to include, this certification in all contracts between itself and any sub-contractors in connection with services performed under this contract; **and**

Contractor shall notify Galveston County in writing immediately, through written notification to the Galveston County Purchasing Agent, if Contractor is not in compliance with Executive Order 12549 or 12689 during the term of its contract with Galveston County.

Contractor **Represents** and **Warrants** that the individual executing this Acknowledgment and Certification on its behalf has the full power and authority to do so and can legally bind the Contractor hereto.

\_\_\_\_\_  
Name of Business

\_\_\_\_\_  
Date

By: \_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name & Title



## County of Galveston Purchasing Department Vendor Qualification Packet

(rev. 1.4, September 28, 2017)

All interested parties seeking consideration for qualified vendor status with the County of Galveston should complete and return only the following forms to:

Galveston County Purchasing Department  
722 Moody Avenue, (21st Street), 5<sup>th</sup> Floor  
Galveston, Texas 77550  
(409) 770-5371 office  
(409) 621-7987 fax

**PEID Form:** Person /Entity Information Data

**W -9 Form:** Request for Taxpayer Identification Number and Certification  
*(please note that the included form may not be the latest revised form issued by the Internal Revenue Service. Please check the IRS website at <http://www.irs.gov/pub/irs-rd/ffw9.pdf> for the latest revision of this form.)*

**CIQ Form:** Conflict of Interest Questionnaire  
*(please note that the included form may not be the latest revised form issued by the State of Texas Ethics Commission. Please check the Texas Ethics Commission website at [http://www.ethics.state.tx.us/whatsnew/conflict\\_forms.htm](http://www.ethics.state.tx.us/whatsnew/conflict_forms.htm) for the latest revision of this form. Please note that Galveston County Purchasing Agent is not responsible for the filing of this form with the Galveston County Clerk per instructions of the State of Texas Ethics Commission).*

**Debarment:** **CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS & REQUIREMENT TO REGISTER IN SAM**  
*Vendors/contractor certifies that neither it, nor any of its Principals, are presently debarred, suspended, proposed for debarment, disqualified, excluded, or in any way declared ineligible for the award of contracts by any Federal agency. Vendor agrees that it shall refund Galveston County for any payments made to Contractor while ineligible. Vendor acknowledges that Contractor's uncured failure to perform under any agreement with the County of Galveston, if such should occur, may result in Contractor being debarred from performing additional work for the County, the respecting State Agency administering the grant funding the contract, if applicable, the State, FEMA or HUD (as applicable), and other Federal and State entities. Further, Vendor has executed the Certification Regarding Debarment, Suspension, Proposed Debarment, and Other Responsibility Matters and returned the fully completed and executed original certification with the submission of this Vendor Qualification Packet. **The truthful and fully completed and executed original of the Certification Regarding Debarment, Suspension, Proposed Debarment, and Other Responsibility Matters must be included with the submission of this Vendor Qualification Packet and is a mandatory requirement to become a vendor of Galveston County. Vendor's failure to include the fully completed and executed original of this Certification shall be considered non-compliant with the requirements of this vendor qualification request and grounds for the rejection of vendor's request. Vendor shall immediately notify the County Purchasing Agent if it becomes debarred or suspended, placed on***

*the Consolidated List of Debarred Contractors, or in any other way becomes ineligible for award of contract by any Federal agency. This Certification is a material fact relied upon by Galveston County; if it is later determined that the vendor did not comply with 2 C. F. R. Part 180 and 2 C.F.R. Part 3000, in addition to the remedies available to Galveston County and the State agency administering a grant, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment of contractor. If the contract to be awarded pursuant to a Galveston County procurement effort involves the use of Federal funds, then vendor must also be registered in the Federal Contractor Registry through the System for Award Management (SAM) to be eligible for award of contract pursuant to the procurement.*

Information regarding the SAM is available at:

<http://federalcontractorregistry.com/?gclid=CIGlhF2rr8wCFYkCaQoducANZw> or at <http://sam.gov/portal/SAM/#1>.

*No contract involving the use of Federal funds may be awarded to any vendor unless and until such registration is current and in good standing under SAM Successful vendors must maintain SAM registration throughout the entire term of any contractual agreement with the County. If a contract involves the use of Federal funds, then vendor must enclose proof of such SAM registration within its response, which is also a mandatory requirement of County procurement policy; failure to enclose such proof shall be considered non-compliant with the requirements of any procurement effort and grounds for the rejection of vendor's response to any procurement efforts (i.e., bid, proposal, or qualifications statement, as applicable).*

**Direct Deposit: Direct Deposit Authorization Form – Temporarily suspended until further notice**

**Certificate(s) of Insurance: If the person or entity seeking qualified vendor status with the County will be performing work at or on any County owned facility and/or property, Certificate(s) of Insurance are required to be submitted prior to performing any work.**

Insurance requirements are as follows:

**Public Liability and Property Damage Insurance:**

Successful vendor agrees to keep in full force and effect, a policy of public liability and property damage insurance issued by a casualty company authorized to do business in the State of Texas, and in standard form approved by the Board of Insurance Commissioners of the State of Texas, with coverage provisions insuring the public from any loss or damage that may arise to any person or property by reason of services rendered by vendor. Vendor shall at its own expense be required to carry the following minimum insurance coverages:

1. For damages arising out of bodily injury to or death of one person in anyone occurrence - one hundred thousand and no/100 dollars (\$100,000.00);
2. For damages arising out of bodily injury to or death of two or more persons in anyone occurrence - three hundred thousand and no/100 dollars (\$300,000.00); and
3. For injury to or destruction of property in anyone occurrence - one hundred thousand and no/100 dollars (\$100,000.00).

This insurance shall be either on an occurrence basis or on a claims made basis. Provided however, that if the coverage is on a claims made basis, then the vendor shall be required to purchase, at the termination of this agreement, tail coverage for the County for the period of the County's relationship with the vendor under this agreement. Such coverage shall be in the amounts set forth in subparagraphs (1), (2), and (3) above.



**Worker's Compensation Insurance:**

Successful vendor shall also carry in full force Workers' Compensation Insurance policy(ies), if there is more than one employee, for all employees, including but not limited to full time, part time, and emergency employees employed by the vendor. Current insurance certificates certifying that such policies as specified above are in full force and effect shall be furnished by the vendor to the County.

**The County of Galveston shall be named as additional insured on policies listed in subparagraphs above and shall be notified of any changes to the policy(ies) during the contractual period.**

Insurance is to be placed with insurers having a Best rating of no less than A. The vendor shall furnish the County with certificates of insurance and original endorsements affecting coverage required by these insurance clauses. The certificates and endorsements for each insurance policy are to be signed by a person authorized by the insurer to bind coverage on its behalf. The vendor shall be required to submit annual renewals for the term of any contractual agreement, purchase order or term contract, with Galveston County prior to expiration of any policy.

In addition to the remedies stated herein, the County has the right to pursue other remedies permitted by law or in equity.

The County agrees to provide vendor with reasonable and timely notice of any claim, demand, or cause of action made or brought against the County arising out of or related to utilization of the property. Vendor shall have the right to defend any such claim, demand, or cause of action at its sole cost and expense and within its sole and exclusive discretion. The County agrees not to compromise or settle any claim or cause of action arising out of or related to the utilization of the property without the prior written consent of the vendor.

In no event shall the County be liable for any damage to or destruction of any property belonging to the vendor unless specified in writing and agreed upon by both parties.

**Procurement Policy - Special Note:**

Understand that it is, according to Texas Local Government Code, Section 262.011, Purchasing Agents, subsections (d), (e), and (0), the sole responsibility of the Purchasing Agent to supervise all procurement transactions.

Therefore, be advised that all procurement transactions require proper authorization in the form of a Galveston County purchase order from the Purchasing Agent's office prior to commitment to deliver supplies, materials, equipment, including contracts for repair, service, and maintenance agreements. Any commitments made without proper authorization from the Purchasing Agent's office, pending Commissioners' Court approval, may become the sole responsibility of the individual making the commitment including the obligation of payment.

**Code of Ethics - Statement of Purchasing Policy:**

Public employment is a public trust. It is the policy of Galveston County to promote and balance the objective of protecting the County's integrity and the objective of facilitating the recruitment and retention of personnel needed by Galveston County. Such policy is implemented by prescribing essential standards of ethical conduct without creating unnecessary obstacles to entering public office.

Public employees must discharge their duties impartially so as to assure fair competitive access to governmental procurement by responsible contractors. Moreover, they should conduct themselves in such a manner as to foster public confidence in the integrity of the Galveston County procurement organization.

To achieve the purpose of these instructions, it is essential that those doing business with Galveston County also observe the ethical standards prescribed here.

**General Ethical Standards:** It shall be a breach of ethics to attempt to realize personal gain through public employment with Galveston County by any conduct inconsistent with the proper discharge of the employee's duties.

It shall be a breach of ethics to attempt to influence any public employee of Galveston County to breach the standards of ethical conduct set forth in this code.

It shall be a breach of ethics for any employee of Galveston County to participate directly or indirectly in procurement when the employee knows that:

- The employee or any member of the employee's immediate family has a financial interest pertaining to the procurement.
- A business or organization in which the employee, or any member of the employee's immediate family, has a financial interest pertaining to the procurement.
- Any other person, business or organization with which the employee or any member of the employee's immediate family is negotiating or has an arrangement concerning prospective employment is involved in the procurement.

**Gratuities:** It shall be a breach of ethics to offer, give or agree to give any employee of Galveston County, or for any employee or former employee of Galveston County to solicit, demand, accept or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation of any part of a program requirement or purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any program requirement or a contract or subcontract, or to any solicitation or proposal therefore pending before this government.

**Kickbacks:** It shall be a breach of ethics for any payment, gratuity or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor for any contract for Galveston County, or any person associated therewith, as an inducement for the award of a subcontract or order.

**Contract Clause:** The prohibition against gratuities and kickbacks prescribed above shall be conspicuously set forth in every contract and solicitation by Galveston County.

**Confidential Information:** It shall be a breach of ethics for any employee or former employee of Galveston County to knowingly use confidential information for actual or anticipated personal gain, or for the actual or anticipated gain of any person.

**Questions/Concerns:**

If you have any questions or concerns regarding the information or instructions contained within this packet, please contact any member of the Purchasing Department staff at **(409) 770-5371**.

**CONFLICT OF INTEREST DISCLOSURE REPORTING**

Proposer may be required under Chapter 176 of the Texas Local Government Code to complete and file a conflict of interest questionnaire (CIQ Form). If so, the completed CIQ Form must be filed with the County Clerk of Galveston County, Texas.

If Proposer has an employment or other business relationship with an officer of Galveston County or with a family member of an officer of Galveston County that results in the officer or family member of the officer receiving taxable income that exceeds \$2,500.00 during the preceding 12-month period, then Proposer **MUST** complete a CIQ Form and file the original of the CIQ Form with the County Clerk of Galveston County.

If Proposer has given an officer of Galveston County or a family member of an officer of Galveston County one or more gifts with an aggregate value of more than \$250.00 during the preceding 12-months, then Proposer **MUST** complete a CIQ Form and file the original of the CIQ Form with the County Clerk of Galveston County

The Galveston County Clerk has offices at the following locations:

Galveston County Clerk  
Galveston County Justice Center, Suite 2001  
600 59th Street  
Galveston, Texas 77551

Galveston County Clerk  
North County Annex, 1st Floor  
174 Calder Road  
League City, Texas 77573

Again, if Proposer is required to file a CIQ Form, the original completed form is filed with the Galveston County Clerk (not the Purchasing Agent).

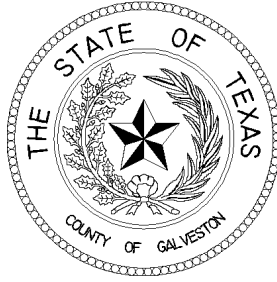
For Proposer's convenience, a blank CIQ Form is enclosed with this proposal. Blank CIQ Forms may also be obtained by visiting the Galveston County Clerk's website and/or the Purchasing Agent's website - both of these web sites are linked to the Galveston County homepage at <http://www.galvestoncountytexas.gov>

As well, blank CIQ Forms may be obtained by visiting the Texas Ethics Commission website, specifically at <http://www.ethics.state.tx.us/whatsnew/conflictfroms.htm>

Chapter 176 specifies deadlines for the filing of CIQ Forms (both initial filings and updated filings).

It is Proposer's sole responsibility to file a true and complete CIQ Form with the Galveston County Clerk if Proposer is required to file by the requirements of Chapter 176. Proposer is advised that it is an offense to fail to comply with the disclosure reporting requirements dictated under Chapter 176 of the Texas Local Government Code.

If you have questions about compliance with Chapter 176, please consult your own legal counsel. Compliance is the individual responsibility of each person, business, and agent who is subject to Chapter 176 of the Texas Local Government Code.



## COUNTY of GALVESTON

### Purchasing Department

rev. 1.3, March 29, 2010

<b>FORM PEID:</b>	<b>Request for Person-Entity Identification Data</b>
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Instructions: Please type or print clearly when completing sections 1 thru 4 and return completed form to:

**Galveston County Purchasing Agent**  
**722 Moody Avenue (21 st. Street), 5th Floor**  
**Galveston, Texas 77550**  
**(409) 770-5371**  
*prodoc@co.galveston.tx.us*

1.	<b>Business Name:</b>			
	<b>Attention Line:</b>			
2.	<b>Physical Address:</b>			
	<b>City:</b>		<b>State:</b>	<b>Zip+4:</b>
3.	<b>Billing / Remit Address:</b>			
	<b>City:</b>		<b>State:</b>	<b>Zip+4</b>
4.	<b>Main Contact Person:</b>			
	<b>Main Phone Number:</b>			
	<b>Fax Number:</b>			
	<b>E-mail Address:</b>			

**Areas below are for County use only.**

<b>Requested By:</b>	<b>Phone / Ext. #</b>
<b>Department:</b>	<b>Date:</b>

<b>Action Requested - Check One:</b>	<b>IFAS PEID Vendor Number:</b>	
<input type="checkbox"/> Add New	<input type="checkbox"/> Change Data	<input type="checkbox"/> Re-activate
<input type="checkbox"/> Inactivate	<input type="checkbox"/> Employee	<input type="checkbox"/> Attorney
<input type="checkbox"/> Landlord	<input type="checkbox"/> Foster Parent	<input type="checkbox"/> Refund
<input type="checkbox"/> OneTime	<input type="checkbox"/> Foster Child	

# Request for Taxpayer Identification Number and Certification

**Give Form to the  
 requester. Do not  
 send to the IRS.**

▶ Go to [www.irs.gov/FormW9](http://www.irs.gov/FormW9) for instructions and the latest information.

<b>Print or type.</b>	<b>See Specific Instructions on page 3.</b>	<p><b>1</b> Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.</p> <hr/> <p><b>2</b> Business name/disregarded entity name, if different from above</p> <hr/> <p><b>3</b> Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only <b>one</b> of the following seven boxes.</p> <p><input type="checkbox"/> Individual/sole proprietor or single-member LLC      <input type="checkbox"/> C Corporation      <input type="checkbox"/> S Corporation      <input type="checkbox"/> Partnership      <input type="checkbox"/> Trust/estate</p> <p><input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____</p> <p><b>Note:</b> Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is <b>not</b> disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.</p> <p><input type="checkbox"/> Other (see instructions) ▶ _____</p>	<p><b>4</b> Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):</p> <p>Exempt payee code (if any) _____</p> <p>Exemption from FATCA reporting code (if any) _____</p> <p style="font-size: small;">(Applies to accounts maintained outside the U.S.)</p>
		<p><b>5</b> Address (number, street, and apt. or suite no.) See instructions.</p> <hr/> <p><b>6</b> City, state, and ZIP code</p> <hr/> <p><b>7</b> List account number(s) here (optional)</p> <hr/>	<p>Requester's name and address (optional)</p> <hr/>

## Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

**Note:** If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

<b>Social security number</b>											
				-			-				
<b>or</b>											
<b>Employer identification number</b>											
				-							

## Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

<b>Sign Here</b>	Signature of U.S. person ▶	Date ▶
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## General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

**Future developments.** For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to [www.irs.gov/FormW9](http://www.irs.gov/FormW9).

### Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

*If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.*

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting*, later, for further information.

**Note:** If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

**Definition of a U.S. person.** For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

**Special rules for partnerships.** Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States.

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

**Foreign person.** If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 515, *Withholding of Tax on Nonresident Aliens and Foreign Entities*).

**Nonresident alien who becomes a resident alien.** Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items.

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

**Example.** Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

## Backup Withholding

**What is backup withholding?** Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

**Payments you receive will be subject to backup withholding if:**

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the instructions for Part II for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code*, later, and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships*, earlier.

## What is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code*, later, and the Instructions for the Requester of Form W-9 for more information.

## Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

## Penalties

**Failure to furnish TIN.** If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

**Civil penalty for false information with respect to withholding.** If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

**Criminal penalty for falsifying information.** Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

**Misuse of TINs.** If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

## Specific Instructions

### Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

**Note: ITIN applicant:** Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or “doing business as” (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C corporation, or S corporation.** Enter the entity’s name as shown on the entity’s tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a “disregarded entity.” See Regulations section 301.7701-2(c)(2)(iii). Enter the owner’s name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner’s name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity’s name on line 2, “Business name/disregarded entity name.” If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

### Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

### Line 3

Check the appropriate box on line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3.

IF the entity/person on line 1 is a(n) . . .	THEN check the box for . . .
• Corporation	Corporation
• Individual • Sole proprietorship, or • Single-member limited liability company (LLC) owned by an individual and disregarded for U.S. federal tax purposes.	Individual/sole proprietor or single-member LLC
• LLC treated as a partnership for U.S. federal tax purposes, • LLC that has filed Form 8832 or 2553 to be taxed as a corporation, or • LLC that is disregarded as an entity separate from its owner but the owner is another LLC that is not disregarded for U.S. federal tax purposes.	Limited liability company and enter the appropriate tax classification. (P= Partnership; C= C corporation; or S= S corporation)
• Partnership	Partnership
• Trust/estate	Trust/estate

### Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

#### Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys’ fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

- 1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)
- 2—The United States or any of its agencies or instrumentalities
- 3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities
- 4—A foreign government or any of its political subdivisions, agencies, or instrumentalities
- 5—A corporation
- 6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession
- 7—A futures commission merchant registered with the Commodity Futures Trading Commission
- 8—A real estate investment trust
- 9—An entity registered at all times during the tax year under the Investment Company Act of 1940
- 10—A common trust fund operated by a bank under section 584(a)
- 11—A financial institution
- 12—A middleman known in the investment community as a nominee or custodian
- 13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over \$600 required to be reported and direct sales over \$5,000 <sup>1</sup>	Generally, exempt payees 1 through 5 <sup>2</sup>
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

<sup>1</sup> See Form 1099-MISC, Miscellaneous Income, and its instructions.

<sup>2</sup> However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

**Exemption from FATCA reporting code.** The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

**Note:** You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

### Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, write NEW at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

### Line 6

Enter your city, state, and ZIP code.

## Part I. Taxpayer Identification Number (TIN)

**Enter your TIN in the appropriate box.** If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN.

If you are a single-member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

**Note:** See *What Name and Number To Give the Requester*, later, for further clarification of name and TIN combinations.

**How to get a TIN.** If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at [www.SSA.gov](http://www.SSA.gov). You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at [www.irs.gov/Businesses](http://www.irs.gov/Businesses) and clicking on Employer Identification Number (EIN) under Starting a Business. Go to [www.irs.gov/Forms](http://www.irs.gov/Forms) to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to [www.irs.gov/OrderForms](http://www.irs.gov/OrderForms) to place an order and have Form W-7 and/or SS-4 mailed to you within 10 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

**Note:** Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

**Caution:** A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

## Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, 4, or 5 below indicates otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code*, earlier.

**Signature requirements.** Complete the certification as indicated in items 1 through 5 below.



**1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983.**

You must give your correct TIN, but you do not have to sign the certification.

**2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983.**

You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

**3. Real estate transactions.**

You must sign the certification. You may cross out item 2 of the certification.

**4. Other payments.** You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

**5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), ABLE accounts (under section 529A), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions.** You must give your correct TIN, but you do not have to sign the certification.

**What Name and Number To Give the Requester**

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account) other than an account maintained by an FFI	The actual owner of the account or, if combined funds, the first individual on the account <sup>1</sup>
3. Two or more U.S. persons (joint account maintained by an FFI)	Each holder of the account
4. Custodial account of a minor (Uniform Gift to Minors Act)	The minor <sup>2</sup>
5. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee <sup>1</sup>
b. So-called trust account that is not a legal or valid trust under state law	The actual owner <sup>1</sup>
6. Sole proprietorship or disregarded entity owned by an individual	The owner <sup>3</sup>
7. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	Give name and EIN of:
8. Disregarded entity not owned by an individual	The owner
9. A valid trust, estate, or pension trust	Legal entity <sup>4</sup>
10. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
11. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
12. Partnership or multi-member LLC	The partnership
13. A broker or registered nominee	The broker or nominee

For this type of account:	Give name and EIN of:
14. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
15. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

<sup>1</sup> List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

<sup>2</sup> Circle the minor's name and furnish the minor's SSN.

<sup>3</sup> You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

<sup>4</sup> List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships*, earlier.

\*Note: The grantor also must provide a Form W-9 to trustee of trust.

Note: If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

**Secure Your Tax Records From Identity Theft**

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Pub. 5027, Identity Theft Information for Taxpayers.

Victims of identity theft who are experiencing economic harm or a systemic problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

**Protect yourself from suspicious emails or phishing schemes.**

Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to [phishing@irs.gov](mailto:phishing@irs.gov). You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at [spam@uce.gov](mailto:spam@uce.gov) or report them at [www.ftc.gov/complaint](http://www.ftc.gov/complaint). You can contact the FTC at [www.ftc.gov/idtheft](http://www.ftc.gov/idtheft) or 877-IDTHEFT (877-438-4338). If you have been the victim of identity theft, see [www.IdentityTheft.gov](http://www.IdentityTheft.gov) and Pub. 5027.

Visit [www.irs.gov/IdentityTheft](http://www.irs.gov/IdentityTheft) to learn more about identity theft and how to reduce your risk.

## Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

# CONFLICT OF INTEREST QUESTIONNAIRE

# FORM CIQ

For vendor or other person doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 1491, 80th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001 (1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

OFFICE USE ONLY

Date Received

1 Name of person who has a business relationship with local governmental entity.

2  Check this box if you are filing an update to a previously filed questionnaire.

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 Name of local government officer with whom filer has employment or business relationship.

\_\_\_\_\_  
Name of Officer

This section (item 3 including subparts A, B, C & D) must be completed for each *officer* with whom the filer has an employment or other business relationship as defined by Section 176.001 (1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the filer of the questionnaire?

Yes       NO

B. Is the filer of the questionnaire receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government *officer* named in this section AND the taxable income is not received from the local governmental entity?

Yes       NO

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an *officer* or director, or holds an ownership of 10 percent or more?

Yes       NO

D. Describe each employment or business relationship with the local government *officer* named in this section.

4

\_\_\_\_\_  
Signature of person doing business with the governmental entity

\_\_\_\_\_  
Date

Adopted 06/29/2007

# **SPECIAL PROVISIONS FOR CONSTRUCTION**

## **1. Contract and Contract Documents**

The Plans, Specifications and Addenda, General Provisions shall form part of this contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth.

## **2. Definitions**

Whenever used in any of the contract Documents, the following meanings shall be given to the terms here in defined:

- (a) The term "Contract" means the Contract executed between the County of Galveston, hereinafter called the Owner, and \_\_\_\_\_, hereinafter called Contractor, of which these GENERAL CONDITIONS, form a part.
- (b) The term "Project Area" means the area within which are the specified Contract limits of the Improvements contemplated to be constructed in whole or in part under this contract.
- (c) The term "Engineer" means LJA Engineering, Inc., Engineer in charge, serving the Owner with architectural or engineering services, his successor, or any other person or persons, employed by the Owner for the purpose of directing or having in charge the work embraced in this Contract.
- (d) The term "Contract Documents" means and shall include the following: Invitation to Bid, , Signed Copy of Bid, General Conditions, Special Provisions For Construction, Acknowledgement and Certification Regarding Debarment, Non-Collusion Affidavit, Vendor Qualification Packet, Payment and Performance Bonds, Contract Award, Addenda (if any), Technical Specifications, and Drawings (as listed in the Schedule of Drawings).
- (e) The term "Substantially Complete" shall mean that the work is fully completed with the exception of minor miscellaneous work and adjustments.

## **3. Supervision By Contractor**

- (a) Except where the Contractor is an individual and gives his personal supervision to the work, the Contractor shall provide a competent superintendent, satisfactory to the Local Public Agency and the Engineer, on the work at all times during working hours with full authority to act for him. The Contractor shall also provide an adequate staff for the proper coordination and expediting of his work.
- (b) The Contractor shall lay out his own work and he shall be responsible for all work executed by him under the Contract. He shall verify all figures and elevations before proceeding with the work and will be held responsible for any error resulting from his failure to do so.

## **4. Subcontracts**

- (a) The Contractor shall not execute an agreement with any subcontractor or permit any subcontractor to perform any work included in this contract until he has verified the subcontractor as eligible to participate in federally funded contracts.
- (b) No proposed subcontractor shall be disapproved by the city/county except for cause.
- (c) The Contractor shall be as fully responsible to the city/county for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them.

- (d) The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work and required compliance by each subcontractor with the applicable provisions of the Contract.
- (e) Nothing contained in the Contract shall create any contractual relation between any subcontractor and the Owner.

**5. Fitting and Coordination of Work**

The Contractor shall be responsible for the proper fitting of all work and for the coordination of the operations of all trades, subcontractors, or material suppliers engaged upon this Contract.

**6. Payments to Contractor**

(a) Partial Payments

- 1) The Contractor shall prepare his requisition for partial payment as of the last day of the month and submit it, with the required number of copies, to the Engineer for his approval. The amount of the payment due the Contractor shall be determined by adding to the total value of work completed to date, the value of materials properly stored on the site and deducting (1) Five percent (5%) of the total amount, to be retained until final payment and (2) the amount of all previous payments. The total value of work completed to date shall be based on the estimated quantities of work completed and on the unit prices contained in the agreement. The value of materials properly stored on the site shall be based upon the estimated quantities of such materials and the invoice prices. Copies of all invoices shall be available for inspection of the Engineer.
- 2) Monthly or partial payments made by the Owner to the Contractor are moneys advanced for the purpose of assisting the contractor to expedite the work of construction. The Contractor shall be responsible for the care and protection of all materials and work upon which payments have been made until final acceptance of such work and materials by the Owner. Such payments shall not constitute a waiver of the right of the Owner to require the fulfillment of all terms of the Contract and the delivery of all improvements embraced in this Contract complete and satisfactory to the Owner in all details.

(b) Final Payment

- 1) After final inspection and acceptance by the Owner of all work under the Contract, the Contractor shall prepare his requisition for final payment which shall be based upon the careful inspection of each item of work at the applicable unit prices stipulated in the Agreement. The total amount of the final payment due the Contractor under this contract shall be the amount computed as described above less all previous payments.
- 2) The Owner before paying the final estimate, shall require the Contractor to furnish releases or receipts from all subcontractors having performed any work and all persons having supplied materials, equipment (installed on the Project) and services to the Contractor, if the Owner deems it necessary in order to protect its interest. The Owner may, if it deems such action advisable, make payment in part or in full to the Contractor without requiring the furnishing of such releases or receipts and any payments made shall in no way impair the obligations of any surety or sureties furnished under this Contract.
- 3) Any amount due the Owner under Liquidated Damages shall be deducted from the final payment due the contractor.

(c) Payments Subject to Submission of Certificates

Each payment to the Contractor by the Owner shall be made subject to submission by the Contractor of all written certifications required of him and his subcontractors.

(d) **Withholding Payments**

The Owner may withhold from any payment due the Contractor whatever is deemed necessary to protect the Owner, and if so elects, may also withhold any amounts due from the Contractor to any subcontractors or material dealers, for work performed or material furnished by them. The foregoing provisions shall be construed solely for the benefit of the Owner and will not require the Owner to determine or adjust any claims or disputes between the Contractor and his subcontractors or material dealers, or to withhold any moneys for their protection unless the Owner elects to do so. The failure or refusal of the Owner to withhold any moneys from the Contractor shall in no way impair the obligations of any surety or sureties under any bond or bonds furnished under this Contract.

**7. Changes in the Work**

- (a) The Owner may make changes in the scope of work required to be performed by the Contractor under the Contract without relieving or releasing the Contractor from any of his obligations under the Contract or any guarantee given by him pursuant to the Contract provisions, and without affecting the validity of the guaranty bonds, and without relieving or releasing the surety or sureties of said bonds. All such work shall be executed under the terms of the original Contract unless it is expressly provided otherwise.
- (b) Except for the purpose of affording protection against any emergency endangering health, life, limb or property, the Contractor shall make no change in the materials used or in the specified manner of constructing and/or installing the improvements or supply additional labor, services or materials beyond that actually required for the execution of the Contract, unless in pursuance of a written order from the Owner authorizing the Contractor to proceed with the change. No claim for an adjustment of the Contract Price will be valid unless so ordered.
- (c) If applicable unit prices are contained in the Agreement, the Owner may order the Contractor to proceed with desired unit prices specified in the Contract; provided that in case of a unit price contract the net value of all changes does not increase the original total amount of the agreement by more than twenty-five percent (25%) or decrease the original the total amount by eighteen percent (18%).
- (d) Each change order shall include in its final form:
  - 1) A detailed description of the change in the work.
  - 2) The Contractor's proposal (if any) or a confirmed copy thereof.
  - 3) A definite statement as to the resulting change in the contract price and/or time.
  - 4) The statement that all work involved in the change shall be performed in accordance with contract requirements except as modified by the change order.
  - 5) The procedures as outlined in this Section for a unit price contract also apply in any lump sum contract.

**8. Estimated Quantities**

This Contract, including the specifications, plans and estimates, is intended to show clearly all the work to be done and material to be furnished hereunder. The estimated quantities of the various classes of work to be done and material to be furnished under this contract are approximate and are to be used as a basis for estimating the probable cost of the work and for comparing the proposals offered for the work. It is understood and agreed that the actual amount of work to be done and material to be furnished under this contract may differ somewhat from these estimates, and that the basis for payment under this contract shall be the plan quantity or actual amount of such work done whichever is specified. It is further understood that the County does not guarantee any

minimum amount of work under this Contract.

Contractor agrees that it will make no claim for damages, anticipated profits or otherwise on account of any differences which may be found between the quantities of work actually done, the material actually furnished under this Contract and the estimated quantities contemplated and contained in the proposals.

## **9. Claims for Extra Cost**

- (a) If the Contractor claims that any instructions by Drawings or otherwise involve extra cost or extension of time, he shall, within ten days after the receipt of such instructions, and in any event before proceeding to execute the work, submit his protest thereto in writing to the Owner, stating clearly and in detail the basis of his objections. No such claim will be considered unless so made.
- (b) Claims for additional compensation for extra work, due to alleged errors in ground elevations, contour lines, or bench marks, will not be recognized unless accompanied by certified survey data, made prior to the time the original ground was disturbed, clearly showing that errors exist which resulted, or would result, in handling more material, or performing more work, than would be reasonably estimated from the Drawings and maps issued.
- (c) Any discrepancies which may be discovered between actual conditions and those represented by the Drawings and maps shall be reported at once to the Owner and work shall not proceed except at the Contractor's risk, until written instructions have been received by him from the Owner.
- (d) If, on the basis of the available evidence, the Owner determines that an adjustment of the Contract Price and/or time is justifiable, a change order shall be executed.

## **10. Time**

The Contractor is advised that time for completion will consist of the number of calendar days set out in the Contract Award. The time for completion will begin to run on the day after the issuance of a notice to proceed by the County. The Contractor is required to start work no later than ten (10) working days after the issuance of the written notice to proceed. Failure to timely commence operations may be deemed by the County to be a default. The Contractor will complete the work at that site within the time period specified. If there is more than one site listed on the notice to proceed, work for all sites must be completed not later than is specified for each site.

## **11. Termination, Delays, and Liquidated Damages**

- (a) Right of the Owner to Terminate Contract.

In the event that any of the provisions of this contract are violated by the Contractor, or by any of his subcontractors, the Owner may serve written notice upon the Contractor and the Surety of its intention to terminate the contract. The notices shall contain the reasons for such intention to terminate the contract, and unless such violation or delay shall cease and satisfactory arrangement of correction be made within ten days, the contract shall, upon the expiration of said ten (10) days, cease and terminate. In the event of any such termination, the Owner shall immediately serve notice thereof upon the Surety and the Contractor. The Surety shall have the right to take over and perform the contract. Provided, however, that if the Surety does not commence performance thereof within ten (10) days from the date of the mailing to such Surety of notice of termination, the Owner may take over the work and complete the project by bid/contract or by force account at the expense of the Contractor and his Surety shall be liable to the Owner for any excess cost incurred. In such event the Owner may take possession of and utilize in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary therefore.

(b) Liquidated Damages for Delays.

Contractor agrees that time is of the essence of this contract and that for each day of a delay of a day beyond the number of working days or calendar days herein agreed upon the completion of the work herein specified and contracted for (after due allowance for such extension of time as is provided for under Extension of Time hereinabove) County may withhold permanently from Contractor's total compensation the sum of \$1,000.00 for each calendar day of delay, until the work is completed, as liquidated damages for such delay. The Contractor and his sureties shall be liable to the Owner for the amount thereof.

(c) Excusable Delays.

- 1) The right of the Contractor to proceed shall not be terminated nor shall the Contractor be charged with liquidated damages for any delays in the completion of the work due to:
  - a. Any acts of the Government, including controls or restrictions upon or requisitioning of materials, equipment, tools, or labor by reason of war, national defense, or any other national emergency;
  - b. Any acts of the Owner;
  - c. Causes not reasonably foreseeable by the parties to this Contract at the time of the execution of the Contract which are beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God or of the public enemy, acts of another Contractor in the performance of some other contract with the Owner, fires, floods, epidemics, quarantine, restrictions, strikes, freight embargoes, and weather of unusual severity such as hurricanes, tornadoes, cyclones and other extreme weather conditions.
- 2) Provided, however, that the Contractor promptly notifies the Owner within ten (10) days in writing of the cause of the delay. Upon receipt of such notification, the Owner shall ascertain the facts and the cause and extent of delay. If, upon the basis of the facts and the terms of this contract, the delay is properly excusable, the Owner shall extend the time for completing the work for a period of time commensurate with the period of excusable delay.

**12. Assignment or Novation**

The Contractor shall not assign or transfer, whether by an assignment or novation, any of its rights, duties, benefits, obligations, liabilities, or responsibilities under this Contract without the written consent of the Owner; provided, however, that assignments to banks or other financial institutions may be made without the consent of the Owner. No assignment or novation of this Contract shall be valid unless the assignment or novation expressly provides that the assignment of any of the Contractor's rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered, and materials, tools, and equipment supplied for the performance of the work under this Contract in favor of all persons, firms, or corporations rendering such labor or services or supplying such materials, tools, or equipment.

**13. Disputes**

- (a) All disputes arising under this Contract or its interpretation except those disputes covered by FEDERAL LABOR STANDARDS PROVISIONS whether involving law or fact or both, or extra work, and all claims for alleged breach of contract shall, within ten (10) days of commencement of the dispute, be presented by the Contractor to the Owner for decision. Any claim not presented within the time limit specified in this paragraph shall be deemed to have been waived, except that if the claim is of a continuing character and notice of the claim is not given within ten (10) days of its commencement, the claim will be considered only for a period commencing ten (10) days prior to the receipt of the Owner.
- (b) The Contractor shall submit in detail his claim and his proof thereof.



- (c) If the Contractor does not agree with any decision of the Owner, he shall in no case allow the dispute to delay the work but shall notify the Owner promptly that he is proceeding with the work under protest.

#### **14. Technical Specifications and Drawings**

Anything mentioned in the Technical Specifications and not shown on the Drawings, or vice versa, shall be of like effect as if shown on or mentioned in both. In case of difference between Drawings and Technical Specifications, the Technical Specifications shall govern. In case of any discrepancy in Drawings, or Technical Specifications, the matter shall be immediately submitted to the Owner, without whose decision, said discrepancy shall not be adjusted by the Contractor, save only at his own risk and expense.

#### **15. Shop Drawings**

- (a) All required shop drawings, machinery details, layout drawings, etc. shall be submitted to the Engineer in copies for approval sufficiently in advance of requirements to afford ample time for checking, including time for correcting, resubmitting and rechecking if necessary. The Contractor may proceed, only at his own risk, with manufacture or installation of any equipment or work covered by said shop drawings, etc. until they are approved and no claim, by the Contractor, for extension of the contract time shall be granted by reason of his failure in this respect.
- (b) Any drawings submitted without the Contractor's stamp of approval will not be considered and will be returned to him for proper resubmission. If any drawings show variations from the requirements of the Contract because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in his letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment of contract price and/or time, otherwise the Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract even though the drawings have been approved.
- (c) If a shop drawing is in accordance with the contract or involves only a minor adjustment in the interest of the owner not involving a change in contract price or time; the engineer may approve the drawing. The approval shall not relieve the Contractor from his responsibility for adherence to the contract or for any error in the drawing.

#### **16. Requests for Supplementary Information**

It shall be the responsibility of the Contractor to make timely requests of the Owner for any additional information not already in his possession which should be furnished by the Owner under the terms of this Contract, and which he will require in the planning and execution of the work. Such requests may be submitted from time to time as the need approaches, but each shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay. Each request shall be in writing, and list the various items and the latest date by which each will be required by the Contractor. The first list shall be submitted within two weeks after Contract award and shall be as complete as possible at that time. The Contractor shall, if requested, furnish promptly any assistance and information the Engineer may require in responding to these requests of the Contractor. The Contractor shall be fully responsible for any delay in his work or to others arising from his failure to comply fully with the provision of this section.

#### **17. Materials and Workmanship**

- (a) Unless otherwise specifically provided for in the technical specifications, all workmanship, equipment, materials and articles incorporated in the work shall be new and the best grade of the respective kinds for the purpose. Where equipment, materials, articles or workmanship are referred to in the technical specifications as "equal to" any particular standard, the Engineer shall decide the question of equality.
- (b) The Contractor shall furnish to the Owner for approval the manufacturer's detailed specifications for all machinery, mechanical and other special equipment, which he contemplates installing together with full

information as to type, performance characteristics, and all other pertinent information as required, and shall likewise submit for approval full information concerning all other materials or articles which he proposes to incorporate.

- (c) Machinery, mechanical and other equipment, materials or articles installed or used without such prior approval shall be at the risk of subsequent rejection.
- (d) Materials specified by reference to the number or symbol of a specific standard, shall comply with requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date of the Invitation for Bids, except as limited to type, class or grade, or modified in the technical specifications shall have full force and effect as though printed therein.
- (e) The Owner may require the Contractor to dismiss from the work such employee or employees as the Owner or the Engineer may deem incompetent, or careless, or insubordinate.

#### **18. Samples, Certificates and Tests**

- (a) The Contractor shall submit all material or equipment samples, certificates, affidavits, etc., as called for in the contract documents or required by the Engineer, promptly after award of the contract and acceptance of the Contractor's bond. No such material or equipment shall be manufactured or delivered to the site, except at the Contractor's own risk, until the required samples or certificates have been approved in writing by the Engineer. Any delay in the work caused by late or improper submission of samples or certificates for approval shall not be considered just cause for an extension of the contract time.
- (b) Each sample submitted by the Contractor shall carry a label giving the name of the Contractor, the project for which it is intended, and the name of the producer. The accompanying certificate or letter from the Contractor shall state that the sample complies with contract requirements, shall give the name and brand of the product, its place of origin, the name and address of the producer and all specifications or other detailed information which will assist the Engineer in making a prompt decision regarding the acceptability of the sample. It shall also include the statement that all materials or equipment furnished for use in the project will comply with the samples and/or certified statements.
- (c) Approval of any materials shall be general only and shall not constitute a waiver of the Owner's right to demand full compliance with Contract requirements. After actual deliveries, the Engineer will have such check tests made as he deems necessary in each instance and may reject materials and equipment and accessories for cause, even though such materials and articles have been given general approval. If materials, equipment or accessories which fail to meet check tests have been incorporated in the work, the Engineer will have the right to cause their removal and replacement by proper materials or to demand and secure such reparation by the Contractor as is equitable.
- (d) Except as otherwise specifically stated in the Contract, the costs of sampling and testing will be divided as follows:
  - 1) The Contractor shall furnish without extra cost, including packing and delivery charges, all samples required for testing purposes, except those samples taken on the project by the Engineer;
  - 2) The Contractor shall assume all costs of re-testing materials which fail to meet contract requirements;
  - 3) The Contractor shall assume all costs of testing materials offered in substitution for those found deficient;
  - 4) The Owner will pay all other expenses.

**19. Permits and Codes**

- (a) The Contractor shall give all notices required by and comply with all applicable laws, ordinances, and codes of the Local Government. All construction work and/or utility installations shall comply with all applicable ordinances, and codes including all written waivers. Before installing any work, the Contractor shall examine the drawings and technical specifications for compliance with applicable ordinances and codes and shall immediately report any discrepancy to the Owner. Where the requirements of the drawings and technical specifications fail to comply with such applicable ordinances or codes, the Owner will adjust the Contract by Change Order to conform to such ordinances or codes (unless waivers in writing covering the difference have been granted by the governing body or department) and make appropriate adjustment in the Contract Price or stipulated unit prices.
- (b) Should the Contractor fail to observe the foregoing provisions and proceed with the construction and/or install any utility at variance with any applicable ordinance or code, including any written waivers (notwithstanding the fact that such installation is in compliance with the drawings and technical specifications), the Contractor shall remove such work without cost to the Owner.
- (c) The Contractor shall at his own expense, secure and pay for all permits for street pavement, sidewalks, shed, removal of abandoned water taps, sealing of house connection drains, pavement cuts, buildings, electrical, plumbing, water, gas and sewer permits required by the local regulatory body or any of its agencies.
- (d) The Contractor shall comply with applicable local laws and ordinances governing the disposal of surplus excavation, materials, debris and rubbish on or off the Project Area and commit no trespass on any public or private property in any operation due to or connected with the Improvements contained in this Contract.
- (e) The Contractor will be required to make arrangements for and pay the water, electrical power, or any other utilities required during construction.
- (f) During construction of this project, the Contractor shall use every means possible to control the amount of dust created by construction. Prior to the close of a day's work, the Contractor, if directed by the Owner, shall moisten the bank and surrounding area to prevent a dusty condition.

**20. Care of Work**

- (a) The Contractor shall be responsible for all damages to person or property that occur as a result of his fault or negligence in connection with the prosecution of the work and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance.
- (b) The Contractor shall provide sufficient competent watchmen, both day and night, including Saturdays, Sundays, and holidays, from the time the work is commenced until final completion and acceptance.
- (c) In an emergency affecting the safety of life, limb or property, including adjoining property, the Contractor, without special instructions or authorization from the Owner is authorized to act at his discretion to prevent such threatened loss or injury, and he shall so act. He shall likewise act if instructed to do so by the Owner.
- (d) The Contractor shall avoid damage as a result of his operations to existing sidewalks, streets, curbs, pavements, utilities (except those which are to be replaced or removed), adjoining property, etc., and he shall at his own expense completely repair any damage thereto caused by his operations.
- (e) The Contractor shall shore up, brace, underpin, secure, and protect as maybe necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be in any way affected by the excavations or other operations connected with the construction of the improvements included in this Contract. The Contractor shall be responsible for the giving of any and all required notices

to any adjoining or adjacent property owner or other party before the commencement of any work. The Contractor shall indemnify and save harmless the Owner from any damages on account of settlements or the loss of lateral support of adjoining property and from all loss or expense and all damages for which the Owner may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

**21. Accident Prevention**

- (a) No laborer or mechanic employed in the performance of this Contract shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety as determined under construction safety and health standards promulgated by the Secretary of Labor.
- (b) The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his prosecution of the work.
- (c) The Contractor shall maintain an accurate record of all cases of death, occupational disease, or injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the Contract. The Contractor shall promptly furnish the Owner with reports concerning these matters.
- (d) The Contractor shall indemnify and save harmless the Owner from any claims for damages resulting from property damage, personal injury and/or death suffered or alleged to have been suffered by any person as a result of any work conducted under this contract.
- (e) The Contractor shall provide trench safety for all excavations more than five feet deep prior to excavation. All OSHA Standards for trench safety must be adhered to by the Contractor.
- (f) The contractor shall at all times conduct his work in such a manner as to insure the least possible inconvenience to vehicular and pedestrian traffic. At the close of the work each day, all streets where possible in the opinion of the Owner, shall be opened to the public in order that persons living in the area may have access to their homes or businesses by the use of the streets. Barricades, warning signs, and necessary lighting shall be provided to the satisfaction of the Owner at the expense of the Contractor.

**22. Sanitary Facilities**

The Contractor shall furnish, install and maintain ample sanitary facilities for the workmen. As the needs arise, a sufficient number of enclosed temporary toilets shall be conveniently placed as required. Drinking water shall be provided from an approved source, so piped or transported as to keep it safe and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing and governing health regulations.

**23. Use of Premises**

- (a) The Contractor shall confine his equipment, storage of materials, and construction operations to the contract limits as shown on the drawings and as prescribed by ordinances or permits, or as may be desired by the Owner, and shall not unreasonably encumber the site or public rights of way with his materials and construction equipment.
- (b) The Contractor shall comply with all reasonable instructions of the Owner and all existing state and local regulations regarding signs, advertising, traffic, fires, explosives, danger signals, and barricades.

**24. Removal of Debris, Cleaning, Etc.**

The Contractor shall, periodically or as directed during the progress of the work, remove and legally dispose of all surplus excavated material and debris, and keep the Project Area and public rights of way reasonably clear. Upon completion of the work, he shall remove all temporary construction facilities, debris and unused materials provided for work, and put the whole site of the work and public rights of way in a neat and clean condition.

**25. Inspection**

- (a) All materials and workmanship shall be subject to inspection, examination, or test by the Owner and Engineer at any and all times during manufacture or construction and at any and all places where such manufacture or construction occurs. The Owner shall have the right to reject defective material and workmanship or require its correction. Unacceptable workmanship shall be satisfactorily corrected. Rejected material shall be promptly segregated and removed from the Project Area and replaced with material of specified quality without charge. If the Contractor fails to proceed at once with the correction of rejected workmanship or defective material, the Owner may by contract or otherwise have the defects remedied or rejected materials removed from the Project Area and charge the cost of the same against any Monies which may be due the Contractor, without prejudice to any other rights or remedies of the Owner.
- (b) The Contractor shall furnish promptly all materials reasonably necessary for any tests which may be required. All tests by the Owner will be performed in such manner as not to delay the work unnecessarily and will be made in accordance with the provisions of the technical specifications.
- (c) The Contractor shall notify the Owner sufficiently in advance of back filling or concealing any facilities to permit proper inspection. If any facilities are concealed without approval or consent of the Owner, the Contractor shall uncover for inspection and recover such facilities at his own expense, when so requested by the Owner.
- (d) Should it be considered necessary or advisable by the Owner at any time before final acceptance of the entire work to make an examination of work already completed by uncovering the same, the Contractor shall on request promptly furnish all necessary facilities, labor, and material. If such work is found to be defective in any important or essential respect, due to fault of the Contractor or his subcontractors, the Contractor shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the actual cost of labor and material necessarily involved in the examination and replacement, shall be allowed the Contractor and he shall, in addition, if completion of the work of the entire Contract has been delayed thereby, be granted a suitable extension of time on account of the additional work involved.
- (e) Inspection of materials and appurtenances to be incorporated in the improvements included in this Contract may be made at the place of production, manufacture or shipment, whenever the quantity justifies it, and such inspection and acceptance, unless otherwise stated in the technical specifications, shall be final, except as regards (1) latent defects, (2) departures from specific requirements of the Contract, (3) damage or loss in transit, or (4) fraud or such gross mistakes as amount to fraud. Subject to the requirements contained in the preceding sentence, the inspection of materials as a whole or in part will be made at the Project Site.
- (f) Neither inspection, testing, approval nor acceptance of the work in whole or in part, by the Owner or its agents shall relieve the Contractor or his sureties of full responsibility for materials furnished or work performed not in strict accordance with the Contract.

**26. Review by Owner**

The Owner and its authorized representatives and agents shall have access to and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, and other relevant data and records pertaining to this Contract, provided, however that all instructions and

approval with respect to the work will be given to the Contractor only by the Owner through its authorized representatives or agents.

**27. Final Inspection**

When the Improvements included in this Contract are substantially completed, the Contractor shall notify the Owner in writing that the work will be ready for final inspection on a definite date which shall be stated in the notice. The Owner will make the arrangements necessary to have final inspection commenced on the date stated in the notice, or as soon thereafter as is practicable.

**28. Deduction for Uncorrected Work**

If the Owner deems it not expedient to require the Contractor to correct work not done in accordance with the Contract Documents, an equitable deduction from the Contract Price will be made by agreement between the Contractor and the Owner and subject to settlement, in case of dispute, as herein provided.

**29. Warranty of Title**

No material, supplies, or equipment to be installed or furnished under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale, lease-purchase or other agreement by which an interest is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies, and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed by him to the Owner free from any claims, liens, or charges. Neither the Contractor nor any person, firm, or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon any improvement or appurtenance. Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any law permitting such persons to look to funds due the Contractor in the hands of the Owner. The provisions of this paragraph shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

**30. Warranty of Workmanship and Materials**

Neither the final certificate of payment nor any provision in the Contract nor partial or entire use of the improvements included in this Contract by the Owner or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of 12 months from the date of final acceptance of the work.

**31. Job Offices**

- (a) The Contractor and his subcontractors may maintain such office and storage facilities on the site as are necessary for the proper conduct of the work. These shall be located so as to cause no interference to any work to be performed on the site. The Owner shall be consulted with regard to locations.
- (b) Upon completion of the improvements, or as directed by the Owner, the Contractors shall remove all such temporary structures and facilities from the site, and leave the site of the work in the condition required by the contract.

**32. Partial Use of Site Improvements**

The Owner may give notice to the Contractor and place in use those sections of the improvements which have been completed, inspected and can be accepted as complying with the technical specifications and if in its

opinion, each such section is reasonably safe, fit, and convenient for the use and accommodation for which it was intended, provided:

- (a) The use of such sections of the Improvements shall in no way impede the completion of the remainder of the work by the Contractor.
- (b) The Contractor shall not be responsible for any damages or maintenance costs due directly to the use of such sections.
- (c) The period of guarantee stipulated in the Section 29 hereof shall not begin to run until the date of the final acceptance of all work which the Contractor is required to construct under this Contract.

**33. Contract Period**

The work to be performed under this contract shall commence within the time stipulated by the Owner in the Notice to Proceed, and shall be fully completed within 330 calendar days thereafter.

**34. Keeping Of Plans And Specifications Accessible**

The Contractor shall keep one (1) copy of all Plans and Specifications constantly accessible at the work site and available for inspection at all times.

**35. Utilities**

Contractor shall be responsible for any charges which may be made by any city or utility companies for the work to be performed by Contractor.

**36. Parking**

Contractor shall be responsible for the expense of parking the Contractor's vehicle(s) in a legal manner and at no expense or inconvenience to the County.

**37. Fire And Safety**

Contractor is completely responsible for fire protection at the job site as well as the safety of its own employees as well as those entering onto the job site.

**38. Contractor's Buildings**

The building of structures for housing men, or the erection of tents or other forms of protection will be permitted only at such places as the County shall permit, and the sanitary conditions of the grounds in or about such structures shall at all times be maintained in the manner satisfactory to the County.

**39. Worksite Security**

Contractor shall maintain the security of the worksite.

Contractor shall provide adequate protection to persons on the worksite, adjacent properties, and utilities as is necessary to keep each free of damage or injury. Contractor shall furnish all barricades, warning lights and other safety devices necessary for the safety and protection of the public and shall remove them upon completion of the work performed on those premises under the terms of this contract.

Contractor will have complete control over the work site and shall be fully responsible for any loss of or damage to any County property from any cause and will reimburse County in the event of any loss or damage to County's

property from any cause.

Contractor shall take proper means to protect adjacent or adjoining properties which might be injured or seriously affected by construction undertaken under this Agreement from any damage or injury by reason of said process of construction. Contractor shall be liable for any and all claims for such damage on account of its failure to fully protect all adjoining properties.

#### **40. Final Grading**

If grading is required, when work is complete, Contractor shall grade the site to fill in holes and make a presentable appearance without disturbing trees and add fill dirt if needed. Contractor may not leave voids in the grading and compaction of the property. The land shall have a smooth appearance without concrete, bricks, building materials, and other debris on the surface.

#### **41. Changes And Alterations**

Contractor further agrees that County may make such changes and alterations as County may see fit, in the line, grade, form dimensions, plans or materials for the work herein contemplated, or any part thereof, either before or after the beginning of the contract construction, without affecting the validity of this Contract and the accompanying bonds.

If such changes or alterations diminish the quantity of the work to be done, they shall not constitute the basis for a claim for damages, or anticipated profits on the work that may be dispensed with. If they increase the amount of the work, and the increased work can fairly be classified under the specifications, such increase shall be paid for according to the quantity actually done and at the unit price established for such work under this contract; otherwise such additional work shall be paid for as provided under the paragraph entitled "EXTRA WORK". In case the County shall make such changes or alterations as shall make useless any work already done or material already furnished or used in said work, then County shall recompense Contractor for any material or labor so used, and for any actual loss occasioned by such change due to actual expenses incurred in preparation for the work as originally planned.

#### **42. Extra Work**

The term "Extra Work" as used in this contract shall be understood to mean and include all work that may be required by the County to be done by Contractor to accomplish any change, alteration or addition to the work shown in the plans and specifications.

It is agreed that Contractor shall perform all Extra Work under the direction of the County when presented with a Written Work Order signed by the County. It is also agreed that the compensation to be paid Contractor for performing said Extra Work shall be determined by one or more of the following methods:

Method (a) - By agreed unit prices; or

Method (b) - By agreed lump sum: or

Method (c) - If Neither Method (a) nor Method (b) can be agreed upon before the Extra Work is commenced, then Contractor shall be paid the "Actual field cost" of the work plus fifteen (15) percent.

In the event said Extra Work be performed and paid for under Method (c), then the provisions of this paragraph shall apply and the "actual field cost" is hereby defined to include the cost of all workmen, such as foremen, timekeepers, merchants, and laborers, and materials, supplies, teams, trucks, rentals on machinery and equipment for time actually employed or used on such Extra Work plus actual transportation charges necessarily incurred, if the kind of equipment or machinery is not already on the job, together with all power, fuel, lubricants, water and similar operating expenses, also all necessary incidental expenses incurred directly on account of such Extra Work including Social Security, Old Age Benefits and other payroll taxes, and a ratable proportion of premiums on Construction and Maintenance Bonds, Public Liability and Property Damage and



Workmen's Compensation, and all other insurance as may be required by any law or ordinance. The County may direct the form in which accounts of the "actual field cost" shall be kept and may also specify in writing, before the work commences, the method of doing the work and the type and kind of machinery and equipment to be used, otherwise these matters shall be determined by Contractor. Unless otherwise agreed upon, the prices for the use of machinery and equipment shall be determined by using the one hundred (100) percent of the actual hourly or daily rate (for the time used plus time in moving to and from Job) of the latest schedule of Equipment Ownership Expense adopted by the Association General Contractors of America. Where practicable the terms and prices for the use of Machinery and Equipment shall be incorporated in the Written Extra Work Order. The fifteen (15) percent of the "Actual Field Cost" to be paid Contractor shall cover and compensate him for his profit, overhead, general superintendence and field office expense, and all other elements of cost and expense not embraced within the 'actual field cost" as herein defined, save that where the Contractor's Camp or Field Office must be maintained primarily on account of such extra work, then the cost to maintain and operate same shall be included in the "actual field cost".

No claim for extra work of any kind will be allowed unless ordered in writing by the County. In case any orders or instructions, either oral or written appear to Contractor to involve extra work for which he should receive compensation, it shall make written request to the County for written order authorizing Extra Work. Should a difference of opinion arise as to what does or does not constitute extra work, or as to the payment therefor, and the County insists upon its performance, Contractor shall proceed with the work after making written order and shall keep an accurate account of the "actual field cost" thereof, as provided under Method (c) and by this action Contractor will thereby preserve the right to submit the matter of payment to litigation.

**43. Salvage**

Any materials, equipment and fixtures specifically ordered to be salvaged under these specifications shall remain the property of County and will be delivered to the site designated by the County. All other items shall be disposed of by Contractor in compliance with all applicable laws and regulations.

**44. Compliance With Codes**

Contractor shall comply with all city, county, and state codes, laws, and ordinances in force at the time of award of contract and applicable to such work. Contractor shall obtain, at Contractor's own expense such permits, certificates, and licenses as may be required in the performance of the specified work.

**45. Laws And Ordinances**

Contractor shall at all times observe and comply with all Federal, State and Local Laws, ordinances and regulations which in any manner effect the contract or the work, and shall indemnify and save harmless the County against any claim arising from the violation of any such laws and ordinances, whether by Contractor or its employees.

**46. Permits And Licenses**

Contractor shall be responsible for obtaining and furnishing all necessary permits and licenses, City, County, State or Federal as are required for the performance of this contract.

**47. Lines And Grades**

The Engineer will furnish points for horizontal and vertical control. Any additional stakes required by the Contractor shall be set at his expense. Whenever necessary, work shall be suspended to permit this work, but such suspension will be as brief as practicable and the Contractor shall be allowed no extra compensation therefor. The Contractor shall give the Engineer ample notice of the time and place where control lines and bench marks will be needed. All control stakes, marks, etc. shall be carefully preserved by the Contractor, and in case of careless destruction or removal by him or his employees, such control stakes, marks, etc. shall be

replaced by the Engineer at the Contractor's expense.

**48. Excess, Waste Material And Debris**

All excess material, waste material and debris shall become the property of the Contractor and shall be properly disposed of off-site. No separate payment shall be made for same.

**49. Material Hauling**

Hauling of materials will not be paid for directly, but shall be considered as subsidiary work pertaining to the respective bid items. Haul routes for full and empty loads shall be restricted to State Highways. Hauling of equipment is also restricted to State Highways.

**50. Abatement And Mitigation Of Excessive Or Unnecessary Construction Noise**

Throughout all phases of the construction of this project, including the moving, unloading, operating and handling of construction equipment prior to commencement of work, during the project and after the work is complete, the contractor shall make every reasonable effort to minimize the noise imposed upon the immediate neighborhood surrounding the area of construction. Particular and special efforts shall be exercised by the Contractor to avoid the creation of unnecessary noise impacts on adjacent sensitive receptors in the placement of non-mobile equipment such as air compressors, generators, pumps, etc. The placement of temporary parked mobile equipment with the engine running shall be such as to cause the least disruption of normal adjacent activities not associated with the work to be performed by the contractor.

All equipment associated with the work shall be equipped with components designed by the manufacturer wholly or in part to suppress excessive noise and these components shall be maintained in their original operating condition considering normal depreciation. Noise-attenuation devices installed by the manufacturer such as mufflers, engine covers, insulation, etc., shall not be removed nor rendered ineffectual nor be permitted to remain off the equipment while the equipment is in use.

**51. Working Hours**

Work shall not be commenced by the contractor before sunrise and shall be so conducted that all equipment is off the road and safely stored by sunset. Specific permission shall be obtained by the contractor from the Engineer for work during those hours between 7:00 P.M. and 6:00 A.M. of the following day.

**52. Pipeline, Utility Locations And Contractor Responsibility**

An effort to determine all pipelines and utilities which may impact the project has been made. All known pipelines and utilities have been approximately located and shown on the plans. The Contractor shall notify all utility and pipeline owners before beginning the work. Additional unknown utilities and pipelines may be found. Adjustments of these utilities or pipelines shall be done by others at no expense to the contractor. However, the Contractor shall cooperate and coordinate his work with the adjustment

The Contractor will anticipate this in making his bid. The contractor will not be allowed claims for damages or delays for these adjustments should they be necessary. However, additional time will be considered for the contract period.

This action, however, shall in no way be interpreted as relieving the Contractor of his responsibilities under the terms of the contract as set out in the plans and specifications. The Contractor shall repair any damage to the facilities caused by his operations at the Contractor's expense and shall restore facilities to service in a timely manner.

**53. Incidentals**

All items of work required under this contract not specifically called for in the proposal as pay items shall be considered incidental to the various bid items and no separate payment shall be made for same.

**54. Flagmen**

During certain phases of construction flagmen will be required to direct and control traffic. This work will not be paid for directly, but shall be considered incidental the various bid items and no separate payment shall be made for same.

**55. Field Office**

For this project the Contractor will not have to provide a field office.

**56. Wage Rates:**

The attached schedule of wages per hour for this Contract follows.

"General Decision Number: TX20220038 02/25/2022

Superseded General Decision Number: TX20210038

State: Texas

Construction Type: Highway

Counties: Austin, Brazoria, Chambers, Fort Bend, Galveston, Hardin, Harris, Jefferson, Liberty, Montgomery, Orange, San Jacinto and Waller Counties in Texas.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

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

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<ul style="list-style-type: none"> <li>. Executive Order 14026 generally applies to the contract.</li> <li>. The contractor must pay all covered workers at least \$15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2022.</li> </ul>
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<ul style="list-style-type: none"> <li>. Executive Order 13658 generally applies to the contract.</li> <li>. The contractor must pay all covered workers at least \$11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.</li> </ul>

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

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

https://www.dol.gov/agencies/whd/government-contracts.

Modification Number	Publication Date
0	01/07/2022
1	02/25/2022

\* SUTX2011-013 08/10/2011

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER (Paving and Structures).....	\$ 12.98	**
ELECTRICIAN.....	\$ 27.11	
FORM BUILDER/FORM SETTER		
Paving & Curb.....	\$ 12.34	**
Structures.....	\$ 12.23	**
LABORER		
Asphalt Raker.....	\$ 12.36	**
Flagger.....	\$ 10.33	**
Laborer, Common.....	\$ 11.02	**
Laborer, Utility.....	\$ 11.73	**
Pipelayer.....	\$ 12.12	**
Work Zone Barricade Servicer.....	\$ 11.67	**
PAINTER (Structures).....	\$ 18.62	
POWER EQUIPMENT OPERATOR:		
Asphalt Distributor.....	\$ 14.06	**
Asphalt Paving Machine.....	\$ 14.32	**
Broom or Sweeper.....	\$ 12.68	**
Concrete Pavement Finishing Machine.....	\$ 13.07	**
Concrete Paving, Curing, Float, Texturing Machine....	\$ 11.71	**
Concrete Saw.....	\$ 13.99	**
Crane, Hydraulic 80 Tons or less.....	\$ 13.86	**
Crane, Lattice boom 80 tons or less.....	\$ 14.97	**
Crane, Lattice boom over 80 Tons.....	\$ 15.80	
Crawler Tractor.....	\$ 13.68	**
Excavator, 50,000 pounds or less.....	\$ 12.71	**
Excavator, Over 50,000 pounds.....	\$ 14.53	**
Foundation Drill, Crawler Mounted.....	\$ 17.43	
Foundation Drill, Truck Mounted.....	\$ 15.89	
Front End Loader 3 CY or Less.....	\$ 13.32	**
Front End Loader, Over 3 CY.....	\$ 13.17	**
Loader/Backhoe.....	\$ 14.29	**
Mechanic.....	\$ 16.96	
Milling Machine.....	\$ 13.53	**
Motor Grader, Fine Grade....	\$ 15.69	
Motor Grader, Rough.....	\$ 14.23	**
Off Road Hauler.....	\$ 14.60	**

Pavement Marking Machine...\$ 11.18 \*\*  
 Piledriver.....\$ 14.95 \*\*  
 Roller, Asphalt.....\$ 11.95 \*\*  
 Roller, Other.....\$ 11.57 \*\*  
 Scraper.....\$ 13.47 \*\*  
 Spreader Box.....\$ 13.58 \*\*

Servicer.....\$ 13.97 \*\*

Steel Worker

Reinforcing Steel.....\$ 15.15  
 Structural Steel Welder.....\$ 12.85 \*\*  
 Structural Steel.....\$ 14.39 \*\*

TRUCK DRIVER

Low Boy Float.....\$ 16.03  
 Single Axle.....\$ 11.46 \*\*  
 Single or Tandem Axle Dump..\$ 11.48 \*\*  
 Tandem Axle Tractor w/Semi  
 Trailer.....\$ 12.27 \*\*

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

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 \*\* Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$15.00) or 13658 (\$11.25). Please see the Note at the top of the wage determination for more information.

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

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

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 The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular

rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

#### Union Rate Identifiers

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

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

#### Survey Rate Identifiers

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

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

#### Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

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

WAGE DETERMINATION APPEALS PROCESS

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

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

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

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

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

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

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

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

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

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

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

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END OF GENERAL DECISIO"



**BID PROPOSAL**

The bidder hereby proposes to furnish all labor, material, equipment and incidentals for:  
**23<sup>rd</sup> Street Paving, Drainage & Utility Rehabilitation**

Enclosed is a Cashier's Check or Bid Bond in the sum of 5% of the greatest amount bid.

Bidder agrees to perform in accordance with the requirements of the contract documents in consideration of payment by the County of the prices in this proposal.

**IN CASE OF DISCREPANCY BETWEEN UNIT PRICES AND EXTENDED PRICES, UNIT PRICES WILL GOVERN.**

**This bid sheet must be completely filled out in ink or typewritten with any necessary supplemental information attached.**

The undersigned hereby agrees to all of the foregoing terms and provisions and to all terms and provisions of the contract, if awarded, which includes all provisions of this bid package.

BIDDER \_\_\_\_\_

SIGNATURE \_\_\_\_\_

PRINT NAME \_\_\_\_\_

TITLE \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY, STATE \_\_\_\_\_

ZIP \_\_\_\_\_

PHONE NO. \_\_\_\_\_

EMAIL \_\_\_\_\_

DATE \_\_\_\_\_

TAX I.D. No. \_\_\_\_\_

**GALVESTON COUNTY  
23RD STREET REHABILITATION  
BID FORM**

**BASE BID ITEMS**

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
<b>PAVING</b>							
1	1505	Mobilization including all permits and fees, Complete in Place	1	LS	_____ Dollars _____ Cents	\$ _____ \$ _____	\$ _____
2	2076	Excavation of Existing Road, Sidewalks, & Driveways 5 to 8-Inches, including Base Material, Complete in Place	37,460	SY	_____ Dollars _____ Cents	\$ _____ \$ _____	\$ _____
3	2076	Cut / Excavation for Road Finished Grade, Blading of Excavation to Embankment Area (Less than 0.5 miles), Placement and Compaction to 95% Standard Procter Density, Removal of Excess Off Site, Complete in Place.	546	CY	_____ Dollars _____ Cents	\$ _____ \$ _____	\$ _____
4	TXDoT 132	Embankment for Road Finished Grade, Placement and Compaction to 95% Standard Procter Density, Complete in Place.	685	CY	_____ Dollars _____ Cents	\$ _____ \$ _____	\$ _____
5	2242	Lime for 8-Inch Stabilized Sub-Grade (5% by Dry weight), Complete in Place (25 lb/sy)	435	TON	_____ Dollars _____ Cents	\$ _____ \$ _____	\$ _____
6	2242	8-Inch Stabilized Sub-Grade (Manipulation), Complete in Place	37,460	SY	_____ Dollars _____ Cents	\$ _____ \$ _____	\$ _____

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
7	2521	7-Inch Reinforced Concrete Pavement, Match Existing Road Section (Minimum 5.5 Sacks per Cubic Yard), Complete in Place	30,250	SY	_____ Dollars _____ Cents	\$ _____	\$ _____
8	2521	6-Inch Reinforced Concrete Pavement for Driveways, Match Existing Road Section (Minimum 5.5 Sacks per Cubic Yard), Complete in Place	2,540	SY	_____ Dollars _____ Cents	\$ _____	\$ _____
9	2532	6-Inch Concrete Curb, Complete in Place	7,145	LF	_____ Dollars _____ Cents	\$ _____	\$ _____
10	2530	5-Inch Thick Concrete Sidewalk and Base Per Detail, Complete in Place	3,850	SY	_____ Dollars _____ Cents	\$ _____	\$ _____
11	2570	3-Inch Thick HMLH Surface Course, Type "D" per TXDOT Item 340, Including 10-Inch Thick Asphalt Base, Gr. 2, PG-64, Per TXDOT Item 292, Complete in Place	820	SY	_____ Dollars _____ Cents	\$ _____	\$ _____
TXDoT							
12	531	ADA Accessible Concrete Ramp Per Detail, Complete in Place	131	EA	_____ Dollars _____ Cents	\$ _____	\$ _____
13	TXDoT: 666 DWGS	666 Traffic Markings, Prep and Paint, 4-Inch Solid White Striping, Complete in Place, As Directed by Engineer	750	LF	_____ Dollars _____ Cents	\$ _____	\$ _____
14	TXDoT: 666 DWGS	666 Traffic Markings, Prep and Paint, 4-Inch Solid Yellow Striping, Complete in Place, As Directed by Engineer	2,005	LF	_____ Dollars _____ Cents	\$ _____	\$ _____

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
15	TXDoT: 666 DWGS	Traffic Markings, Prep and Paint, 8-Inch Solid White Striping, Complete in Place, As Directed by Engineer	5,035	LF	_____ Dollars _____ Cents	\$ _____	\$ _____
16	TXDoT: 666 DWGS	Traffic Markings, Prep and Paint, 24-Inch Solid White Stop Bar, Complete in Place, As Directed by Engineer	1,170	LF	_____ Dollars _____ Cents	\$ _____	\$ _____
17	TXDoT: 666 DWGS	Traffic Markings, Prep and Paint, White "STOP" Marking, Complete in Place, As Directed by Engineer	14	EA	_____ Dollars _____ Cents	\$ _____	\$ _____
18	TXDoT: 666 DWGS	Traffic Markings, Prep and Paint, White Turn Only Marking, Complete in Place, As Directed by Engineer	2	EA	_____ Dollars _____ Cents	\$ _____	\$ _____
19	DWGS	Remove Existing Sign and Replace with New Sign, Complete in Place	61	EA	_____ Dollars _____ Cents	\$ _____	\$ _____
20	DWGS	Remove Existing School Zone Sign and Replace with New School Zone Sign with Mounted Solar Powered Beacons, Complete in Place	2	EA	_____ Dollars _____ Cents	\$ _____	\$ _____
21	SS 5074	Remove and Replace 6-Foot Concrete Wheel Stops, Complete in Place	45	EA	_____ Dollars _____ Cents	\$ _____	\$ _____
22	DWGS	Traffic Control Plan, Complete in Place	1	LS	_____ Dollars _____ Cents	\$ _____	\$ _____

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
23	2935	Turf Establishment, Full Sodding, Complete in Place	4,820	SY	_____ Dollars _____ Cents	\$ _____	\$ _____
24	DWGS	SWPPP, Installed, Maintained, and Removed, In Accordance with Best Management Practices, Complete in Place	1	LS	_____ Dollars _____ Cents	\$ _____	\$ _____
25	1580	Project Identification Sign, Complete in Place	1	LS	_____ Dollars _____ Cents	\$ _____	\$ _____
26		Flagger - As Directed by Engineer (Min. Bid \$20 / HR)	950	HR	_____ Dollars _____ Cents	\$ _____	\$ _____

**TOTAL AMOUNT SITE BID ITEMS** \_\_\_\_\_  
(Items 1 thru 26)

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
<b>STORM - 25 YEAR STORM</b>							
27	2706	Remove Existing Culverts 36-Inch or Less, Complete in Place	4,235	LF	_____ Dollars _____ Cents	\$ _____	\$ _____
28	2706	Remove Existing Culverts 60-Inch, Complete in Place	295	LF	_____ Dollars _____ Cents	\$ _____	\$ _____
29	2720	24-Inch Reinforced Concrete Pipe, ASTM C-76, Class III, including Cement Stabilized Sand, Complete in Place	2,140	LF	_____ Dollars _____ Cents	\$ _____	\$ _____
30	2720	36-Inch Reinforced Concrete Pipe, ASTM C-76, Class III, Complete in Place	595	LF	_____ Dollars _____ Cents	\$ _____	\$ _____
31	2720	48-Inch Reinforced Concrete Arch Pipe, ASTM C-76, Class III, Complete in Place	1,255	LF	_____ Dollars _____ Cents	\$ _____	\$ _____
32	2720	60-Inch Reinforced Concrete Pipe, ASTM C-76, Class III, Complete in Place	745	LF	_____ Dollars _____ Cents	\$ _____	\$ _____
33	2720	8-Foot by 3-Foot Reinforced Concrete Box Culvert, ASTM C-1433, Complete in Place	1,590	LF	_____ Dollars _____ Cents	\$ _____	\$ _____
34	2720	Concrete Storm Manhole (4-Foot Diameter), Complete in Place	1	EA	_____ Dollars _____ Cents	\$ _____	\$ _____
35	2605	Type "A" Inlet, Complete in Place	16	EA	_____ Dollars _____ Cents	\$ _____	\$ _____

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX.		UNITS	UNIT PRICE IN WORDS		UNIT PRICE (2)	TOTAL AMOUNT
			QTY.			Dollars	Cents		
36	2605	Type "C" Inlet, Complete in Place	52		EA			\$ _____	\$ _____
37	2605	Type "C-1" Inlet, Complete in Place	8		EA			\$ _____	\$ _____
38	2605	Type "C-2" Inlet, Complete in Place	1		EA			\$ _____	\$ _____
39	2720	Junction Box (5'x5') with Manhole Access Lid, Complete in Place	4		EA			\$ _____	\$ _____
40	2720	Junction Box (7'x7') with Manhole Access Lid, Complete in Place	7		EA			\$ _____	\$ _____
41	2720	Junction Box (8'x6') with Manhole Access Lid, Complete in Place	1		EA			\$ _____	\$ _____
42	2720	Junction Box (8'x8') with Manhole Access Lid, Complete in Place	1		EA			\$ _____	\$ _____
43	2720	Junction Box (9.2'x9.5') with Manhole Access Lid, Complete in Place	1		EA			\$ _____	\$ _____

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
44	2720	Junction Box (10.5'x8') with Manhole Access Lid, Complete in Place	3	EA	_____ Dollars _____ Cents	\$ _____	\$ _____
45	DWGS	Conflict Junction Box with Manhole Access Lid, Complete in Place	1	EA	_____ Dollars _____ Cents	\$ _____	\$ _____
46	DWGS	Junction Box ("45° Turning Box") with Manhole Access Lid, Complete in Place	1	EA	_____ Dollars _____ Cents	\$ _____	\$ _____
<b>TOTAL AMOUNT STORM BID ITEMS</b>					(25-Year Storm)		_____
							(Items 27 thru 46)



ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
<b>WATER</b>							
47	2664	12-Inch Waterline, Augered Construction (PVC, AWWA C-900, DR-18) All Depths, Complete in Place	1,645	LF	_____ Dollars _____ Cents	\$ _____ \$ _____	\$ _____
48	2664	12-Inch Waterline (PVC, AWWA C-900, DR-18) with Ductile Iron Fittings, Open Cut, Joint Restraints (as necessary), Including Sections Ductile Iron (AWWA C-151, Class 350) (as necessary) and Offsets as Shown on Plans, All Depths, Complete in Place	780	LF	_____ Dollars _____ Cents	\$ _____ \$ _____	\$ _____
49	2664	12-Inch Waterline (PVC, AWWA C-900, DR-18) with Ductile Iron Fittings, <b>Augered and Encased</b> with 18-Inch PVC Casing (0.3125-Inch Thick, C-150), and Offsets as Shown on Plans, All Depths, Complete in Place	135	LF	_____ Dollars _____ Cents	\$ _____ \$ _____	\$ _____
50	2625	Close Existing Valve, Remove Box, Plug Valve Operator (Open cut & Backfill), Complete in Place	20	EA	_____ Dollars _____ Cents	\$ _____ \$ _____	\$ _____
51	2625	Construct New Polyethylene Tubing Service Connection (3/4-Inch to 1-Inch), Short Side, Including Tap, Pipe, Valves, Connection to New Meter, and New Meter Box, Complete in	11	EA	_____ Dollars _____ Cents	\$ _____ \$ _____	\$ _____

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX.		UNITS	UNIT PRICE IN WORDS		UNIT PRICE (2)	TOTAL AMOUNT
			QTY.			Dollars	Cents		
52	2625	Construct New Polyethylene Tubing Service Connection (3/4-Inch to 1-Inch), Long Side, Auger Beneath Road, Including Tap, Pipe, Valves, Connection to New Meter, and New Meter Box, Complete in Place	4		EA			\$ _____	\$ _____
53	2625	Construct New Polyethylene Tubing Service Connection (2-Inch), Short Side, Including Tap, Pipe, Valves, Connection to New Meter, and New Meter Box, Complete in Place	5		EA			\$ _____	\$ _____
54	2625	Construct New Polyethylene Tubing Service Connection (2-Inch), Long Side, Auger Beneath Road, Including Tap, Pipe, Valves, Connection to New Meter, and New Meter Box,	10		EA			\$ _____	\$ _____
55	2626	12" Gate Valve (AWWA) with Adjustable Box, Joint Restraint (as necessary), Accessories, Concrete Collar, Complete in Place	25		EA			\$ _____	\$ _____
56	2626	8-Inch Wet Connection, Including Valve Closures for Line Isolation and Cut & Plug of Existing Line or Removal as Necessary, Complete in Place	7		EA			\$ _____	\$ _____
57	2626	6-Inch Wet Connection, Including Valve Closures for Line Isolation and Cut & Plug of Existing Line or Removal as Necessary, Complete in Place	12		EA			\$ _____	\$ _____

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT	
58	2626	6-Inch x 6-Inch Tapping Sleeve and Valve (AWWA) Full Body with Adjustable Box, Joint Restraint (as necessary), Accessories, Concrete Collar, Complete in Place	1	EA	_____ Dollars _____ Cents	\$ _____	\$ _____	
59	2626	Fire Hydrant Assembly, With Restrained Joints, 4-Foot Bury, Concrete Collar, Thrust Block, Complete in Place	13	EA	_____ Dollars _____ Cents	\$ _____	\$ _____	
60	2626	Extra Depth Bury for Fire Hydrant, Complete in Place	24	VF	_____ Dollars _____ Cents	\$ _____	\$ _____	
61	2669	Cut and Plug Existing Waterline (Open cut & Backfill), Complete in Place	19	EA	_____ Dollars _____ Cents	\$ _____	\$ _____	
<b>TOTAL AMOUNT WATER BID ITEMS</b>							_____	(Items 47 thru 61)

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX.		UNITS	UNIT PRICE IN WORDS		UNIT PRICE (2)	TOTAL AMOUNT
			QTY.						
<b>SANITARY</b>									
62	2730	12-Inch Sanitary Sewer, Open Cut Construction, Solid Wall PVC, SDR 26, Including By-pass Pumping, All Depths, Complete in Place	160		LF		Dollars _____ Cents _____	\$ _____	\$ _____
63	2768	12-Inch Sewer Reconstruction by Pipe Bursting with 14.5-Inch O.D. Polyethylene Pipe (SDR 19), all Depths, Including By-pass Pumping, Trench Safety, Post TV Inspection, Etc., As Directed by Owner's Representative, Complete in Place	380		LF		Dollars _____ Cents _____	\$ _____	\$ _____
64	2730	18-Inch Sanitary Sewer, Open Cut Construction, Solid Wall PVC, SDR 26, Including By-pass Pumping, All Depths, Complete in Place	1320		LF		Dollars _____ Cents _____	\$ _____	\$ _____
65	2768	18-Inch Sewer Reconstruction by Pipe Bursting with 21.5-Inch O.D. Polyethylene Pipe (SDR 19), all Depths, Including By-pass Pumping, Trench Safety, Post TV Inspection, Etc., As Directed by Owner's Representative, Complete in Place	2,190		LF		Dollars _____ Cents _____	\$ _____	\$ _____

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX.		UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
			QTY.					
66	2601	Standard Concrete Sanitary Sewer Manhole, 4-Foot Diameter, 0-8' Depth, Complete in Place	34		EA	_____ Dollars _____ Cents	\$ _____	\$ _____
67	2076	Remove Existing Sanitary Sewer Manhole, Complete in Place	31		EA	_____ Dollars _____ Cents	\$ _____	\$ _____
68	2665	Normal Connection (4-Inch or 6-Inch), Complete in Place	67		EA	_____ Dollars _____ Cents	\$ _____	\$ _____
69	2665	Short Side Service Connection (4-Inch), Complete in Place	4		EA	_____ Dollars _____ Cents	\$ _____	\$ _____
70	2665	Long Side Service Connection (4-Inch), Complete in Place	49		EA	_____ Dollars _____ Cents	\$ _____	\$ _____
71	2665	Long Side Service Connection (6-Inch), Complete in Place	4		EA	_____ Dollars _____ Cents	\$ _____	\$ _____

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT	
72	2665	Short Side Service Connection (6-Inch), Complete in Place	10	EA	_____ Dollars _____ Cents	\$ _____	\$ _____	
73	DWGS	Sanitary Sewer Vent, Complete in Place	2	EA	_____ Dollars _____ Cents	\$ _____	\$ _____	
<b>TOTAL AMOUNT SANITARY BID ITEMS</b>							_____	(Items 62 thru 73)

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
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**SUPPLEMENTAL BID ITEMS**

74	2521	Furnish and Install 8" Reinforced High Early Strength Concrete Pavement, Match Existing Road Section (Minimum 7 Sacks per Cubic Yard), Complete in Place	6,500	SY	_____ Dollars _____ Cents	\$ _____ \$ _____	(Minimum bid \$85.00)
75	2442	Flyash for 8-Inch Stabilized Sub-Grade (5% by Dryweight), Complete in Place (48 lb/sy)	100	TON	_____ Dollars _____ Cents	\$ _____ \$ _____	(Minimum bid \$100.00)
76	TXDoT: 666 DWGS	Traffic Markings, Prep and Paint, ADA Parking Marking, Complete in Place, As Directed by Engineer	1	EA	_____ Dollars _____ Cents	\$ _____ \$ _____	(Minimum bid \$300.00)
77	2720	12-Inch Reinforced Concrete Pipe, ASTM C-76, Class III, Complete in Place	200	LF	_____ Dollars _____ Cents	\$ _____ \$ _____	(Minimum bid \$35.00)

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
78	2720	18-Inch Reinforced Concrete Pipe, ASTM C-76, Class III, Complete in Place	200	LF	_____ Dollars _____ Cents	_____ _____	(Minimum bid \$40.00) \$ _____ \$ _____
79	HD Storm Pipe 12"-60"	24-Inch HP Storm Pipe, Pipe conforms to TxDOT SS Item 4122, AASHTO M330, ASTM F2881 Type S, Complete in Place	70	LF	_____ Dollars _____ Cents	_____ _____	(Minimum bid \$40.00) \$ _____ \$ _____
80	2720	6" Insertion Valve (AWWA) with Adjustable Box, Joint Restraint (as necessary), Accessories, Concrete Collar, As Directed by Owner's Representative, Complete in Place	1	EA	_____ Dollars _____ Cents	_____ _____	(Minimum Bid \$5,000.00) \$ _____ \$ _____
81	2720	8" Insertion Valve (AWWA) with Adjustable Box, Joint Restraint (as necessary), Accessories, Concrete Collar, As Directed by Owner's Representative, Complete in Place	1	EA	_____ Dollars _____ Cents	_____ _____	(Minimum Bid \$6,000.00) \$ _____ \$ _____
82	2720	12" Insertion Valve (AWWA) with Adjustable Box, Joint Restraint (as necessary), Accessories, Concrete Collar, As Directed by Owner's Representative, Complete in Place	1	EA	_____ Dollars _____ Cents	_____ _____	(Minimum Bid \$7,000.00) \$ _____ \$ _____



ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
83	LJA Spec. 2560	Sanitary Sewer Cleanout Per Detail, Complete in Place	1	EA	_____ Dollars _____ Cents	(Minimum Bid \$300.00) \$ _____	\$ _____
84	TXDoT 400	"Extra" Cement Stabilized Sand, As Directed by Owner's Representative, Complete in Place	200	TON	_____ Dollars _____ Cents	(Minimum Bid \$35.00) \$ _____	\$ _____
85	2521	"Extra" Class "A" Concrete, As Directed by Owner's Representative, Complete in Place	100	CY	_____ Dollars _____ Cents	(Minimum bid \$100.00) \$ _____	\$ _____
86	TXDoT 440	"Extra" Reinforcing Steel, As Directed by Owner's Representative, Complete in Place	2,500	LB	_____ Dollars _____ Cents	(Minimum Bid \$1.00) \$ _____	\$ _____
87	LJA Spec. 2223	"Extra" Crushed Limestone Bedding, As Directed by Owner's Representative, Complete in Place	50	CY	_____ Dollars _____ Cents	(Minimum bid \$25.00) \$ _____	\$ _____
88	DWGS	Select Fill, Compacted per ASTM D698, As Directed by Owner's Representative, Complete in Place	300	CY	_____ Dollars _____ Cents	(Minimum Bid \$10.00) \$ _____	\$ _____

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
89	2932	Turf Establishment, Hydromulch Seeding, Complete in Place	0.50	AC	_____ Dollars _____ Cents	_____ \$	(Minimum Bid \$2,000.00)
90	1526	Trench Safety, Complete in Place	12,395	LF	_____ Dollars _____ Cents	_____ \$	(Minimum Bid \$0.50)
<b>TOTAL AMOUNT SUPPLEMENTAL BID ITEMS</b>							_____ (Items 74 thru 90)
<b>ALTERNATE BID ITEMS</b>							
91	DWGS	Brick Paver (Sidewalk Crossing/Bumpouts) Per Detail, Complete in Place	2,605	SY	_____ Dollars _____ Cents	_____ \$	(Minimum Bid \$30.00)
<b>TOTAL AMOUNT ALTERNATE BID ITEMS</b>							_____ (Items 91)

ITEM NO.	SPEC NO.	DESCRIPTION (2)	APPROX. QTY.	UNITS	UNIT PRICE IN WORDS	UNIT PRICE (2)	TOTAL AMOUNT
<b>SUMMATION</b>							
		<b>TOTAL AMOUNT PAVING BID ITEMS</b>			(Items 1 thru 26)		
		<b>TOTAL AMOUNT STORM BID ITEMS</b>			(Items 27 thru 46)		
		<b>TOTAL AMOUNT WATER BID ITEMS</b>			(Items 47 thru 61)		
		<b>TOTAL AMOUNT SANITARY BID ITEMS</b>			(Items 62 thru 73)		
		<b>TOTAL AMOUNT BASE BID ITEMS</b>			(Items 1 thru 73)		
		<b>TOTAL AMOUNT SUPPLEMENTAL BID ITEMS</b>			(Items 74 thru 90)		
		<b>TOTAL AMOUNT ALTERNATE BID ITEMS</b>			(Items 91)		
		<b>TOTAL AMOUNT SUPPLEMENTAL AND BASE BID ITEMS</b>			(Items 1 thru 90)		
		<b>TOTAL AMOUNT SUPPLEMENTAL, ALTERNATE, AND BASE BID ITEMS</b>			(Items 1 thru 91)		

Notes:

(1) The intent of the Contract Documents is for the Contractor to include all items necessary for the proper execution and completion of the Work described the Contract Documents. No separate measurement and payment shall be made for any work unless identified as a pay item in the BID. Include the cost of work not identified as a separate pay item in Contract price bid for items of which this work is a component. In case of discrepancy between measurement and payment within the BID and Technical Specification Section, the BID shall govern.

(2) In the event of a discrepancy, this column shall govern.

**CONTRACT AWARD**

**23<sup>RD</sup> STREET PAVING, DRAINAGE & UTILITY REHABILITATION**

THIS CONTRACT IS ENTERED INTO BETWEEN GALVESTON COUNTY AND THE CONTRACTOR NAMED BELOW PURSUANT TO SUBCHAPTER B, CHAPTER 271, TEXAS LOCAL GOVERNMENT CODE, AND THE REFERENCED INVITATION TO BID.

Bid No: B#221010

Contract No: \_\_\_\_\_

Contractor: \_\_\_\_\_

The Specifications and Drawings are enumerated as follows:

Standard Specifications: **Standard Specifications for Construction and Maintenance Of Highways, Streets and Bridges; adopted by the Texas Department Of Transportation, 2014**

**City of Galveston Standard Construction Specifications**

**LJA Specifications**

Special Provisions: Galveston County Special Provisions 1 thru 9

Special Items: Phase 1 Environmental Site Assessment  
23<sup>rd</sup> Street Rehabilitation Project August 2019  
By Holloway Environmental

Phase 2 Environmental Site Assessment  
23<sup>rd</sup> Street Rehabilitation Project June 2020  
By Holloway Environmental

Geotechnical Study  
23<sup>rd</sup> Street Reconstruction August 2019  
By Geotech Engineering and Testing

DRAWINGS: **1 thru 67**

ADDENDA: \_\_\_\_\_

**Contract Award** (continued)

Invitation to Bid, General Provisions, Special Provisions, Prohibition on Contracts with Certain Companies, Prohibition on Contracts with Companies Boycotting Israel, Certification Regarding Lobbying, Non-Collusion Affidavit, Contractor’s Certification Regarding Lobbying, Bid Forms, Debarment Form, Vendor Qualification Packet, Special Provisions for Construction, Bid Proposal, Affidavit and Surety Forms, Wage Rates, Specifications, Environmental Site Assessments, Geotechnical Study, Plans and any Addenda attached to this Contract Award are all made a part of this Contract and collectively evidence and constitute the entire contract. Contractor shall furnish all materials, perform all of the work required to be done and do everything else required by these documents.

**Time of Completion:** The Contractor shall complete the work within 330 Calendar Days of the issuance of the notice to proceed. The time set forth for completion of the work is an essential element of the Contract.

**The Contract Sum:** The County shall pay the Contractor for performance of the Contract, the sum of \_\_\_\_\_ Dollars and \_\_\_/100 (\$ \_\_\_\_\_), payments to be made as described herein.

Performance Bond required: (x) yes ( ) no  
Payment Bond required: (x) yes ( ) no

This Contract is issued pursuant to award made by Commissioners' Court on \_\_\_\_\_, 2022.

EXECUTED this \_\_\_\_ day of \_\_\_\_\_, 2022.

COUNTY OF GALVESTON, TEXAS

BY: \_\_\_\_\_  
MARK HENRY, County Judge

ATTEST:

\_\_\_\_\_  
DWIGHT SULLIVAN, County Clerk

CONTRACTOR

BY: \_\_\_\_\_  
Signature - Title

\_\_\_\_\_  
Printed Name

**CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS**

TO (Owner):

PROJECT NO:

CONTRACT FOR:

PROJECT:  
(name, address)

CONTRACT DATE:

State of:

County of:

The undersigned, hereby certifies that, except as listed below, he has paid in full or has otherwise satisfied all obligations for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or his property might in any way be held responsible.

EXCEPTIONS: (If none, write "None". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each exception.)

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Consent of Surety to Final Payment.  
Whenever Surety is involved, consent of Surety is required. CONSENT OF SURETY, may be used for this purpose.  
Indicate attachment: yes \_\_\_\_\_ no \_\_\_\_\_

The following supporting documents should be attached hereto if required by the Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers to the extent required by the Owner, accompanied by a list thereof.
3. Contractor's Affidavit of Release of Liens.

CONTRACTOR:

Address:

BY:

Subscribed and sworn to before me this

day of \_\_\_\_\_ 20

Notary Public:

My Commission Expires:

**CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIEN**

TO (Owner):

PROJECT NO:

CONTRACT FOR:

PROJECT:  
(name, address)

CONTRACT DATE:

State of:

County of:

The undersigned, hereby certifies that, to the best of his knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS: (If none, write "None". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each exception.)

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Sub-contractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR:

Address:

BY:

Subscribed and sworn to before me this

day of 20

Notary Public:

My Commission Expires:

**CONSENT OF SURETY TO REDUCTION IN OR PARTIAL RELEASE OF RETAINAGE**

TO (Owner):

PROJECT NO:

PROJECT:  
(name, address)

CONTRACT FOR:

CONTRACT DATE:

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the  
(here insert name and address of Surety as it appears in the bond).

, SURETY,

on bond of (here insert name and address of Contractor as it appears in the bond)

, CONTRACTOR,

hereby approves the reduction in or partial release of retainage to the contractor as follows:

The Surety agrees that such reduction in or partial release of retainage to the Contractor shall not relieve the Surety of any of its  
obligations to (here insert name and address of Owner)

, OWNER,

as set forth in the said Surety's bond.

IN WITNESS WHEREOF,  
the Surety has hereunto set its had this

day of

20 .

\_\_\_\_\_  
Surety

\_\_\_\_\_  
Signature of Authorized Representative

\_\_\_\_\_  
Title

ATTEST:  
(Seal):



**CONSENT OF SURETY COMPANY TO FINAL PAYMENT**

TO (Owner):

PROJECT NO:

PROJECT:  
(name, address)

CONTRACT FOR:

CONTRACT DATE:

CONTRACTOR:

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In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the  
(here insert name and address of Surety as it appears in the bond).

, SURETY COMPANY,

on bond of (here insert name and address of Contractor )

, CONTRACTOR,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety  
Company of any of its obligations to (here insert name and address of Owner)

, OWNER,

as set forth in the said Surety Company's bond.

IN WITNESS WHEREOF,  
the Surety Company has hereunto set its had this

day of \_\_\_\_\_ 20\_\_ .

\_\_\_\_\_  
Surety Company

\_\_\_\_\_  
Signature of Authorized Representative

\_\_\_\_\_  
Title

ATTEST:  
(Seal):

NOTE: This form is to be use as a companion document to Contractor's Affidavit of Payment of Debts and Claims.

## SPECIAL PROVISION TO ITEM 1

### "DEFINITION OF TERMS"

For this project, Item 1 of the Texas Standard Specifications is hereby amended with respect to the clauses cited below and no other clauses or requirements of this Item are waived or changed hereby:

THE TERM "DEPARTMENT," "STATE," "STATE HIGHWAY DEPARTMENT OF TEXAS", "TxDOT", "TEXAS DEPARTMENT OF TRANSPORTATION", STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION," "STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION COMMISSION," "COMMISSION," AND "STATE HIGHWAY COMMISSION," SHALL, IN THE USE OF THE STANDARD SPECIFICATIONS FOR ALL WORK IN CONNECTION WITH THIS PROJECT, BE DEEMED TO MEAN GALVESTON COUNTY, PARTY OF THE FIRST PART IN ACCOMPANYING CONTRACT OR CONTRACTS. ANY REFERENCE IN THE TEXAS STANDARD SPECIFICATIONS TO THE STATE OF TEXAS, ITS OFFICIALS, EMPLOYEES, OR AGENTS SHALL BE DEEMED TO MEAN GALVESTON COUNTY, ITS OFFICIALS, EMPLOYEES, OR AGENTS.

Articles 1.26, "Certificate of Insurance" ; 1.28, "Commission", 1.47, "Department", 1.70 "Letting Official " and 1.124 "State" are deleted.

Article 1.53, "ENGINEER", is revised to read in its entirety as follows:

1.53 ENGINEER. Galveston County Engineer or his authorized representatives. If a representative is authorized to function as the ENGINEER'S representative with respect to certain ENGINEER'S activities that representative's responsibilities and obligations shall be limited as provided in Article 1.148.

Article 1.64, "INSPECTOR," is revised to read in its entirety as follows:

1.64 INSPECTOR. The representative of the ENGINEER assigned and authorized to observe or inspect any or all parts of the work and the material to be used therein. A representative is authorized to function as the ENGINEER'S representative with respect to certain activities, and that representative's responsibilities and obligations shall be limited as provided in Article 1.148.

## Special Provisions to Item 1

### "DEFINITION OF TERMS"

#### ADDITIONAL ARTICLES ARE ADDED AS FOLLOWS:

1.148 CONSULTING ENGINEER. Independent engineering firms contracting with Galveston County for the providing of professional engineering services. The engineering firms are the representatives of Galveston County only to the extent provided in the Contract documents and in such special instances where they are specifically authorized by Galveston County so to act. All powers and rights assigned by Galveston County to the engineering firms with respect to the work are solely and exclusively for the benefit of Galveston County and not for the CONTRACTOR. In carrying out of its powers and rights assigned by Galveston County the engineering firms shall function as a representative of Galveston County and shall act by and for Galveston County. Irrespective of what authority may be assigned by Galveston County to the engineering firms, CONTRACTOR remains fully and solely responsible and liable for its obligations to perform the work in accordance with the requirements of the plans and specifications; to insure against failures in safety precautions; to carry out his work pursuant to safe methods of construction; to select and fulfill the proper manner, means, and methods in performing the work in order to meet the plans and specifications; and to complete the work in accordance with the contract documents.

SPECIAL PROVISION TO ITEM 2  
INSTRUCTIONS TO BIDDERS

For this project, Item 2 of the Texas Standard Specifications is hereby deleted in its entirety.  
The Instructions to Bidders is included elsewhere in the Contract Documents.

SPECIAL PROVISION TO ITEM 3  
AWARD AND EXECUTION OF CONTRACT

For this project, Item 3 of the Texas Standard Specifications is hereby deleted in its entirety.  
The Award and Execution of Contract is included elsewhere in the Contract Documents.

## SPECIAL PROVISION TO ITEM 4

### SCOPE OF WORK

For this project, Item 4 of the Texas Standard Specifications is hereby amended with respect to the clauses cited below and no other clauses or requirements of this Item are waived or changed hereby.

ARTICLE 4.2 "CHANGES IN WORK;" ARTICLE 4.3 "DIFFERING SITE CONDITIONS" and ARTICLE 4.4 "REQUESTS AND CLAIMS FOR ADDITIONAL COMPENSATION" are deleted in their entirety and replaced by Article 41 "CHANGES and ALTERATIONS" and ARTICLE 42 "EXTRA WORK" of "Special Provisions for Construction".

## SPECIAL PROVISION TO ITEM 5

### CONTROL OF THE WORK

For this project, Item 5 of the Texas Standard Specifications is hereby amended with respect to the clauses cited below and no other clauses or requirements of this Item are waived or changed hereby.

ARTICLE 5.2 "PLANS AND WORKING DRAWINGS." The first sentence of the first paragraph is hereby revised to read as follows:

When required, the Contractor shall provide working drawings to supplement the plans with all necessary details not included on the Contract plans.

ARTICLE 5.5 "COOPERATION OF CONTRACTOR." The last sentence of the first paragraph is hereby revised to read as follows:

The Contractor will be supplied with three (3) copies of the plans, specifications and special provisions and he shall have one (1) copy of each available on the project at all times.

ARTICLE 5.6 "CONSTRUCTION SURVEYING," is hereby deleted in its entirety.

ARTICLE 5.7 "INSPECTION." The sixth sentence of the second paragraph is hereby revised to read as follows:

If the uncovered work is acceptable, the costs to uncover, remove and replace or make good the parts removed will be paid for in accordance with Article 41. "Changes and Alterations" of "Special Provisions for Construction".

ARTICLE 5.8 "FINAL ACCEPTANCE," is hereby deleted in its entirety. It is replaced by Article 6(b). "PAYMENTS TO CONTRACTOR, FINAL PAYMENT" of "Special Provisions for Construction".

SPECIAL PROVISION TO ITEM 6

CONTROL OF MATERIALS

For this project, Item 6 of the Texas Standard Specifications is hereby amended with respect to the clauses cited below and no other clauses or requirements of this Item are waived or changed hereby.

ARTICLE 6.1 "SOURCE CONTROL." Paragraph A. "Buy America" and B. "Buy Texas" are hereby deleted in their entirety.

ARTICLE 6.7 "Department-furnished Material" is hereby deleted in its entirety.



## SPECIAL PROVISION TO ITEM 7

### LEGAL RELATIONS AND RESPONSIBILITIES

For this project, Item 7 of the Texas Standard Specifications is hereby amended with respect to the clauses cited below and no other clauses or requirements of this Item are waived or changed hereby.

ARTICLE 7.4 "INSURANCE AND BONDS" is hereby deleted in its entirety.

ARTICLE 7.5 "RESTORING SURFACES OPENED BY PERMISSION." The third sentence of the first paragraph is hereby revised to read as follows:

Payment for repair of surfaces opened by permission will be made in accordance with Article 41. "Changes and Alterations" of "Special Provisions for Construction".

## SPECIAL PROVISION TO ITEM 8

### PROSECUTION AND PROGRESS

For this project, Item 8 of the Texas Standard Specifications is hereby amended with respect to the clauses cited below and no other clauses or requirements of this Item are waived or changed hereby.

ARTICLE 8.1 "PROSECUTION OF WORK" The third sentence in the first paragraph is hereby revised to read as follows:

"The Contractor shall begin the work to be performed under the contract within ten (10) days after the date of the authorization to begin work as shown on the work order.

ARTICLE 8.2 "PROGRESS SCHEDULES", B. "CONSTRUCTION CONTRACTS" The first sentence in the first paragraph is hereby revised to read as follows:

If required by the Engineer, before starting work on a construction Contract, prepare and submit a progress schedule based on the sequence of work and traffic control plan shown in the Contract.

## SPECIAL PROVISION TO ITEM 9

### MEASUREMENT AND PAYMENT

For this project, Item 9 of the Texas Standard Specifications is hereby amended with respect to the clauses cited below and no other clauses or requirements of this Item are waived or changed hereby.

ARTICLE 9.2 "PLANS QUANTITY MEASUREMENT" is hereby revised to read as follows: Plans quantities may not represent the exact quantity of work performed or material moved, handled, or placed during the execution of the Contract. The estimated bid quantities are designated as final payment quantities.

ARTICLE 9.4 "PAYMENT FOR EXTRA WORK" is hereby revised to read as follows:

Extra work ordered, performed and accepted will be paid for in accordance with ARTICLE 42, "EXTRA WORK" of "Special Provisions for Construction".

ARTICLE 9.5 "FORCE ACCOUNT" is hereby deleted in its entirety.

ARTICLE 9.6 "PROGRESS PAYMENTS" is hereby deleted in its entirety and replaced by ARTICLE 36, "PROGRESS PAYMENTS AND RETAINAGE" of Section IV, "General Terms and Conditions".

ARTICLE 9.8 "FINAL PAYMENT" and ARTICLE 40, "FINAL PAYMENT" are hereby deleted in their entirety and replaced by ARTICLE 6(b), "PAYMENTS TO CONTACTOR, FINAL PAYMENT" of "Special Provisions for Construction".

**23<sup>RD</sup> STREET REHABILITATION**  
**GALVESTON COUNTY**

**TECHNICAL SPECIFICATIONS**

<u>Item</u>	<u>Title</u>
<b>LJA Specs:</b>	
1400.....	Measurement and Payment
2223.....	Crushed Limestone Bedding
2560.....	Sanitary Sewers
<b>ADS Specs:</b>	
HP Storm Pipe 12”-60”	
<b>TXDoT Specs:</b>	
132.....	Embankment
400.....	Excavation and Backfill for Structures
440.....	Reinforcement for Concrete
531.....	Sidewalks
666.....	Retroreflectorized Pavement Markings
SS5074.....	Precast Concrete Wheel Stops
<b>City of Galveston</b>	

**TECHNICAL SPECIFICATIONS**  
**Section No. Title No. of Pages**  
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01015 Contractor’s Use of Premises .....	4
01025 Measurement and Payment .....	3
01040 Coordination and Meetings .....	4
01045 Cutting and Patching .....	3
01050 Field Surveying .....	2
01090 Reference Standards .....	9
01292 Schedule of Values .....	2
01300 Submittals .....	5
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 02521 Concrete Paving ..... 14  
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 02525 Concrete Pavement Curing ..... 2  
 02530 Concrete Sidewalks ..... 3  
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 02532 Curb, Curb and Gutter ..... 3  
 02570 Pavement Repair and Resurfacing ..... 3  
 02571 Pavement Repair for Utilities ..... 5  
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 02603 Frames, Grates, Rings, and Covers ..... 3  
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 02605 Cast-in-Place Inlets, Headwalls, and Wingwalls ..... 3  
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 02626 Tapping Sleeves and Valves ..... 3  
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02645 Fire Hydrant Assembly .....7  
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**ITEM 1400**

**MEASUREMENT AND PAYMENT**

MEASUREMENT AND PAYMENT: It is the intent of the Proposal and of the General and Supplementary Conditions that the total bid, as submitted, shall cover all work required by these Contract Documents and the Plans. All costs in connection with the work, including the furnishing of all materials, appliances, equipment, supplies and all appurtenances; providing all construction equipment and tools; and performing all necessary labor to fully complete the work shall be included in the unit prices in the Proposal. No item of work that is required by the Contract Documents for the proper and successful completion of the Contract will be paid for outside of or in addition to the prices submitted to the Proposal. All work not specifically set forth in the Proposal as a pay item shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices named in the Proposal.

The method of measurement and basis of payment shall be as stipulated in the following subparagraphs:

1. Mobilization including all permits and fees; Bid Item 1:

Measurement shall be “Per Lump Sum”. The unit price shall be full compensation for the transportation and delivery of supplies, equipment, and crew on site and start the job. This item is to be utilized once only in the beginning of the job.

2. Excavation of Existing Road 5-Inches to 8-Inches; Bid Item 2:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies, and incidentals necessary to complete the work; including roadway, destruction, excavation, saw cutting, shaping and finishing, salvaging, transporting, and removing material and base material, as required.

3. Cut / Excavation for Ditch Finished Grade; Bid Item 3:

Measurement shall be “Per Cubic Yard”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies, and incidentals necessary to complete the work, including excavating or blading onsite material from roadway to establish a finished grade on spoil location sheet as called out in plans, and reach compaction to 95% by Standard Procter Density. The surplus suitable material shall be placed as shown in plans as described by Owner’s Representative. The location for desirable spoil to be placed shall not exceed a distance of 0.5 miles.

4. Embankment for Fill Purposes, Bid Item 4:

Measurement shall be “Cubic Yard” of in-place material. The unit price shall be full compensation for materials, labor, and appurtenances for delivery and installation of extra embankment as required to raise and establish a finished grade as called out on plans, and reach compaction of 95% standard proctor density, as directed by the Owner’s Representative.

5. Lime for 8-inch Stabilized Sub-Grade (5% by Dryweight); Bid Item 5:

Measurement shall be “Per Ton”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including supplying and placing lime to be utilized.

6. 8-Inch Stabilized Sub-Grade (Manipulation); Bid Item 6:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies, and incidentals necessary to complete the work, including salvaging and reshaping the existing base material and subgrade to obtain the required alignment and grade of the proposed pavement; spreading, blading and shaping of any material brought to the project from a stockpile; spreading and blading of the lime/flyash to obtain a uniform application; lime/flyash stabilization; mixing, sprinkling, blading, shaping and rolling of the base material and subgrade to obtain the required Standard Proctor Density and all manipulations, labor, tools, equipment necessary to complete the work.

7. 7-Inch Reinforced Concrete Pavement (5.5 Sacks per Cubic Yard); Bid Item 7:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for shaping and fine grading the roadbed, including furnishing and applying all water required; for furnishing, loading and all freight and royalty involved; for mixing, placing, finishing and curing all concrete mix; for furnishing all materials for and placing longitudinal, warping, expansion, sawed control and contraction joints , and load transmission units, and joint filler material in proper position; for coating steel bars where required by plans, for furnishing and placing all reinforcing steel; and for all manipulations, labor, equipment, appliances, tools, traffic provisions and incidentals necessary to complete the work.



8. 6-Inch Reinforced Concrete Pavement for Driveways (5.5 Sacks per Cubic Yard); Bid Item 8:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for shaping and fine grading the roadbed, including furnishing and applying all water required; for furnishing, loading and all freight and royalty involved; for mixing, placing, finishing and curing all concrete mix; for furnishing all materials for and placing longitudinal, warping, expansion, sawed control and contraction joints, and load transmission units, and joint filler material in proper position; for coating steel bars where required by plans, for furnishing and placing all reinforcing steel; and for all manipulations, labor, equipment, appliances, tools, traffic provisions and incidentals necessary to complete the work.

9. 6-Inch Curb; Bid Item 9:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including layout, forming, reinforcement including dowels, supply and installation of concrete, joints, trenching and incidentals thereto, salvaging, transporting, and delivering the material, as required to complete a 6-Inch concrete curb complete in place.

10. 5-Inch Thick Concrete Sidewalk, Bid Item 10:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including layout, shaping and compacting the select fill bed, including furnishing and applying all water required; loading and all freight and royalty involved; compact to 95% maximum dry density determined by the standard proctor method (ASTM 0-698) for sidewalk bedding, mixing, placing, finishing with a light broom finish and curing all concrete mix, new sidewalk per detail, adjusting elevation of new sidewalk using compacted sand, forming, reinforcement including dowels, joints, trenching and incidentals thereto, salvaging, transporting, and delivering the material, as required, complete in place.

11. 3-Inch Asphaltic Concrete Surface, Bid Item 611:

Measurement shall be “Per Square Yard”. The unit price shall be for furnishing and placement of all materials including prime coat, 8-inch asphalt base grade-2 PG-64, per TXDOT Item 292, 3” thick HMHL surface coarse, type “D” per TXDOT Item 340, and required equipment and labor. Pavement shall be for repaired areas where removal was required for construction. Saw-cutting and excavation of existing area to be repaired is incidental to this item. Pavement replacement shall not exceed the areas shown on the details. Other damaged areas shall be repaired at Contractor’s expense.

12. ADA-Handicap Accessible Ramp; Bid Item 12:

Measurement shall be “Per Each”. The unit price shall be full compensation for shaping, including furnishing and applying all water required; for furnishing, loading and all freight and royalty involved; for mixing, placing, finishing and curing all concrete mix; for furnishing all materials for and placing truncated domes, slopes, doweling into existing ramp, and tie-ins to new or existing sidewalk and pavement, for furnishing and placing all reinforcing steel; and for all manipulations, labor, equipment, appliances, tools, traffic provisions and incidentals necessary to complete the work for a concrete ramp complete in place.

13. Traffic Markings, Prep and Paint, 4” Solid White Striping; Bid Item 13:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies, and incidentals necessary to complete the work, including the layout, and surface preparation to place a 4” solid white stripe, as directed by the Owner’s Representative, complete in place.

14. Traffic Markings, Prep and Paint, 4” Solid Yellow Striping; Bid Item 14:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies, and incidentals necessary to complete the work, including the layout, and surface preparation to place a 4” dashed yellow stripe, as directed by the Owner’s Representative, complete in place.

15. Traffic Markings, Prep and Paint, 8” Solid White Striping; Bid Item 15:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies, and incidentals necessary to complete the work, including the layout, and surface preparation to place a 8” solid white stripe, as directed by the Owner’s Representative, complete in place.

16. Traffic Markings, Prep and Paint, 24” Wide Stop Bar; Bid Item 16:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies, and incidentals necessary to complete the work, including the layout, and surface preparation to place a 24” wide white stop bar stripe, as directed by the Owner’s Representative, complete in place.

17. Traffic Markings, Prep and Paint, White "STOP" Marking; Bid Item 17:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies, and incidentals necessary to complete the work, including the layout, and surface preparation to place a white "STOP" Marking stripe, as directed by the Owner’s Representative, complete in place.

18. Traffic Markings, Prep and Paint, White Turn Only Marking; Bid Item 18:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies, and incidentals necessary to complete the work, including the layout, and surface preparation to place a white Turn Only Marking stripe, as directed by the Owner’s Representative, complete in place.

19. Remove Existing Sign and Replace with New, Bid Item 19:

Measurement shall be “Per Each.” Unit price shall be full compensation for removal and replacement of existing sign, cleanup, appurtenances, and any incidentals necessary to complete the work.

20. Remove Existing Solar School Zone Sign with Lights and Replace with New, Bid Item 20:

Measurement shall be “Per Each.” Unit price shall be full compensation for removal and replacement of existing sign, cleanup, appurtenances, and any incidentals necessary to complete the work.

21. Remove and Replace 6-Foot Concrete Wheel Stops; Bid Item 21:

Measurement shall be “Per Each”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including layout, forming, reinforcement including rebar, supply and installation of concrete, drilling holes, setting stops, salvaging, transporting, and delivering the material, as required to place wheel stops as shown in plans, complete in place.

22. Traffic Control Plan During Construction; Bid Item 22:

Measurement shall be “Per Month”. The unit price shall be full compensation for furnishing traffic control plan needed for milling, proof rolling, forming and concrete activities as necessary. Roadways are to be open to local traffic. The unit price shall include furnishing, installation, and removal of signs and/or barricades as necessary, and the use of flagmen to assist in traffic control during working hours.

23. Turf Establishment, Full Sodding; Bid Item 23:

Measurement shall be “Per Square Yard”. Payment is to be full compensation for the establishment of turf by sodding in accordance with the Specifications in locations specified by the Owner’s Representative.

24. SWPPP, Installed, Maintained, and Removed; Bid Item 24:

Measurement shall be “Per Lump Sum”. The unit price shall be full compensation for supplying materials, installation of SWPPP, maintenance of SWPPP, and removal of SWPPP at the end of construction, finish grading, clean-up, and all incidental work.

25. Project Sign; Bid Item 25:

Measurement shall be “Per Lump Sum”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including the placement of sign, as directed by the engineer for the duration of the project and then removed at projects end, complete in place.

26. Flagger; Bid Item 26:

Measurement shall be “Per Hour”. The unit price shall be full compensation for flagger in field during construction for traffic control if deemed necessary by county’s representative. Contractor shall get in writing approval before flagger is to be used for entirety of contract. This item does not preclude contractor from implementing the approved traffic control plan as necessary but shall be deemed as an additional necessity and shall be avoided if it can be.

27. Remove Existing Culverts 36-Inch or Less, Bid Item 27:

Measurement shall be “Per Linear Foot”. Payment shall be full compensation for supplying all materials to remove existing culvert, and labor to place haul offsite as directed by the engineer.

28. Remove Existing Culverts 60-Inch, Bid Item 28:

Measurement shall be “Per Linear Foot”. Payment shall be full compensation for supplying all materials to remove existing culvert, and labor to place haul offsite as directed by the engineer.

29. 24-Inch Reinforced Concrete Pipe, ASTM C-76, Class III; Bid Item 29:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing and installation of storm sewers of size contained in the bid form including excavation and embedment as required, backfilling, finish grading, ditch grading to drain, well point dewatering, trench safety, cement stabilized sand, clean-up and all appurtenances including concrete collars per detail, and work required for the complete placement of proposed storm sewers.

30. 36-Inch Reinforced Concrete Pipe, ASTM C-76, Class III; Bid Item 30:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing and installation of storm sewers of size contained in the bid form including excavation and embedment as required, backfilling, finish grading, ditch grading to drain, well point dewatering, trench safety, cement stabilized sand, clean-up and all appurtenances including concrete collars per detail, and work required for the complete placement of proposed storm sewers.

31. 48-Inch Reinforced Concrete Arch Pipe, ASTM C-76, Class III; Bid Item 31:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing and installation of storm sewers of size contained in the bid form including excavation and embedment as required, backfilling, finish grading, ditch grading to drain, well point dewatering, trench safety, cement stabilized sand, clean-up and all appurtenances including concrete collars per detail, and work required for the complete placement of proposed storm sewers.

32. 60-Inch Reinforced Concrete Pipe, ASTM C-76, Class III; Bid Item 32:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing and installation of storm sewers of size contained in the bid form including excavation and embedment as required, backfilling, finish grading, ditch grading to drain, well point dewatering, trench safety, cement stabilized sand, clean-up and all appurtenances including concrete collars per detail, and work required for the complete placement of proposed storm sewers.

33. 8-Foot by 3-Foot Reinforced Box Culvert (ASTM C850), Including Slope Paving and Backfill; Bid Item 33:

Measurement shall be “Per Linear Foot” along the centerline of box sewer without deductions for manholes and inlets, from start to the line terminus. The unit price shall be full compensation for layout, trenching and incidentals thereto, saw-cutting, cement stabilized bedding, Concrete Safety End Treatment as shown in Plans, boxes and fitting materials, box placement, embedment and backfill to existing surface elevations, well point dewatering, connections, trench safety, trench backfill maintenance, clean-up and all incidental work required for the complete contract not specifically included in another payment item.

34. Standard Concrete Storm Manhole; Bid Item 34:

Measurement shall be “Per Each”. Payment shall be full compensation for a 4-foot to 6-foot diameter manhole 0 to 8 feet deep, well point watering, per details on plans if necessary, complete in place concrete units including cone, rings, frame and cover, accessories, embedment, and backfill per details shown on Plans.

35. Type “A” Inlet; Bid Item 35:

Measurement shall be “Per Each”. The unit price shall be full compensation for furnishing and installation of type “A” inlet including excavation and embedment as required, backfilling, finish grading, trench safety, ditch grading to drain, dewatering, clean-up and all appurtenances including concrete collars per detail, and work required for the complete placement of proposed type “A” inlet.

36. Type “C” Inlet; Bid Item 36:

Measurement shall be “Per Each”. The unit price shall be full compensation for furnishing and installation of type “E” inlet including excavation and embedment as required, backfilling, finish grading, trench safety, ditch grading to drain, dewatering, clean-up and all appurtenances including concrete collars per detail, and work required for the complete placement of proposed type “E” inlet.

37. Type “C-1” Inlet; Bid Item 37:

Measurement shall be “Per Each”. The unit price shall be full compensation for furnishing and installation of type “E” inlet including excavation and embedment as required, backfilling, finish grading, trench safety, ditch grading to drain, dewatering, clean-up and all appurtenances including concrete collars per detail, and work required for the complete placement of proposed type “E” inlet.

38. Type “C-2” Inlet; Bid Item 38:

Measurement shall be “Per Each”. The unit price shall be full compensation for furnishing and installation of type “E” inlet including excavation and embedment as required, backfilling, finish grading, trench safety, ditch grading to drain, dewatering, clean-up and all appurtenances including concrete collars per detail, and work required for the complete placement of proposed type “E” inlet.

39. Junction Box; Bid Items 39, 40, 41, 42, 43, 44, and 45:

Measurement shall be “Per Each.” The unit price shall be full compensation for layout, materials, installation of materials necessary, excavation, disposal of waste, seal slabs, access inlet with solid cover, forming, steel placement, placement of concrete, trench safety, connections to all existing and proposal storm sewer, and appurtenances as shown on the Plans and/or Details, embedment and backfill, finish grading, dewatering, clean-up, and all appurtenances necessary to complete the work, complete in place.

40. Waterline in Augered Construction; Bid Item 46:

Measurement shall be “Per Linear Foot” along centerline of pipe from start to the augered terminus. The unit price shall be full compensation for layout, grade, clearing and grubbing, boring and jacking of pipe and incidentals thereto, bedding, carrier pipe and materials, pipe placement, fittings, thrust blocking and normal backfill to existing surface elevations, connections, joint restraints, bore pit dewatering, trench safety, testing, disinfection, trench backfill maintenance, and all incidental work.

41. Waterline, Open Cut; Bid Items 47:

Measurement shall be “Per Linear Foot” along centerline of pipe without deductions for valves and fittings, from start to line terminus. The unit price shall be full compensation for layout, clearing and grubbing, trenching and incidentals thereto, bank sand bedding, pipe and fitting materials, steel pipe sections (as applicable), pipe placement, thrust blocking and normal backfill to existing grade, testing, disinfection, connections, joint restraints, trench backfill, maintenance, clean-up, trench dewatering, trench safety, and all incidental work required for the complete contract not specifically included in another payment item.

42. Waterline in Augered & Encased Construction, Bid Item 48:

Measurement shall be “Per Linear Foot” along centerline of pipe from start to the augered terminus. The unit price shall be full compensation for layout, grade, clearing and grubbing, boring and jacking of encasement pipe and incidentals thereto, bedding, carrier pipe and materials, pipe placement, fittings, racci supports, thrust blocking and normal backfill to existing surface elevations, connections, bore pit dewatering, trench safety, testing, disinfection, trench backfill maintenance, and all incidental work.

43. Short Side Service Connections, Bid Items 49 and 51:

Measurement shall be "Per Each". Payment shall be full payment for tapping of the line through service saddle with corporation stop, temporary capping of stop, installing new service line (with or without casing as required in Bid Form), excavating trench for new service, laying new service tubing from new meter to the new waterline, connecting new service line to the meter, backfilling trench, and clean-up. No adjustment in the unit price shall be made for varying service line footage.

44. Long Side Service Connections; Bid Items 50 and 52:

Measurement shall be "Per Each". Payment shall be full payment for tapping of the line through service saddle with corporation stop, temporary capping of stop, installing new service line (with or without casing as required in Bid Form), auger under road for new service, laying new service tubing from existing meter to the new waterline, connecting new service line to the meter, brass adapters as necessary, tracer wire, setting new District supplied meter box if required by the District, backfilling auger pit, and clean-up. No adjustment in the unit price shall be made for varying service line footage.

45. Gate Valves; Bid Item 53:

Measurement "Per Each". Payment includes valve with resilient seats, manual operator of type specified, accessories, adjustable valve box, setting, valve blocking, and incidental work.

46. Wet Connections, Bid Items 54 and 55:

Measurement shall be "Per Each." Unit price shall be full compensation for excavation, dewatering, cutting, cleaning, fittings, blocking, appurtenances and any incidentals including cutting and plugging of existing pipes to be abandoned necessary for a complete connection.

47. Tapping Sleeve and Valve, Bid Item 56:

Measurement shall be "Per Each". Unit price shall be full compensation for tapping through full body service saddle with gate valve, valve pressure tap, adjustable box, blocking, appurtenances and dewatering of trench and any incidentals necessary to complete the work.

48. Fire Hydrant Assembly; Bid Item 57:

Measurement is to be "Per Each." Unit price shall be full compensation for tee (if required), piping, valve, elbow, new fire hydrant 4' bury, restrained joints, concrete block, drain gravel, and backfill.



49. Extra Depth of Bury for Fire Hydrant, Bid Item 58:

Measurement is to be "Per Vertical Foot." Unit price shall be full compensation for addition in barrel length over 4-foot of bury fire hydrant, complete with drain gravel, and backfill.

50. Cut & Plug Existing Waterline, Bid Item 59:

Measurement shall be "Per Each." Unit price shall be full compensation for excavation, dewatering, cutting, and plugging existing waterline to be abandoned, manufactured plug, backfill, appurtenances and any incidentals necessary to complete the work.

51. Sewer Reconstruction by Open Cut Method; Bid Items 60 and 62:

Measurement shall be "Per Linear Foot" for all sizes along the centerline of the pipe without deductions for manholes and fittings from start to line terminus. The unit price shall be full compensation for layout, bypass pumping, trenching and incidental thereto, Open cutting with saw for clean edge, material, placement, sealing when required, steel encasement as shown in the details, backfill to existing surface, post rehabilitation TV inspection, traffic control, trench safety for access pits and insertion pits, well point dewatering, cement stabilized sand, finish grading, clean-up and all incidental work for a complete project. If post rehabilitation TV inspection shows defects, TV inspection shall be repeated until defect is satisfactorily repaired. Post TV and relevant submittals shall be incidental to the project.

52. Sewer Reconstruction by Pipe Bursting; Bid Items 61 and 63:

Measurement shall be "Per Linear Foot" for all sizes along the centerline of the pipe without deductions for manholes and fittings from start to line terminus. The unit price shall be full compensation for layout, bypass pumping, trenching, well point dewatering, and incidental thereto, pipe bursting, liner material, liner placement, sealing when required, backfill to existing surface, cement stabilized sand, post rehabilitation TV inspection, traffic control, trench safety for access pits and insertion pits, finish grading, clean-up and all incidental work for a complete project. If post rehabilitation TV inspection shows defects, TV inspection shall be repeated until defect is satisfactorily repaired. Post TV and relevant submittals shall be incidental to the project.

53. Standard Concrete Sanitary Sewer Manhole; Bid Item 64:

Measurement shall be "Per Each". Payment shall be full compensation for a 4-foot diameter manhole 0 to 8 feet deep, sealed, bypass pumping, well point watering, per details on plans if necessary, complete in place concrete units including cone, rings, frame and cover, accessories, and backfill per details shown on Plans.

54. Remove Existing Sanitary Sewer Manhole; Bid Item 65:

Measurement shall be "Per Each". Unit price shall be full compensation for excavation, dewatering, bypass pumping, per details on plans if necessary, complete in place, cleanup, appurtenances, and any incidentals necessary to complete the work, and backfill per details shown on Plans.

55. Normal Connection, Complete in Place; Bid Item 66:

Measurement shall be "Per Each". Payment shall be full compensation for removal and replacement of individual house (4-inch) or commercial (6-inch) services from the newly reconstructed sewers to the service lead (long or short service). Work includes but is not limited to layout, dewatering, trenching and incidental thereto, sealing, bypass pumping, insert a tee and piping, backfill to existing surface, surface restoration, testing, safety measures, finish grading, clean-up, obstruction removal and all incidental work.

56. Short Side Service Connection; Bid Items 67 and 70:

Measurement shall be "Per Each". Payment shall be full compensation for removal and replacement of individual house services from the new sewer to the property line or easement line, including the connection to the new sewer line (deep connection or normal connection). Work includes but is not limited to layout, trenching and incidental thereto, sealing, pipe, backfill to existing surface, testing, traffic control, safety measures, finish grading, clean-up, obstruction removal, required boring or auguring to install new service line, district side cleanout, and all incidental work required for a complete installation.

57. Long Service Connection; Bid Items 68 and 69:

Measurement shall be "Per Each". Payment shall be full compensation for removal and replacement of individual house services from the new sewer under the street to the property line or easement line, including the connection to the new sewer line (deep connection or normal connection). Work includes but is not limited to layout, auguring and incidental thereto, sealing, pipe, backfill to existing surface, testing, traffic control, safety measures, finish grading, clean-up, obstruction removal, required boring or auguring to install new service line, district side cleanout, and all incidental work required for a complete installation.

58. Vent Sanitary Sewer Manhole; Bid Item 71:

Measurement shall be "Per Each". The unit price shall be full compensation for each manhole vent supplied and installed, including connection to the manhole, piping, bedding and backfill, fittings, and all incidental work required for a complete installation.

59. Concrete Surface Restoration; Bid Item 72:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for the base material, reinforced concrete, labor and all appurtenances required for concrete surface replacement. Saw-cutting and excavation of existing area to be repaired is incidental to this item. Repair area shall not exceed area shown on Plans. Areas outside access pits damaged by equipment will be repaired at Contractor’s expense.

**SUPPLEMENTARY ITEMS**

60. Furnish and Install 8" Reinforced High Early Strength Concrete Pavement, Match Existing Road Section (Minimum 7 Sacks per Cubic Yard), As Directed by Owner’s Representative; Supplemental Bid Item 73:

Measurement shall be “Per Square Yard”. The unit price shall be full compensation for shaping and fine grading the roadbed, including furnishing and applying all water required; for furnishing, loading and all freight and royalty involved; for mixing, placing, finishing and curing all concrete mix; for furnishing all materials for and placing longitudinal, warping, expansion, sawed control and contraction joints , and load transmission units, and joint filler material in proper position; for coating steel bars where required by plans, for furnishing and placing all reinforcing steel; and for all manipulations, labor, equipment, appliances, tools, traffic provisions and incidentals necessary to complete the work.

61. Flyash for 8-Inch Stabilized Sub-Grade (6% by Dryweight), As Directed by Owner’s Representative; Supplemental Bid Item 74:

Measurement shall be “Per Ton”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies and incidentals necessary to complete the work, including supplying and placing lime to be utilized.

62. Traffic Markings, Prep and Paint, ADA Parking Only Marking, As Directed by Owner’s Representative; Supplemental Bid Item 75:

Measurement shall be “Per Linear Foot”. The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies, and incidentals necessary to complete the work, including the layout, and surface preparation to place a white Turn Only Marking stripe, as directed by the Owner’s Representative, complete in place.

63. 12-Inch Arch Reinforced Concrete Pipe, ASTM C-76, Class III, As Directed by Owner's Representative; Supplemental Bid Item 76:

Measurement shall be "Per Linear Foot". The unit price shall be full compensation for furnishing and installation of storm sewers of size contained in the bid form including excavation and embedment as required, backfilling, finish grading, ditch grading to drain, clean-up and all appurtenances including concrete collars per detail, and work required for the complete placement of proposed storm sewers.

64. 18-Inch Reinforced Concrete Pipe, ASTM C-76, Class III, As Directed by Owner's Representative; Supplemental Bid Item 77:

Measurement shall be "Per Linear Foot". The unit price shall be full compensation for furnishing and installation of storm sewers of size contained in the bid form including excavation and embedment as required, backfilling, finish grading, ditch grading to drain, clean-up and all appurtenances including concrete collars per detail, and work required for the complete placement of proposed storm sewers.

65. 24-Inch HP Storm Pipe, As Directed by Owner's Representative; Supplemental Bid Item 78:

Measurement shall be "Per Linear Foot". The unit price shall be full compensation for furnishing and installation of storm sewers of size contained in the bid form including excavation and embedment as required, backfilling, finish grading, ditch grading to drain, clean-up and all appurtenances including concrete collars per detail, and work required for the complete placement of proposed storm sewers.

66. Insertion Valves, As Directed by Owner's Representative; Supplemental Bid Items 79, 80, and 81:

Measurement shall be "Per Each". Payment includes valve with resilient seats, manual operator of type specified, insertion of valve into, and connection to existing pipe, accessories, adjustable valve box, setting, concrete collar, and incidental work as directed by the Owner's Representative.

67. Sanitary Sewer Cleanout, As Directed by Owner's Representative; Supplemental Bid Item 82:

Measurement shall be "Per Each". Payment shall be full compensation for clearing and grubbing, excavation and incidentals thereto, removal and disposal of defective pipe, bedding, pipe materials, pipe placement, backfill, and all appurtenances for a complete Sanitary Sewer Cleanout per detail.

68. “Extra” Cement Stabilized Sand, 2.0 Sacks per Ton, As Directed by Owner’s Representative; Supplemental Bid Item 83:

Measurement shall be “Per Ton”. Payment shall be full compensation for supplying all materials to deliver cement stabilized sand, labor to place cement stabilized sand as directed by the Owner’s Representative.

69. “Extra” Class A Concrete, As Directed by Owner’s Representative; Supplemental Bid Item 84:

Measurement shall be “Per Cubic Yard”. Payment shall be full compensation for supplying all materials to deliver class A concrete, labor to place class A concrete as directed by the Owner’s Representative.

70. “Extra” Reinforcing Steel, As Directed by Owner’s Representative; Supplemental Bid Item 85:

Measurement shall be “Per Pound” of in-place material. The unit price shall be full compensation for materials, labor and appurtenances for delivery and installation of extra reinforcing steel as directed by the Owner’s Representative. Installation of supplemental materials shall be done so as directed by the Owner’s Representative and approved by the Engineer.

71. “Extra” Crushed Limestone Bedding, As Directed by Owner’s Representative; Supplemental Bid Item 86:

Measurement shall be “Per Cubic Yard”. Payment shall be full compensation for supplying all materials to deliver crushed limestone bedding, labor to place crushed limestone bedding as directed by the engineer.

72. Select Fill, Compacted per ASTM D698, As Directed by Owner’s Representative; Supplemental Bid Item 87:

Measurement shall be “Per Cubic Yard”. Payment shall be full compensation for supplying all materials to deliver select fill and follow recommendations based on Geotest Engineering, Inc. Geotechnical Report for Bel Road, labor to place select fill as directed by the Owner’s Representative.

73. Turf Establishment, Hydromulch Seeding, As Directed by Owner's Representative;  
Supplemental Bid Item 88:

Measurement shall be "Per Acre". The unit price shall be full compensation for furnishing all labor, tools, equipment, supplies, and incidentals necessary to complete the work, including the establishment of hydromulch seeding in accordance with the specifications and plans, complete in place.

**ALTERNATE ITEMS**

74. Brick Paver (Sidewalk Crossing), Alternate Bid Item 89:

Measurement shall be "Per Square Yard". The unit price shall be full compensation for installing brick pavers per manufactures recommendations on top of proposed concrete roadway at appropriate thickness per detail as shown in striping plan. Pavers shall be used if awarded by county at beginning of job and the location shall be verified with county's representative before concrete is placed in order to prevent extra placement or excavation of new concrete, complete in place.

**ITEM 2223**

**CRUSHED LIMESTONE BEDDING**

I. GENERAL

- A. Scope: Furnish and install crushed limestone bedding when ordered for stabilization of trench, or as shown on Plans and/or Exhibits.
- B. Related Work (if utilized in this project)
  - 1. Pipe: Per applicable Item
  - 2. Item 2221 - Excavation, Trenching, and Backfilling for Utilities

II. MATERIALS

- A. Use crushed stone with its natural binder or other approved fine aggregate. Crushed stone to have not more than 50 percent wear (AASHTO T-96-74). Gradation as follows:

<u>Retained on</u>	<u>Percent by Weight</u>
1-Inch Square Sieve	0 - 10
½-Inch Square Sieve	15 - 40
No. 4 Square Sieve	45 - 65
No. 40 Square Sieve	70 - 85

Aggregate to meet Texas Highway Department Wet Ball Mill Test, TEX-116-E.

- B. Material passing No. 40 sieve to be soil binder and meet following requirements when tested by current ASTM Standards.
  - 1. Plasticity index not to exceed 10.
  - 2. Liquid limit not to exceed 35.

### III. EXECUTION

- A. Excavate trench to provide at least six inches clearance below pipe. Replace excavation below subgrade with crushed limestone bedding under barrel of pipe, and sufficient additional thickness of the bedding material for full width of trench on each side of pipe, to fit lower part of pipe exterior for at least 50 percent of pipe breadth. Tamp and grade bedding to assure uniform bearing of pipe barrel. After pipe is firmly installed on bedding to grade and alignment, carefully place crushed limestone bedding in layers of maximum 4" thick, compacting each to 85% Proctor Density (AASHTO T-99), up to a depth above top of pipe as shown on Plans and/or Exhibits. Complete backfill in accordance with other applicable specifications.



## ITEM 2560

### SANITARY SEWERS

#### I. GENERAL

- A. Scope: This section specifies furnishing and installing sanitary sewer pipes, manholes, and appurtenances.
- B. Related Work (if utilized in this project)
  - 1. Item 2221 - Excavation, Trenching and Backfilling for Utilities
  - 2. Item 2224 - Encasing, Augering and Tunneling

#### II. MATERIALS

- A. Pipe
  - 1. Vitrified Clay
    - a. Clay pipe shall conform to ASTM C700, extra strength. Pipe wye, tee and bend fittings shall be of the same strength as the adjacent joint of pipe and shall also conform to ASTM C700. The clay pipe shall be free of fractures, cracks, chips and etc.
    - b. Joint closures shall be in accordance with ASTM C425.
    - c. Joint lubricant shall be in accordance with the pipe manufacturer's recommendations.
  - 2. Polyvinyl Chloride (PVC)
    - a. The plastic pipe and fittings shall meet the requirements of ASTM D3034, F949 or D2680, and the pipe shall have a minimum of 46 psi pipe stiffness when tested in accordance with ASTM D2412 and be of the nominal pipe size shown on the Plans and/or Exhibits. All PVC pipes shall be made of resins meeting ASTM D1784 cell classifications 12454B or 12454C.

- b. The Contractor shall furnish manufacturer's certification that the pipe and fittings furnished to the project meet the ASTM requirements above.
  - c. Pipe and fittings shall be free from defects which, in the judgment of the Engineer, would hinder their ability to function as planned.
  - d. The dimensions of the PVC pipe shall be as shown on the Plans and/or Exhibits. The fittings supplied shall properly fit the pipe supplied and shall be the same color as the pipe.
  - e. Gaskets: Compression-type vulcanized high grade elastomeric compound gasket joints as per ASTM Specification D1869 or D3212.
  - f. Lubricant: Lubricant used for assembly to have no detrimental effect on gasket or pipe and to be according to pipe manufacturer's recommendations.
3. Hobas (Centrifugally, Cast, Fiberglass-Reinforced)
- a. All pipes, joints and fittings shall be manufactured in accordance with the requirements of ASTM D3262. Pipes shall be centrifugally cast, fiberglass-reinforced polyester resin as manufactured by Hobas USA, Inc. Contractor shall furnish manufacturer's certification that the pipe and fittings furnished to the project meet the ASTM requirements above. Minimum pipe stiffness when tested in accordance with ASTM D2412 shall be 46 psi.
  - b. The Manufacturer shall use only approved polyester resin systems for which he can provide a proven history of performance in this particular application. The historical data shall have been acquired from a composite material of similar construction and composition as the proposed product. The reinforcing glass fibers used to manufacture the components shall be of highest quality commercial grade of E-glass filaments with binder and sizing compatible with impregnating resins. Sand shall be minimum 98% silica with a maximum moisture content of 0.2%.
  - c. Pipe outside diameters shall be in accordance with AWWA Standards C151 and C950. For diameters larger than covered in those documents, OD's shall be approved by Engineer. Pipe shall be supplied in nominal lengths of 20-feet. Actual laying length shall be the nominal  $\pm$  2 inches. At least 90% of the total

footage of each size and class of pipe, excluding special order lengths, shall be furnished in nominal length sections.

- d. Unless otherwise specified, the pipe shall be field connected with fiberglass sleeve couplings that utilize elastomeric sealing gaskets made of EPDM rubber compound as the sole means to maintain joint water tightness. The joints must meet the performance requirements of ASTM D4161.

#### 4. High-Density Polyethylene Pipe (HDPE)

- a. HDPE shall be produced from a high density, high molecular weight polyethylene pipe material meeting the requirements of type III, Class C, Grade P34, as defined in ASTM D1248. The pipe shall have a minimum pipe stiffness of 46 psi when tested in accordance with ASTM D2412.
- b. The Contractor shall furnish manufacturer's certification that the pipe and fittings furnished to the project meet the ASTM requirements above.
- c. The pipe shall be manufactured by the continuous winding of a special profile onto suitably sized mandrels. It shall be produced to constant internal diameters with a ring stiffness of 46 psi in accordance with ASTM F714. Standard shipping lengths shall be 20-feet, long,  $\pm$  2-inches.

Each pipe length shall be clearly marked. Marking information shall include pipe size, profile number and production code.

The pipe shall be free from visible cracks, holes or other defects. It shall be as uniform as commercially practical in color, density and other physical properties.

- d. Joints: The pipe shall be produced with bell and spigot end construction. Joining will be accomplished by rubber gasket as determined in accordance with manufacturer's recommendations.

#### B. Manholes

1. Covers: Covers shall conform to ASTM 498-76, Class No. 30 cast iron. Make cast iron manhole frames and covers to dimensions shown on standard detail drawing. Castings free from sand or blow holes and other defects. Holes in cover to be free from plugs and burrs. Machine bearing surfaces of manholes, frames and covers to obtain even bearing. Cast

wording “Sanitary Sewer” or “Storm Sewer” as applicable; and name of Owner on cover as shown on standard detail Plans and/or Exhibits.

2. Precast Concrete

- a. Design Loads: Design loads shall consist of dead load, live load, impact and in addition loads due to water table and any other loads which may be imposed on the structure.

Live load shall be H-20 and/or H-20-S16 per the AASHTO Standard Specifications for Highway Bridges, with revisions. Design wheel loads shall be 16 kips. The live load shall be that loading which produces the maximum shears and bending moments in the structure.

- b. All cement shall be Portland cement conforming to ASTM C150. Cement content shall be sufficient to produce minimum compression strengths of 4,000 psi in 28 days.
- c. Reinforcing steel shall be in accordance with the Item 3200 - Concrete Reinforcement. Reinforcing steel shall be Grade 60. The minimum steel requirement in the walls and cone of a cast-in-place manhole will be one or two lines of steel, the total area per vertical foot shall be not less than 0.0025 times the inside diameter in inches. The steel requirement in the base section shall have a minimum area of 0.12 square inches per linear foot in both directions.
- d. Precast concrete manhole sections (base sections, risers, reducers, cones, slab tops, and grade rings) to conform to the requirements of ASTM C478. Provide bases, risers, and reducer sections having an inside diameter of 48-inches, 60-inches, 72-inches or 96-inches as shown on the Plans and/or Exhibits and details as required. The inside diameter of the access opening to be not less than 30-inches.
- e. The precast concrete manhole riser sections, excepting grade rings, to be formed with male and female ends for use with O-ring gaskets. The male end to contain a recess for the gasket. The joints and gaskets in the base and riser sections to comply with the requirements of ASTM C443.
- f. The adjustment throat rings to be reinforced concrete rings having a thickness of 3-inches. The internal diameter to be not less than 30-inches and the width to be a minimum of 5-inches.

- g. Resilient connectors for a watertight seal between precast concrete manholes and sewer pipe to be furnished of size and at location shown on the Plans and/or Exhibits. Resilient pipe to manhole connectors to conform to ASTM C923. Connectors to be embedded in the walls of precast concrete manhole sections. Resilient connectors to provide 10 degrees of omnidirectional deflection at the entrance of the pipe into the manhole wall. A-Loc Products or equal.
  - h. Flexible, watertight connector installed in formed holes with a compression ring. Connector to have take up clamp on gasket for mechanical compression on pipe. Press Seal Gasket or equal.
3. Fiberglass
- a. Design loads: Same as presented in B. 2. a above.
  - b. Fiberglass manholes shall be mounted on precast concrete base meeting the requirements of B. 2 including gasketed pipe penetrations. Seal (make watertight) joint between concrete and fiberglass with Ram-nek, Volclay, or Synko Flex.
  - c. Fiberglass riser shall conform to material requirements of ASTM D3753.

C. Sewer Line Specials

- 1. Sewer line specials are sewer line appurtenances, such as; cleanout, deep cut connections for service lines, branch wye outlets for service lines, and wye outlets on deep cut connections.
- 2. Pipe and Fittings: Use pipe and fittings constructed of same material as specified for main sewer.
- 3. Cast Iron for Castings: Conform to ASTM A48, Class No. 20, gray cast iron.
- 4. Concrete for Blocking and Encasing: 1500 psi, 28 day compressive strength. Material and mix in accordance with applicable specification Item.

### III. EXECUTION

#### A. Pipe

##### 1. Vitrified Clay

- a. Installation: Clay pipe shall be installed in accordance with ASTM C12, titled "Standard Practice for Installing Vitrified Clay Pipe Lines." Before laying pipe, prepare pipe ends by wiping the inside surface of bell or coupling and the outside surface of the spigot until clean and dry and apply joint lubricant in accordance with the manufacturer's recommendations. Cover the entire area with joint lubricant, then complete joint immediately.
- b. The pipe joint shall be made in the following manner. Push the spigot end into the bell of the preceding pipe until it is properly seated. Apply moderate force by using a simple lever. Two or three joints may be joined on the bank and then lowered into the trench.
- c. See detail sheet, Item 2221 - Excavation, Trenching and Backfilling for Utilities for bedding and backfill procedures, conform to ASTM C12.

##### 2. Polyvinyl Chloride, Hobas, and HDPE

- a. Backfill in Pipe Zone: Install pipe and fittings in accordance with ASTM Specification D2321 except as shown on detail sheet, Item 2221 - Excavation, Trenching and Backfilling for Utilities. Note: **Initial backfill over pipe to be 12-inches in all cases.** Avoid contact between pipe and compaction backfill equipment. Compaction of haunching, initial backfill, and backfill material should be done in a manner that compaction equipment is not used directly above pipe until sufficient backfill has been placed to ensure that equipment will have no damaging effect on pipe.
- b. Joining: Use elastomeric gasket joints, providing a watertight seal. Assembly of joints to be per the manufacturer's recommendation.
- c. Connections to Manholes and Other Rigid Structures: Manhole couplings corresponding to size of sewer pipe to be cast directly into a rigid structure such as manhole or manhole base.
- d. Deflection Tests: All pipe to be satisfactorily tested for deflection by pulling a mandrel through pipe after backfilling is complete.

Mandrel to have an outside diameter equal to 95 percent of the original inside diameter of pipe being tested. See Item 2221 - Excavation, Trenching and Backfilling for Utilities for Mandrel requirements. Mandrel to be pulled by hand line. Should mandrel meet any resistance. Contractor may clean line and repeat test. Any pipe not meeting this test to be removed and replaced at Contractor's expense.

## B. Manholes

### 1. Precast Concrete

- a. Precast concrete manhole bases to be bedded on a minimum of 8-inches of cement-stabilized sand or crushed aggregate as used for pipe bedding. The dimensions of the bedding to be 12-inches greater than the precast manhole base in all directions. The bedding to be placed to provide a firm foundation for the manhole. Contractor to level and plumb the base section prior to setting the manhole riser sections on the precast concrete base.
- b. All invert channels are to be constructed and shaped accurately so as to be smooth, uniform, and cause minimum resistance to the flow. The bench to be furnished smooth, with a slope of ½-inch per foot from the manhole walls to the edges of the invert channel.
- c. Sewer Pipe joints **not** to be cast or constructed within the wall sections of manholes.
- d. Gasket and pipe surface at resilient pipe to manhole connections to have a smooth, clean finish. Clean and lubricate pipe end a minimum of one-half the pipe diameter in length with a lubricant suitable for use with rubber O-ring concrete pipe joints. Lubricate the entire portion of the pipe which will slide through the resilient connector. If pipe is cut, no sharp edges to be allowed. A slight bevel is preferred as a lead and this should also be lubricated. No mortar to be placed around the connector on the outside of the structure and no mortar to be placed around the top half of the connector on the inside when completing the invert.
- e. Install stub-outs, where shown, to line and grade. Use one full joint of pipe, of size indicated, for stub-out. Seal stub-out with plug. Install plug in such manner as to prevent seepage of leakage through stub-outs. Install plugs such that it may be easily removed in future without damaging bell or groove end of stub-out.

- f. Where inlet leads, lateral sewer pipe, stub-outs, and drop connections enter manholes, cut off ends of protruding pipe flush with inside of manhole wall.
- g. Where drop connections into manholes are required, construct drops of 6-inch pipe for 6-inch sewer lines, of 8-inch pipe for sewers 8-inches in diameter through 15-inches in diameter, and of 12-inch pipe for all larger sizes of sewer lines. Drop connections consist of tee in sewer line faced vertical down, riser stack, 90-degree cut elbow at base of stack and joint of pipe from elbow into manhole. Encase entire drop connection in Class "B" concrete extending at least 4 inches outside of bells on 3 sides away from manhole wall and extending to face of manhole wall on side adjacent to manhole. Join entire drop connection with wall of manhole in solid mass of concrete. Construct drop connection at time manhole is constructed. If lateral is not to be immediately connected into drop connection, plug outer end of tee in same manner as specified for plugging stub-outs.
- h. Backfill - Place material in uniform layers of prescribed maximum thickness and wet or dry the material to no less than 3 percent below or more than 5 percent above optimum moisture content. Compact with power driven hand tampers to prescribed density. Laboratory field tests shall be taken at Engineers discretion. Either of the following backfill materials may be utilized at Contractors option:
  - 1) Select Material: Material selected from excavation, or obtained from other sources, shall be free from stones (which interfere with compaction) and free from large lumps (which do not breakdown readily under compaction). Place in 8-inch maximum layers, loose measure. Mechanically compact to not less than 95 percent of maximum soil density.
  - 2) Cement Stabilized Sand: Material to be in accordance with Specification Item 2221 - Excavation, Trenching and Backfilling for Utilities. Place in loose 8-inch thick layers and compact to a density of not less than 92 percent nor greater than 98 percent.

## 2. Fiberglass

- a. Construct base in accordance with provision of paragraph B. 1. a. through B. 1. d. Contractor to level and plumb the base section



prior to setting the fiberglass riser section on the precast concrete base.

- b. Base and riser to have joint made water tight. Joint material to be placed between the base and riser both inside and outside of joint. Joint seal to be Ram-nek, Volclay, or Synko-Flex.
- c. Backfill - Fiberglass manholes to be backfilled with cement stabilized sand (Specification Item 2221 - Excavation, Trenching and Backfilling for Utilities) a minimum of 3' - 0" from outside of the manhole or from outside of manhole to undisturbed soil, whichever is less. Backfill shall be from the bottom of the concrete base to the top of the manhole. Place in loose 8-inch thick layers and compact to a density of not less than 92 percent nor greater than 98 percent.
- d. Backfill around manholes and drop connections immediately after mortar and concrete, if applicable, have set. Place backfill in accordance with applicable Item.

#### C. Sewer Line Specials

- 1. Install wye and tee branches as sewer line is laid at locations shown or as directed. Correct omission of required specials during construction of sewer, at no extra expense to Owner. Do not cover specials until their locations have been recorded. Do not install permanent plugs in ends of branch openings or service lines until after a satisfactory exfiltration test is performed.
- 2. Installation of Branch Wye Outlets: Where ordered or shown, place branch wyes in pipe sewer at time pipe is laid. Unless Plans and/or Exhibits show service line to be constructed in this contract, plug branch opening with standard pipe plug. Install plug in such manner that will facilitate its future removal without damage to bell.
- 3. Installation of Deep Cut Connections: Unless otherwise directed, install deep cut connections only at locations where top of sewer is greater than 8-feet below surface of ground. Place tee in pipe sewer at base of deep cut connections at time pipe is laid and encase tee in concrete. Install c bend in branch opening tee. Install wye in bell of 1/8 bend if wye will raise height to within 5 to 8-feet of ground surface. If wye does not provide sufficient height, install run of pipe vertically between 1/8 bend and wye. Plug run of wye. Unless Plans and/or Exhibits show service lines to be constructed in this contract, plug branch opening with standard pipe plug. Install plug in such manner that will facilitate its future removal without

damage to bell. Encase deep cut connection in concrete in conforming with details shown.

4. Cleanouts: Install cleanouts at locations indicated and in conformity with details shown.
5. Service Line: Install service lines, when shown on Plans and/or Exhibits, from branch opening of fitting is sewer to property line. Terminate service line with hub. Install standard pipe plug in hub in such manner that will facilitate its future removal without damage to bell.

#### IV. QUALITY ASSURANCE

- A. Testing Requirements: Contractor to furnish water and all testing equipment unless specified otherwise.
- B. Testing Procedures
  1. Testing of Installed Pipe: An infiltration, exfiltration or low-pressure air test shall be as specified below. Copies of all test results shall be made available to the executive director upon request. Tests shall conform to the following requirements:
    - a. Infiltration or Exfiltration Tests: The total exfiltration as determined by a hydrostatic head test, shall not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of 2-feet above the crown of the pipe at the upstream manhole. When pipes are installed below the groundwater level an infiltration test shall be used in lieu of the exfiltration test. The total infiltration, as determined by a hydrostatic head test, shall not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of 2-feet above the crown of the pipe at the upstream manhole, or at least 2-feet above existing groundwater level, whichever is greater. For construction within the 25 year flood plain, the infiltration or exfiltration shall not exceed 10 gallons per inch diameter per mile of pipe per 24 hours at the same minimum test head. If the quantity of infiltration or exfiltration exceeds the maximum quantity specified, remedial action shall be undertaken in order to reduce the infiltration or exfiltration to an amount within the limits specified.
    - b. Low Pressure Air Test: The procedure for the low pressure air test shall conform to the procedures described in ASTM C-828, ASTM C-924, ASTM F-1417 or other appropriate procedures,

except for testing times. The test times shall be as outlined in this section. For sections of pipe less than 36-inch average inside diameter, the following procedure shall apply unless the pipe is to be joint tested. The pipe shall be pressurized to 3.5 psi greater than the pressure exerted by groundwater above the pipe. Once the pressure is stabilized, the minimum time allowable for the pressure to drop from 3.5 pounds per square inch gauge to 2.5 pounds per square inch gauge shall be computed from the following equation:

$$T = 0.085 \{DK\} \text{ OVER } Q$$

T = time for pressure to drop 1.0 pound per square inch gauge in seconds

K = 0.000419HDHL, but not less than 1.0

D = average inside pipe diameter in inches

L = length of line of same pipe size being tested, in feet

Q = rate of loss, 0.0015 cubic feet per minute per square foot internal surface shall be used

Since a K value of less than 1.0 shall not be used, there are minimum testing times for each pipe diameter as follows:

<b>Pipe Diameter (inches)</b>	<b>Minimum Time (seconds)</b>	<b>Length for Minimum Time (feet)</b>	<b>Time for Longer Length (seconds)</b>
6	340	398	0.855 (L)
8	454	298	1.520 (L)
10	567	239	2.374 (L)
12	680	199	3.419 (L)
15	850	159	5.342 (L)
18	1020	133	7.693 (L)
21	1190	114	10.471 (L)
24	1360	100	13.676 (L)
27	1530	88	17.309 (L)
30	1700	80	21.369 (L)
33	1870	72	25.856 (L)

The test may be stopped if no pressure loss has occurred during the first 25% of the calculated testing time. If any pressure loss or leakage has occurred during the first 25% of the testing period, then the test shall continue for the entire test duration as outlined

above or until failure. Lines with a 27-inch average inside diameter and larger may be air tested at each joint. Pipe greater than 36-inch diameter must be tested for leakage at each joint. If the joint test is used, a visual inspection of the joint shall be performed immediately after testing. The pipe is to be pressurized to 3.5 psi greater than the pressure exerted by groundwater above the pipe. Once the pressure has stabilized, the minimum time allowable for the pressure to drop from 3.5 pounds per square inch gauge to 2.5 pounds per square inch gauge shall be 10 seconds.

- c. Deflection Testing: Deflection tests shall be performed on all flexible pipes. For pipelines with inside diameters less than 27-inches, a rigid mandrel shall be used to measure deflection. For pipelines with an inside diameter 27-inches and greater, a method approved by the executive director shall be used to test for vertical deflections. Other methods shall provide a precision of  $\pm$  two tenths of one percent (0.2%) deflection. The test shall be conducted after the final backfill has been in place at least 30 days. No pipe shall exceed a deflection of five percent. If a pipe should fail to pass the deflection test, the problem shall be corrected and a second test shall be conducted after the final backfill has been in place an additional 30 days. The tests shall be performed without mechanical pulling devices.
- 1) Mandrel Sizing: The rigid mandrel shall have an outside diameter (O.D.) equal to 95% of the inside diameter (I.D.) of the pipe. The inside diameter of the pipe for the purpose of determining the outside diameter of the mandrel, shall be the average outside diameter minus two minimum wall thicknesses for O.D. controlled pipe and the average inside diameter for I.D. controlled pipe, all dimensions shall be per appropriate standard. Statistical or other “tolerance packages” shall not be considered in mandrel sizing.
  - 2) Mandrel Design: The rigid mandrel shall be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed. The mandrel shall have nine or more “runners” or “legs” as long as the total number of legs is an odd number. The barrel section of the mandrel shall have a length of at least 75% of the inside diameter of the pipe. A proving ring shall be provided and used for each size mandrel in use. See Item 2221 - Excavation, Trenching and Backfilling for Utilities, Page 14 of 15 for typical mandrel.

- 3) Method Options: Adjustable or flexible mandrels are prohibited. A television inspection is not a substitute for the deflection test. A deflectometer may be approved for use on a case by case basis. Mandrels with removable legs or runners may be accepted on a case by case basis.
2. Manhole Testing: Manholes shall be tested for leakage separately and independently of the wastewater lines by hydrostatic exfiltration testing, vacuum testing, or other methods acceptable to the commission. If a manhole fails a leakage test, the manhole must be made water tight and retested.
- a. Hydrostatic Exfiltration Test
    - 1) The maximum leakage for hydrostatic testing shall be 0.025 gallons per foot diameter per foot of manhole depth per hour. Alternative test methods must ensure compliance with the above allowable leakage.
    - 2) Hydrostatic exfiltration testing shall be performed as follows: All wastewater lines coming into the manhole shall be sealed with an internal pipe plug, then the manhole shall be filled with water and maintained full for at least one hour.
    - 3) For concrete manholes a wetting period of 24 hours may be used prior to testing in order allow saturation of the concrete.
  - b. Vacuum Test
    - 1) After completion of manhole construction, but prior to backfilling, test manholes for water tightness using vacuum testing procedures.
    - 2) No grout shall be placed in horizontal joints before testing.
    - 3) Plug influent and effluent lines, including service lines, with suitably-sized pneumatic or mechanical plugs. Ensure plugs are properly rated for pressures required for test; follow manufacturer's safety and installation recommendations. Place plugs a minimum of 6 inches outside of manhole walls. Brace inverts to prevent lines from being dislodged if lines entering manhole have not been backfilled.

4) Vacuum Testing

- a) Install vacuum tester head assembly at top access point of manhole and adjust for proper seal on straight top section of manhole structure. Following manufacturer's instructions and safety precautions, inflate sealing element to the recommended maximum inflation pressure; do not over-inflate.
- b) Manholes to be vacuum tested shall have 10-inches of mercury applied to the manhole and the time measured for the vacuum to drop from 10-inches to 9-inches of mercury. Vacuum equipment shall be approved by the Engineer prior to its use. Following are minimum allowable test times for manhole acceptance at the specified vacuum drop.

Depth of Manhole (feet)	Time (sec) Manhole Diameter (inches)		
	48"	60"	72"
8	14	18	23
10	17	23	28
12	21	28	34
14	25	32	40
16	28	37	45
18	32	41	51
20	35	46	57
22	39	51	62
24	42	55	68
26	46	60	74
28	49	64	80
30	53	69	85

Test times for structures other than manholes will be based on the times for manholes of the nearest equivalent volume or as directed by the Engineer.

- c) If the drop in vacuum exceeds 1-inch mercury (Hg) over the specified time period tabulated above, locate leaks, complete repairs necessary to seal manhole and repeat test procedure until satisfactory results are obtained.

# HP Storm Pipe 12"–60"



# HP STORM PIPE 12”-60” FOR STORM APPLICATIONS

## Overview

An addition to our proven line of pipe products, HP Storm is a high-performance polypropylene (PP) pipe for gravity-flow storm drainage applications. HP Storm is the perfect choice when premium joint performance and/or greater pipe stiffness is required. HP Storm couples advanced polypropylene resin technology with a proven, dual-wall profile design for superior performance and durability.

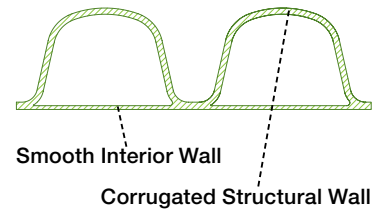
Specify HP Storm with confidence based on national standards and approvals. This innovative product meets or exceeds ASTM F2881 and AASHTO M330. From a federal perspective, polypropylene pipe is approved for use by the Army Corps of Engineers for storm drainage applications under Section 33 40 00 (Unified Facilities Guide Specifications). The Federal Aviation Authority (FAA) permits polypropylene pipe under airfield pavements per Item D-701, Pipe for Storm Drains and Culverts in AC 150/5370-10G (Standards for Specifying Construction of Airports). Additionally, the American Railway Engineering and Maintenance-of-Way Association (AREMA) approves polypropylene pipe in storm drainage applications under railroads.

## Advanced Dual Wall Profile Construction

12”-60” (300 - 1500 mm) diameter HP Storm pipe utilizes an enhanced dual wall construction, providing increased pipe stiffness. The additional stiffness and beam strength enhances jobsite performance in stringent line and grade requirements. The pipe profile is completed with a smooth interior which provides additional strength and excellent flow characteristics.

## Superior Polypropylene Material

Made from an engineered impact modified co-polymer compound, the superior strength and material properties of polypropylene offer robust pipe stiffness, excellent handling characteristics, and long service life when compared to traditional storm sewer products. It is highly resistant to chemical attack and is unaffected by soils or effluents with PH ranges 1.5 to 14. The unique light grey resin color provides immediate jobsite recognition as well as improving the pipe’s interior visibility during post-installation inspection.



Interior View



Polypropylene Resin



## Superior Joint Performance

HP Storm pipe has an extended bell that adds an additional factor of safety within each joint. The joint performance meets or exceeds the 10.8 psi laboratory performance standards per ASTM D3212 requirements. Third party certification of joint performance is available upon request.

In the field, each section of HP Storm may be tested by a low pressure air test, according to ASTM F1417, which is a commonly used standard and specifies that 3.5 psi air pressure be held for a specified length of time based upon pipe diameter and length of run.

Where an infiltration/exfiltration test is preferred, ASTM F2487 specifies a simplistic method of verifying proper joint performance.

## Fittings

Both standard and custom fittings are available for the HP Storm product line. A complete line of standard Nyloplast PVC molded fittings are available in the 12"–30" (300-750mm) mainline sizes. Standard branch laterals are designed to accept SDR-35 or SDR-26 pipe.

## Diameter Range

HP Storm is currently manufactured in the 12"–60" (300-1500mm) size range and in 20-foot (6m) lengths. The 20-foot (6m) lengths aid in speed of installation and reduce the total number of joints.



Extended Bell



Fabricated Wye Fitting

DIAMETER	PROFILE TYPE	LENGTH	INSIDE DIAMETER	OUTSIDE DIAMETER	TRUCKLOAD FOOTAGE
12 in. (300 mm)	Dual Wall	20 ft. (6 m)	12.2 in. (310 mm)	14.5 in. (368 mm)	2400 ft. (731.5 m)
15 in. (375 mm)	Dual Wall	20 ft. (6 m)	15.1 in. (384 mm)	17.7 in. (450 mm)	1600 ft. (487.7 m)
18 in. (450 mm)	Dual Wall	20 ft. (6 m)	18.2 in. (462 mm)	21.4 in. (544 mm)	1120 ft. (341.4 m)
24 in. (600 mm)	Dual Wall	20 ft. (6 m)	24.1 in. (612 mm)	28.0 in. (711 mm)	600 ft. (182.9 m)
30 in. (750 mm)	Dual Wall	20 ft. (6 m)	30.2 in. (767 mm)	35.5 in. (902 mm)	360 ft. (109.7 m)
36 in. (900 mm)	Dual Wall	20 ft. (6 m)	36.0 in. (914 mm)	41.5 in. (1054 mm)	240 ft. (73.2 m)
42 in. (1050 mm)	Dual Wall	20 ft. (6 m)	42.0 in. (1067 mm)	47.4 in. (1204 mm)	160 ft. (48.8 m)
48 in. (1200 mm)	Dual Wall	20 ft. (6 m)	47.9 in. (1217 mm)	54.1 in. (1374 mm)	120 ft. (36.6 m)
60 in. (1500 mm)	Dual Wall	20 ft. (6 m)	59.9 in. (1521 mm)	67.1 in. (1704 mm)	80 ft. (24.4 m)



Fittings Available in PVC or PP

## Tap Connections

A standard tapping product, such as INSERTA TEE®, is compatible with HP Storm.

## Repair Couplers

Depending on local requirements, ADS offers a full range of repair coupling options. For soil-tight performance, split couplers and Mar Mac® repair bands are offered. Testable repair couplers are also available, which include stainless steel restraint bands and Nyloplast® PVC repair sleeves.

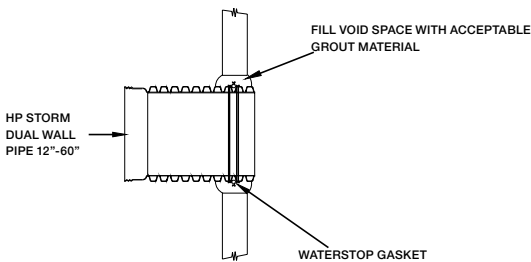
## 12"-60" Structure Connections

Storm sewer structure connection requirements vary greatly by region. For soil-tight performance, HP Storm exterior corrugations provide an effective profile for grouted connections. For watertight performance, ADS offers a wide selection of connection options utilizing some of the most widely used manhole connectors on the manhole today from companies such as A-Lok®, Trelleborg® and Press Seal® Gasket Corporation.

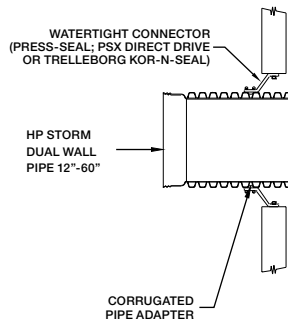


Typical INSERTA TEE Tap

## Grouted Waterstop Manhole Connection

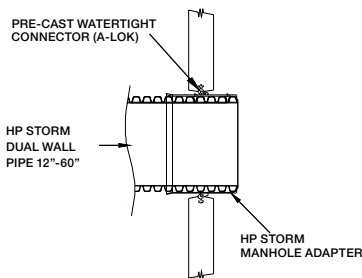


## Flexible Boot Connection

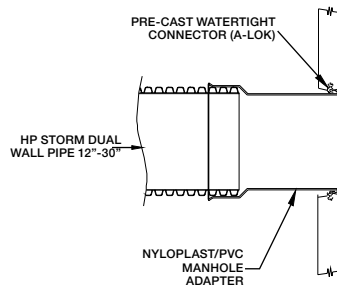


Repair Coupler

## Pre-Cast Compression Gasket Connection



## Pre-Cast Compression Gasket Connection



Manole Compression Gasket Connection with Corrugated Pipe Adapter

## ADS HP STORM 12”–60” PIPE SPECIFICATION

### SCOPE

This specification describes 12- through 60-inch (300 to 1500 mm) ADS HP Storm pipe for use in gravity-flow storm drainage applications.

### PIPE REQUIREMENTS

- 12- through 60-inch (300 to 1500 mm) pipe shall have a smooth interior and annular exterior corrugations and meet or exceed ASTM F2881 and AASHTO M330.
- Manning’s “n” value for use in design shall be 0.012.

### JOINT PERFORMANCE

Pipe shall be joined with a gasketed integral bell & spigot joint meeting the requirements of ASTM F2881.

12- through 60-inch (300 to 1500 mm) shall be watertight according to the requirements of ASTM D3212. Spigots shall have gaskets meeting the requirements of ASTM F477. Gasket shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during joint assembly.

12- through 60-inch (300 to 1500 mm) diameters shall have an exterior bell wrap installed by the manufacturer.

### FITTINGS

Fittings shall conform to ASTM F2881 and AASHTO M330. Bell and spigot connections shall utilize a spun-on, welded or integral bell and spigots with gaskets meeting ASTM F477. Bell & spigot fittings joint shall meet the watertight joint performance requirements of ASTM D3212. Corrugated couplings shall be split collar, engaging at least 2 full corrugations.

### FIELD PIPE AND JOINT PERFORMANCE

To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F1417 or F2487. Appropriate safety precautions must be used when field testing any pipe material. Contact the manufacturer for recommended leakage rates.

### MATERIAL PROPERTIES

Polypropylene compound for pipe and fitting production shall be impact modified copolymer meeting the material requirements of ASTM F2881, Section 5 and AASHTO M330, Section 6.1.

### INSTALLATION

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in traffic areas for 12- through 48-inch (300 to 1200 mm) diameters shall be one foot (0.3 m) and for 60-inch (1500 mm) diameters, the minimum cover shall be 2 feet (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1, Class 2 (minimum 90% SPD) or Class 3 (minimum 95%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.04. Contact your local ADS representative or visit our website at [www.ads-pipe.com](http://www.ads-pipe.com) for a copy of the latest installation guidelines.

### PIPE DIMENSIONS

Nominal Diameter in. (mm)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Average Pipe I.D. in. (mm)	12.2 (310)	15.1 (384)	18.2 (462)	24.1 (612)	30.2 (767)	36.0 (914)	42.0 (1067)	47.9 (1217)	59.9 (1521)
Average Pipe O.D. in. (mm)	14.5 (368)	17.7 (450)	21.4 (544)	28.0 (711)	35.5 (902)	41.5 (1054)	47.4 (1204)	54.1 (1374)	67.1 (1704)
Minimum Pipe Stiffness at 5% Deflection* #/in./in. (kN/m <sup>2</sup> )	75 (517)	60 (414)	56 (386)	50 (345)	46 (317)	40 (276)	35 (241)	35 (241)	30 (207)

\*Minimum pipe stiffness values listed; contact a representative for maximum values.

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SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Summary of the Work including work by Owner, Owner furnished products, Work sequence, future Work, Contractor use of Premises, and Owner occupancy.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work of the contract is for the reconstruction of 23<sup>rd</sup> Street from Broadway Street to Seawall Boulevard. The scope includes concrete pavement replacement, storm sewer

upgrades, waterline and sanitary sewer replacement, as well as upgraded sidewalks and ADA ramps.

#### 1.03 ALTERNATES

- A. Alternate bids quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option.
- B. Volunteer Alternates, any Alternate not specified in this Section, will not be considered.
- C. Accepted Alternates will be identified in the Agreement Between the Owner and Contractor.
- D. Bids will be evaluated on base bid price. After determination of lowest bidder, consideration will be given to Alternates and Bid Price adjustments and award will be made on the basis of the most advantageous bid as determined by the City.

#### 1.04 WORK BY OWNER

- A. Items noted as Not in Contract (NIC), no items will be furnished and installed by Owner.
- B. Owner will remove and retain possession of the following items prior to start of work:
  - 1. N/A

#### 1.05 OWNER FURNISHED PRODUCTS

- A. Products purchased and paid for by Owner:
  - 1. N/A
- B. Contractor's Responsibilities:
  - 1. Arrange and pay for product delivery to site.
  - 2. Receive and unload products at site; jointly with Owner's Representative, inspect for completeness or damage.
  - 3. Handle, store, install, and finish products.
  - 4. Repair or replace damaged items.

**1.06 WORK SEQUENCE**

- A. Construct Work in phases during the construction period, coordinate construction schedule and operations with Owner's Representative:
  - 1. Construct Work in 2 phases during the construction period, coordinate construction schedule and operations with Owner's Representative:
    - a. Phase 1: Construction of westbound lanes and sidewalks with one-way eastbound traffic
    - B. Phase 2: Construction of eastbound lanes and sidewalks with one-way westbound traffic

**1.07 FUTURE WORK**

- A. N/A

**1.08 UTILITY OUTAGE AND SHUTDOWN**

- A. N/A

**1.09 OWNER OCCUPANCY**

- A. The Owner intends to occupy the (Provide limits or location of areas of early occupancy, if applicable) portion of the Project by (Provide desired date of occupancy).
- B. The Owner will occupy the site the entire period of construction.
- C. C. Cooperate with the Owner to minimize conflict, and to facilitate the Owner's operations. Coordinate Contractor's activities with Owner's Representative.
- D. Schedule work to accommodate this requirement.
- E. If owner occupies any or all parts of the premises, this action does not signify substantial completion or any limits on the contractor's liability or contractual responsibility of premises.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

01010-3

## SECTION 01015

## CONTRACTOR'S USE OF PREMISES

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Section includes general use of the site including properties inside and outside of rights-of-way, work affecting road, ramps, streets and driveways and notification to adjacent occupants.

## 1.02 RIGHTS-OF-WAY

- A. Confine access and operations and storage areas to rights-of-way provided by Owner as stipulated in General Conditions of Agreement; trespassing on abutting lands or other lands in the area is not allowed.
- B. Contractor may make arrangements, at Contractor's cost, for temporary use of private properties, in which case Contractor and Contractor's surety shall indemnify and hold harmless the Owner against claims or demands arising from such use of properties outside of rights-of-way. Any use of private property shall have a written agreement between the contractor and the property owner. Notify the City in writing of any agreements and provide written agreement with the landowner to the City. The Use of said site shall comply with all City ordinances and restrictions.
- C. Restrict total length which materials may be distributed along the route of the construction at any one time to **1,000** linear feet unless otherwise approved by Owner's Representative.

## 1.03 PROPERTIES OUTSIDE OF RIGHTS-OF-WAY

- A. Altering the condition of properties adjacent to and along rights-of-way will not be permitted unless authorized by the Owner's Representative, Owner and property owner.
- B. Ways, means, methods, techniques, sequences, or procedures which will result in damage to properties or improvements in the vicinity outside of rights-of-way will not be permitted.
- C. Any damage to properties outside of rights-of-ways shall be repaired or replaced to the satisfaction of the Owner's Representative, Owner and property owner at no cost to the Owner or property owner.



#### 1.04 USE OF SITE

- A. Obtain approvals of governing authorities prior to impeding or closing public roads or streets. Do not close more than two consecutive intersections at one time unless approved by the Owner.
- B. Notify the Owner's Representative and the Owner a minimum of 72 hours prior to closing a street or a street crossing. Permits for street closures are required in advance and are the responsibility of the Contractor.
- C. Maintain access for emergency vehicles including access to fire hydrants.
- D. Avoid obstructing drainage ditches or inlets; when obstruction is unavoidable due to requirements of the Work, provide grading and temporary drainage structures to maintain unimpeded flow.
- E. Locate and protect private lawn sprinkler systems which may exist on rights-of-ways within the site. Repair or replace damaged systems to condition equal to or better than that existing at start of Work.
- F. Perform daily clean up of dirt outside the construction zone, and debris, scrap materials, and other disposable items. Keep streets, driveways, and sidewalks clean of dirt, debris and scrap materials. Do not leave buildings, roads, streets or other construction areas unclean overnight.

#### 1.05 NOTIFICATION TO ADJACENT OCCUPANTS

- A. Notify individual occupants in areas to be affected by the Work of the proposed construction and time schedule. Notification shall be not less than 72 hours or more than 2 weeks prior to work being performed within 200 feet, or as specified by the Owner, of the homes or businesses.
- B. Include in notification names and telephone numbers of two company representatives for resident contact, who will be available on 24-hour call. Include precautions which will be taken to protect private property and identify potential access or utility inconvenience or disruption.
- C. Submit proposed notification to Owner's Representative for approval. Consideration shall be given to the ethnicity of the neighborhood where English is not the dominant language. Notice shall be provided in understandable language when required by Owner.

#### 1.06 PUBLIC, TEMPORARY, AND CONSTRUCTION ROADS AND RAMPS

- A. Construct and maintain temporary detours, ramps, and roads to provide for normal public traffic flow when use of public roads or streets is closed by necessities of the Work.
- B. Provide mats or other means to prevent overloading or damage to existing roadways from tracked equipment or exceptionally large or heavy trucks or equipment.
- C. Construct and maintain access roads and parking areas as specified in Section 01500 - Temporary Facilities and Controls.

#### 1.07 EXCAVATION IN STREETS AND DRIVEWAYS

- A. Avoid hindering or needlessly inconveniencing public travel on a street or any intersecting alley or street for more than two blocks at any one time, except by permission of the Owner's Representative.
- B. Obtain the Owner's Representative and Owner's approval when the nature of the Work requires closing of any portion or an entire street. Permits required for street closure are the Contractor's responsibility. Avoid unnecessary inconvenience to abutting property owners.
- C. Remove surplus materials and debris and open each block for public use as work in that block is complete.
- D. Acceptance of any portion of the Work will not be based on return of street to public use.
- E. Avoid obstructing driveways or entrances to private property.
- F. Provide temporary crossing or complete the excavation and backfill in one continuous operation to minimize the duration of obstruction when excavation is required across drives or entrances. Closure of driveways overnight shall not be allowed unless approved by the Owner.
- G. Provide barricades and signs in accordance with Section VI of the State of Texas Manual on Uniform Traffic Control Devices latest edition.

#### 1.08 SURFACE RESTORATION

- A. Restore site to condition existing before construction to satisfaction of the Owner and Owner's Representative.
- B. Repair paved area per the requirements of the plans and specifications.

- C. Repair turf areas which become damaged per the requirements of the plans and specifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

## SECTION 01025

## MEASUREMENT AND PAYMENT

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Procedures for measurement and payment plus conditions for nonconformance assessment and nonpayment for rejected products.

## 1.02 AUTHORITY

- A. Measurement methods delineated in Specification sections are intended to complement the criteria of this section. In the event of conflict, the requirements of the Specification section shall govern.
- B. Measurements and quantities submitted by the Contractor will be verified by the Owner's Representative.
- C. Contractor shall provide necessary equipment, workers, and survey personnel as required by Owner's Representative to verify quantities.

## 1.03 UNIT QUANTITIES SPECIFIED

- A. Quantity and measurement estimates stated in the Agreement are for contract purposes only. Quantities and measurements supplied or placed in the Work and verified by Owner's Representative shall determine payment as stated in the General Conditions.
- B. If the actual Work requires greater or lesser quantities than those quantities indicated in the Bid Form, provide the required quantities at the unit prices contracted, except as otherwise stated in the General Conditions.

## 1.04 MEASUREMENT OF QUANTITIES

- A. Measurement by Weight: Measured by unit of weight as submitted on certified load tickets.
- B. Measurement by Volume:
  - 1. Stockpiles: Measured by cubic dimension using mean length, width, and height or thickness.

2. Excavation and Embankment Materials: Measured by cubic dimension using cross-sections measured every 100-feet unless otherwise specified by the owner.
- C. Measurement by Area: Measured by square dimension using mean length and width or radius.
- D. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- E. Stipulated Price Measurement: By unit designated in the agreement.
- F. Other: Items measured by weight, volume, area, or lineal means or combination, as appropriate, as a completed item or unit of the Work.

#### 1.05 PAYMENT

- A. Payment Includes: Full compensation for all required supervision, labor, products, tools, equipment, plant, transportation, services, and incidentals; and erection, application or installation of an item of the Work; and Contractor's overhead and profit.
- B. Total compensation for required Unit Price Work shall be included in Unit Price bid in Bid schedule. Claims for payment as Unit Price Work, but not specifically covered in the list of unit prices contained in Bid Schedule, will not be accepted.
- C. No payment for stored material will be made unless stipulated or approved by owner.
- D. Progress payments will be based on the Owner's Representative's observations and evaluations of quantities incorporated in the Work multiplied by the unit price.
- E. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities determined by Owner & Owner's Representative multiplied by the unit price for Work which is incorporated in or made necessary by the Work.

#### 1.06 NONCONFORMANCE ASSESSMENT

- A. Remove and replace the Work, or portions of the Work, not conforming to the Contract Documents.
- B. If, in the opinion of Owner & Owner's Representative, it is not practical to remove and replace the Work, the Owner & Owner's Representative will direct one of the following remedies:

1. The nonconforming Work will remain as is, but the unit price will be adjusted to a lower price at the discretion of Owner & Owner's Representative.
  2. The nonconforming Work will be modified as authorized by the Owner & Owner's Representative, and the unit price will be adjusted to a lower price at the discretion of Owner & Owner's Representative, if the modified work is deemed to be less suitable than originally specified.
- C. Specification sections may modify these options or may identify a specific formula or percentage price reduction.
- D. The Owner's Representative shall make a recommendation to the City on the assessment of nonconformance and adjustment of payment based on the nonconformance if such condition of nonconformance is not specifically resolved within the contract documents. The Owner will have final approval of the assessment and adjustment of payment.”

#### 1.07 NONPAYMENT FOR REJECTED PRODUCTS

- A. Payment will not be made for any of the following:
1. Products wasted or disposed of in a manner that is not acceptable to Owner's Representative.
  2. Products determined as nonconforming before or after placement.
  3. Products not completely unloaded from transporting vehicle.
  4. Products placed beyond the lines and levels of the required Work.
  5. Products remaining on hand after completion of the Work, unless specified otherwise.
  6. Loading, hauling, and disposing of rejected products.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

## SECTION 01040

## COORDINATION AND MEETINGS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Section includes general coordination including preconstruction conference, and progress meetings.

## 1.02 RELATED DOCUMENTS

- A. Coordination is required throughout the documents. Refer to all of the Contract Documents and coordinate as necessary.

## 1.03 ENGINEER AND REPRESENTATIVES

- A. The Owner's Representative may act directly and is identified by name at the preconstruction conference.

## 1.04 CONTRACTOR COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various Specifications sections to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Coordinate completion and clean up of Work for Substantial Completion and for portions of Work designated for Owner's partial occupancy.
- C. Coordinate access to site for correction of nonconforming Work to minimize disruption of Owner's activities where Owner is in partial occupancy.

## 1.05 PRECONSTRUCTION CONFERENCE

- A. Owner's Representative will schedule a preconstruction conference.
- B. Attendance Required: Owner's Representatives, Consultants, Contractor, and major Subcontractors.
- C. Agenda:
  - 1. Distribution of Contract Documents

2. Designation of personnel representing the parties in Contract, and the Consultant.
3. Review of insurance
4. Discussion of formats proposed by the Contractor for schedule of values, and construction schedule
5. Procedures and processing of shop drawings and other submittals, substitutions, pay estimates or applications for payment, Requests for Information, Request for Proposal, Change Orders, and Contract closeout
6. Scheduling of the Work and coordination with other contractors
7. Review of Subcontractors and Suppliers
8. Procedures for testing
9. Procedures for maintaining record documents
10. Owner's requirements
11. Construction Schedule
12. Storm Water Pollution Prevention Plan
13. Submittals and TPDES Requirements
14. Use of premises by Owner and Contractor
15. Safety and first aid procedures
16. Construction controls provided by Owner
17. Temporary utilities
18. Survey and layout
19. Security and housekeeping procedures

#### 1.06 PROGRESS MEETINGS

- A. Project meetings shall be held at Project field office or other location as designated by the Owner's Representative. Meeting shall be held at monthly intervals, or more frequent intervals if directed by Owner's Representative.



- B. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner's representatives, and Consultants as appropriate to agenda topics for each meeting.
- C. Owner or his representative will make arrangements for meetings, and recording minutes.
- D. Owner or his representative will prepare the agenda and preside at meetings.
- E. Contractor shall provide required information and be prepared to discuss each agenda item.
- F. Agenda:
  - 1. Review minutes of previous meetings
  - 2. Review of Work progress schedule submittal, and pay estimates, payroll and compliance submittals
  - 3. Field observations, problems, and decisions
  - 4. Identification of problems which impede planned progress
  - 5. Review of submittals schedule and status of submittals
  - 6. Review of Request for Information and Request for Proposal status
  - 7. Change order status
  - 8. Review of off-site fabrication and delivery schedules
  - 9. Maintenance of progress schedule
  - 10. Corrective measures to regain projected schedules
  - 11. Planned progress during succeeding work period
  - 12. Coordination of projected progress
  - 13. Maintenance of quality and work standards
  - 14. Effect of proposed changes on progress schedule and coordination
  - 15. Other items relating to Work

PART 2 PRODUCTS - NOT USED

01040-3

PART 3      EXECUTION - NOT USED

END OF SECTION

## SECTION 01045

## CUTTING AND PATCHING

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Cutting, patching and fitting of Work to existing facilities, or to accommodate installation or connection of Work with existing facilities, or to uncover work for access, inspection or testing.

## 1.02 CUTTING AND PATCHING

- A. Perform activities to avoid interference with facility operations and the Work of others in accordance with all provisions and sections of these specifications.
- B. Execute cutting and patching, including excavation, backfill and fitting to:
  - 1. Remove and replace defective Work or Work not conforming to the Drawings and Specifications.
  - 2. Take samples of installed Work as required for testing.
  - 3. Remove construction required to provide for specified alteration or addition to existing work.
  - 4. Uncover Work to provide for inspection or reinspection of covered Work by the Owner Representative or regulatory agencies having jurisdiction.
  - 5. Connect any Work that was not accomplished in the proper sequence to completed Work.
  - 6. Remove or relocate existing utilities and pipes which obstruct Work to which connections must be made.
  - 7. Make connections or alterations to existing or new facilities.
  - 8. Provide openings, channels, chases and flues, if any, and do cutting, patching and finishing.
- C. Restore existing work to a state equal to or better than that prior to cutting and patching. Restore new Work to standards of these Specifications.

- D. Support, anchor, attach, match, trim and seal materials to the Work of others. Unless otherwise specified, furnish and install sleeves, inserts, hangers, required for the execution of the Work.
- E. Provide shoring, bracing and support as required to maintain structural integrity and protect adjacent Work from damage during cutting and patching. Before cutting beams or other structural members, anchors, lintels or other supports, request written instructions from the Owner Representative. Follow such instructions, as applicable.

### 1.03 SUBMITTALS

- A. Submit written notice to the Owner Representative requesting consent to proceed prior to cutting which may affect structural integrity or design function, Owner operations, or work of another contractor.
- B. Include the following in submittal:
  - 1. Identification of project.
  - 2. Description of affected Work.
  - 3. Necessity for cutting.
  - 4. Effect on other work and on structural integrity.
  - 5. Include description of proposed Work:
    - a. Scope of cutting and patching.
    - b. Contractor, subcontractor or trade to execute Work.
    - c. Products proposed to be used.
    - d. Extent of refinishing.
    - e. Schedule of operations.
  - 6. Alternatives to cutting and patching, if any.
- C. Should conditions of Work or schedule indicate change of materials or methods, submit a written recommendation to the Owner Representative including:
  - 1. Conditions indicating change.
  - 2. Recommendations for alternative materials or methods.

3. Submittals as required for substitutions.
- D. Submit written notice to the Owner Representative designating time Work will be uncovered for observation. Do not begin cutting or patching operations until authorized by the Owner Representative.

#### 1.04 CONNECTIONS TO EXISTING FACILITIES

- A. Perform construction necessary to complete connections and tie-ins to existing facilities. Keep all existing facilities in continuous operation unless otherwise specifically permitted in these Specifications or approved by the Owner Representative.
- B. Coordinate with the Owner Representative, interruption of service requiring connection into existing facilities. Bypassing of wastewater or sludge to waterways is not permitted. Provide temporary pumping facilities to handle wastewater if necessary. Use temporary bulkheads (e.g., inflatable plugs) to minimize disruption. Provide temporary power supply and piping to facilitate construction where necessary.
- C. Submit a detailed schedule of proposed connections, including shut-downs and tie-ins. Include in the submittal the proposed time and date as well as the anticipated duration of the Work. Submit the detailed schedule coordinated with the construction schedule.
  1. Provide specific time and date information to the Owner Representative 48 hours in advance of proposed Work.
- D. Procedures and Operations:
  1. Only city personnel shall operate any valve, gate or other item of equipment without authorization of the Owner.
  2. Insofar as possible, equipment shall be tested and in operating condition before final tie-ins are made to connect equipment to the existing facility.
  3. Carefully coordinate Work and schedules. Provide written notice to the Owner Representative at least 48 hours before shut-downs or by-passes are required.

PART 2 PRODUCTS - NOT USED.

PART 3 EXECUTION - NOT USED.

END OF SECTION

01045-3

## SECTION 01050

## FIELD SURVEYING

## PART 1 GENERAL

## 1.01 QUALITY CONTROL

- A. Conform to State of Texas laws for surveys requiring licensed surveyors. Employ a Land Surveyor acceptable to Owner Representative, if required by Owner.

## 1.02 SUBMITTALS

- A. Submit to Owner Representative the name, address, and telephone number of Surveyor before starting survey work.
- B. Submit documentation verifying accuracy of survey work on request.

## 1.03 PROJECT RECORD DOCUMENTS

- A. Maintain a complete and accurate log of control and survey work as it progresses.
- B. Submit Record Documents under provisions of Section 01720 - Project Record Documents.

## 1.04 EXAMINATION

- A. Verify locations of survey control points prior to starting Work. Contractor shall utilize bench mark as basis for field verification of all temporary benchmark elevation prior to commencement of work. Contractor shall provide letter to Owner Representative once he is in agreement with all provided temporary benchmark elevations.
- B. Notify Owner Representative immediately of any discrepancies discovered.

## 1.05 SURVEY REFERENCE POINTS

- A. Control datum for survey is that established by Owner-provided survey and indicated on Drawings.
- B. Locate and protect survey control points, including property corners, prior to starting site work; preserve permanent reference points during construction.

- C. Notify Owner Representative 48 hours in advance of need for relocation of reference points due to changes in grades or other reasons.
- D. Report promptly to Owner Representative the loss or destruction of any reference point.
- E. Contractor shall reimburse Owner for cost of reestablishment of permanent reference points and temporary benchmarks disturbed by Contractor's operations.

#### 1.06 SURVEY REQUIREMENTS

- A. Utilize recognized engineering survey practices.
- B. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on Project Record Documents.
- C. Establish elevations, lines and levels to provide quantities required for measurement and payment and to provide appropriate controls for the Work. Locate and lay out by instrumentation and similar appropriate means:
  - 1. Site improvements including pavements; stakes for grading; fill and topsoil placement; utility locations, slopes, and invert elevations.
  - 2. Grid or axis for structures.
- D. Verify periodically layouts by same means.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

## SECTION 01090

## REFERENCE STANDARDS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Section includes general quality assurance as related to Reference Standards and a list of references.

## 1.02 QUALITY ASSURANCE

- A. For Products or workmanship specified by association, trades, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on the date as stated in the General Conditions.
- C. Request clarification from Owner's Representative before proceeding should specified reference standards conflict with Contract Documents.

## 1.03 SCHEDULE OF REFERENCES

AASHTO            American Association of State Highway and Transportation Officials  
444 North Capitol Street, N.W, Ste. 249  
Washington, DC 20001  
[www.transportation.org](http://www.transportation.org)

ACI                American Concrete Institute  
P.O. Box 9094  
Farmington Hills, MI 48333-9094  
[www.concrete.org](http://www.concrete.org)



AGC                      Associated General Contractors of America  
  
2300 Wilson Blvd., Ste. 400  
  
Arlington, VA 22201  
  
[www.agc.org](http://www.agc.org)

AI                         Asphalt Institute  
  
2696 Research Park Drive, P.O. Box 14052  
  
Lexington, KY 40511-8480  
  
[www.asphaltinstitute.org](http://www.asphaltinstitute.org)

AITC                     American Institute of timber Construction  
  
7012 S. Revere Parkway, Suite 140  
  
Centennial, CO 80112  
  
[www.aitc-glulam.org](http://www.aitc-glulam.org)

AISC                     American Institute of Steel Construction  
  
One East Wacker Dr., Ste. 700  
  
Chicago, IL 60601-1802  
  
[www.aisc.org](http://www.aisc.org)

AISI                     American Iron and Steel Institute  
  
1140 Connecticut Ave. NW, Ste. 705

	Washington, DC 20036 <a href="http://www.aisi.com">www.aisi.com</a>
ASME	American Society of Mechanical Engineers Three Park Avenue New York, NY 10016-5990 <a href="http://www.asme.org">www.asme.org</a>
ANSI	American National Standards Institute 1899 L Street NW, Eleventh Floor Washington, DC 20036 <a href="http://www.ansi.org">www.ansi.org</a>
APA	American Plywood Association Box 11700 Tacoma, WA 98411 <a href="http://www.apawood.org">www.apawood.org</a>
API	American Petroleum Institute 1220 L Street, N.W. Washington, DC 20005 <a href="http://www.api.org">www.api.org</a>
AREMA	American Railway Engineering and Maintenance-of-way Association

10003 Derekwood Lane, Ste. 210

Lanham, Maryland 20706

[www.arena.org](http://www.arena.org)

ASTM American Society for Testing and Materials  
100 Barr Harbor Drive  
West Conshohocken, PA 19428  
[www.astm.org](http://www.astm.org)

AWPA American Wood-Preservers' Association  
P.O. Box 5690  
Granbury, TX 76049  
[www.awpa.com](http://www.awpa.com)

AWS American Welding Society  
550 NW LeJeune Rd.  
Miami, FL 33126  
[www.aws.org](http://www.aws.org)

AWWA American Water Works Association  
6666 West Quincy Avenue  
Denver, CO 80235  
[www.awwa.org](http://www.awwa.org)

CLFMI	Chain Link Fence Manufactures Institute 10015 Old Colombia Rd.,Ste. B-215 Columbia, MD 21046 <a href="http://www.clfmi.net">www.clfmi.net</a>
CRSI	Concrete Reinforcing Steel Institute 933 North Plum Grove Road Schaumburg, IL 60173-4758 <a href="http://www.crsi.org">www.crsi.org</a>
EJMA	Expansion Joint Manufacturers Association 25 North Broadway Tarrytown, NY 10591 <a href="http://www.ejma.org">www.ejma.org</a>
FS	Federal Standardization Documents General Services Administration, Specifications Unit (WFSIS) 7 <sup>th</sup> and D Streets, S.W. Washington, DC 20406 <a href="http://www.gsa.gov">www.gsa.gov</a>
ICEA	Insulated Cable Engineer Association P.O. Box 1568

	Carrolton, Ga. 30112  <a href="http://www.icea.net">www.icea.net</a>
IEEE	Institute of Electrical and Electronics Engineers  445 Hoes Lane  Piscataway, NJ 08854-4141  <a href="http://www.ieee.org">www.ieee.org</a>
MIL	Military Specifications  General Services Administration, Specifications Unit (WFSIS)  7 <sup>th</sup> and D Streets, S.W.  Washington, DC 20406  <a href="http://www.gsa.gov">www.gsa.gov</a>
NACE	National Association of Corrosion Engineers  1440 South Creek Drive  Houston, TX 77084-4906  <a href="http://www.nace.org">www.nace.org</a>
NEMA	National Electrical Manufacturers' Association  1300 North 17 <sup>th</sup> Street, Suite 1752  Rosslyn, VA 22209  <a href="http://www.nema.org">www.nema.org</a>

NFPA	National Fire Protection Association 1 Batterymarch Park, P.O. Box 9101 Quincy, MA 02169-7471 <a href="http://www.nfpa.org">www.nfpa.org</a>
OSHA	Occupational Safety Health Administration U.S. Department of Labor, Office of Public Affairs 200 Constitution Ave. Washington, DC 20210 <a href="http://www.osha.gov">www.osha.gov</a>
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077-1083 <a href="http://www.cement.org">www.cement.org</a>
PCI	Prestressed Concrete Institute 200 W. Adams St., Ste. 2100 Chicago, IL 60606 <a href="http://www.pci.org">www.pci.org</a>
SDI	Steel Deck Institute P.O. Box 25 Fox River Grove, IL 60021

	<a href="http://www.sdi.org">www.sdi.org</a>
SSPC	Society for Protective Coatings (Steel Structures Painting Council) 40 24 <sup>th</sup> Street, Sixth Floor Pittsburgh, PA 15222 <a href="http://www.sspc.org">www.sspc.org</a>
TAC	Texas Administrative Code Texas Water Resources Conservation Commission P.O. Box 13087 Library MC-196 Austin, TX 78711-3087
TCEQ	Texas Commission on Environmental Quality P.O. Box 13087 Austin, TX 78711-3087 <a href="http://www.tceq.state.tx.us">www.tceq.state.tx.us</a>
TxDOT	Texas Department of Transportation 125 E. 11 <sup>th</sup> Street Austin, TX 78701-2483 <a href="http://www.txdot.gov">www.txdot.gov</a>

UL                      Underwriters' Laboratories, Inc.  
  
                                 2600 N.W. Lake Road  
  
                                 Camas, WA. 98607-8542  
  
                                 [www.ul.com](http://www.ul.com)

UNI-BELL              UNI-BELL Pipe Association  
  
                                 2711 LBJ Freeway, Ste. 1000  
  
                                 Dallas, TX 75234  
  
                                 [www.uni-bell.org](http://www.uni-bell.org)

PART 2              P R O D U C T S - N O T U S E D

PART 3              E X E C U T I O N - N O T U S E D

                                 E N D O F S E C T I O N



## SECTION 01292

## SCHEDULE OF VALUES

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Preparation and submittal of Schedule of Values for stipulated price contracts or for major unit price work on unit price contracts.

## 1.02 DEFINITION

- A. The Schedule of Values is an itemized list that establishes the value of each part of the Work for a stipulated price contract and for major unit price work on a unit price contract. The Schedule of Values is used as the basis for preparing applications for payments. Quantities and unit prices shall be included in the schedule of values.
- B. Major Unit Price Work is an individual unit price item:
  - 1. Whose value is greater than five percent of original contract price,
  - 2. Whose value becomes greater than five percent of original contract price as the result of an increase in quantity, or
  - 3. Whose value is \$100,000, whichever is least.

## 1.03 PREPARATION

- A. For stipulated price contracts, subdivide the Schedule of Values into logical portions of the Work, such as major work items or work in contiguous construction areas. Use Section 01310 - Construction Schedule to guide the subdivision of work items. The items in the Schedule of Values will correlate directly with the tasks enumerated in the Construction Schedule. Organize each portion using the Table of Contents of this Project Manual as an outline for listing the value of work by Sections. A pro rata share of mobilization, bonds, and insurance may be listed as separate items for each portion of the work.
- B. For unit price contracts, items shall use the bid items for the Schedule of Values.
- C. For lump sum equipment items, where submittal of operation/maintenance data and testing are required, include a separate item for equipment operation and maintenance data where:

1. Submittal of maintenance data shall be valued at five percent (5%) of the lump sum amount for each equipment item,
  2. Submittal for testing and adjusting shall be valued at five percent (5%) of the lump sum amount for each equipment item,
- D. Round off figures for each listed item to the nearest \$100.00. Set the value of one (1) item, when necessary, to make all values equal the contract price for stipulated price contract or lump sum amount for unit price work.

#### 1.04 SUBMITTAL

- A. Submit the Schedule of Values in accordance with the requirements of Section 01300 - Submittals. Submit initial schedule of values within fifteen (15) days after execution of contract or at the time of the pre-construction conference.
- B. Revise the Schedule of Values and resubmit for items affected by contract modifications. After the changes are reviewed without exception by the Owner, make the submittal at least 10 days prior to submitting the next application for progress payment.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

## SECTION 01300

## SUBMITTALS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Submittal procedures for:
1. Schedule of Values
  2. Construction Schedules
  3. Shop Drawings, Product Data, and Samples
  4. Operations and Maintenance Data
  5. Manufacturer's Certificates
  6. Construction Photographs
  7. Project Record Documents
  8. Design Mixes
  9. Video Tapes or DVD's
  10. And all other submittals the owner deems necessary.

## 1.02 SUBMITTAL PROCEDURES

- A. Scheduling and Handling
1. Schedule submittals well in advance of the need for the material or equipment for construction. Allow time to make delivery of material or equipment after submittal is approved.
  2. Develop a submittal schedule that allows sufficient time for initial review, correction, resubmission and final review of all submittals. The Owner Representative will review and return submittals to the Contractor as expeditiously as possible but the amount of time required for review will vary depending on the complexity and quantity of data submitted. In no case will a submittal schedule be acceptable which allows less than 30 days for initial review by the Owner Representative. This time for review shall in no way be justification for delays or additional compensation to the Contractor.

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3. The Owner Representative's review of submittals covers only general conformity to the Drawings, Specifications and dimensions which affect the layout. The Contractor is responsible for quantity determination. No quantities will be verified by the Owner Representative. The Contractor is responsible for any errors, omissions or deviations from the Contract requirements; review of submittals in no way relieves the Contractor from his obligation to furnish required items according to the Drawings and Specifications.
4. Submit 6 copies of documents unless otherwise specified in the following paragraphs or in the Specifications.
5. Revise and resubmit submittals as required. Identify all changes made since previous submittal.
6. The Contractor shall assume the risk for material or equipment which is fabricated or delivered prior to approval. No material or equipment shall be incorporated into the Work or included in periodic progress payments until approval has been obtained in the specified manner.

B. Transmittal Form and Numbering

1. Transmit each submittal to the Owner Representative with a transmittal form.
2. Sequentially number each transmittal form beginning with the number 1. Resubmittals shall use the original number with an alphabetic suffix (i.e., 2A for first resubmittal of Submittal 2 or 15C for third resubmittal of Submittal 15). Each submittal shall only contain one type of work, material, or equipment. Mixed submittals will not be accepted.
3. Identify variations from requirements of Contract Documents and identify product or system limitations.
4. For submittal numbering of video tapes or DVD's, coordinate with the Owner Representative.

C. Contractor's Certification

1. Each submittal shall contain a statement or stamp signed and dated by the Contractor, certifying that the items have been reviewed in detail and are correct and in accordance with Contract Documents, except as noted by any requested variance.

1.03 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

A. Shop Drawings

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- 
1. Submit shop drawings for review as required by the Specifications.
  2. Contractor's Certification, as described in paragraph 1.02C, shall be placed on each drawing.
  3. The drawings shall accurately and distinctly present the following:
    - a. Field and erection dimensions clearly identified as such
    - b. Arrangement and section views
    - c. Relation to adjacent materials or structure including complete information for making connections between work under this Contract and work under other contracts
    - d. Kinds of materials and finishes
    - e. Parts list and descriptions
    - f. Assembly drawings of equipment components and accessories showing their respective positions and relationships to the complete equipment package
    - g. Where necessary for clarity, identify details by reference to drawing sheet and detail numbers, schedule or room numbers as shown on the Contract Drawings.
  4. Drawings shall be to scale, and shall be a true representation of the specific equipment or item to be furnished.
- B. Product Data
1. Submit product data for review as required in Specification sections.
  2. Contractor's Certification, as described in paragraph 1.02C, shall be placed on each data item submitted.
  3. Mark each copy to identify applicable products, models, options to be used in this Project. Supplement manufacturers' standard data to provide information unique to this Project, where required by the Specifications.
  4. For products specified only by reference standard, give manufacturers, trade name, model or catalog designation and applicable reference standard.
  5. For products proposed as alternates to "approved" products, as described in Section 01630 - Product Options and Substitutions, provide all information

required to demonstrate the proposed products meet the level of quality and performance criteria of the "approved product".

C. Samples

1. Submit samples for review as required by the Specifications.
2. Contractor's Certification, as described in paragraph 1.02C, shall be placed on each sample or a firmly attached sheet of paper.
3. Submit the number of samples specified in Specifications; one of which will be retained by the Owner's Representative.
4. Reviewed samples which may be used in the Work are identified in Specifications.

1.04 MANUFACTURER'S CERTIFICATES

- A. When specified in Specification sections, submit manufacturers' certificate of compliance for review by Owner's Representative.
- B. Contractor's Certification, as described in paragraph 1.02C, shall be placed on front page of the certificate.
- C. Submit supporting reference data, affidavits, and certifications as appropriate.
- D. Certificates may be recent or previous test results on material or product, but must be acceptable to Owner's Representative.

1.05 DESIGN MIXES

- A. When specified in Specifications, submit design mixes for review.
- B. Contractor's Certification as described in paragraph 1.02C, shall be placed on front page of each design mix.
- C. Mark each design mix to identify proportions, gradations, and additives for each class and type of design mix submitted. Include applicable test results on samples for each mix.
- D. Maintain a copy of approved design mixes at mixing plant.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULE

PART 1 GENERAL

1.01 DESCRIPTION

- A. Furnish projected construction schedule for entire work.
- B. Revise monthly.

1.02 FORM OF SCHEDULE

- A. Prepare by bar chart method.
- B. Arrange by chronological order by beginning of each item of work.

1.03 CONTENT OF SCHEDULES

- A. Include complete sequence of construction by activity:
  - 1. Shop drawings, product data and samples: Submittal dates and dates reviewed copies will be required.
  - 2. Decision dates.
  - 3. Product procurement and delivery dates.
  - 4. Dates for beginning, and completion of each element of construction.
  - 5. Tentative dates for progress meetings.
- B. Show projected percentage of completion for each item of work as of first day of each month.
- C. Furnish subschedules to define critical portions of entire schedule.
- D. Show anticipated payment to complete work.
- E. Anticipated completion date and one year post acceptance inspection date.

1.04 UPDATING

- A. Show all changes occurring since previous month's submission of updated schedule.

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- B. Indicate progress of each activity.
- C. Show completion dates.
- D. If in opinion of the Owner, Contractor falls behind in scheduled progress, Contractor shall take steps required to regain lost progress without additional cost to Owner, and likewise revise schedule accordingly.

1.05 SUBMITTALS

- A. Submit initial schedules within fifteen days after execution of Contract or at the time of the Pre-Construction conference.
- B. Owner's Representative will review schedules and return review copy within ten days after receipt.
- C. If required, resubmit within seven days after return of review copy.
- D. Submit periodically updated schedules accurately depicting progress to first day of each month.
- E. Submit number of copies required by Contractor plus four copies to be retained by Owner's Representative.

1.06 DISTRIBUTION

- A. Distribute copies of reviewed schedules to:
  - 1. Owner's Representative.
  - 2. Job-site file.
  - 3. Subcontractors.
  - 4. Owner.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Photographic requirements for construction photographs and submittals

1.02 UNIT PRICES

- A. No separate payment will be made for work under this section. Include the cost in the unit price of related work.

1.03 SUBMITTALS

- A. Construction Photographs shall be made and submitted according to the provisions of all sections of these specifications.
- B. All photographs shall be taken digitally and submitted on a CD-ROM with Project Name, Contractor and Date Photographs were taken.
- C. Prepare 2 copies of the CD-ROM's of each view in digital format and submit 1 directly to the Owner's Representative within 5 days of taking photographs.

PART 2 PRODUCTS

2.01 PRECONSTRUCTION PHOTOGRAPHS

- A. Prior to the commencement of any construction, take digital color photographs of the entire route of the project. Photographs shall be 5 megapixel or better quality.
- B. Provide photographs recorded on a CD-ROM and a photo log shall be submitted with the CD's providing the required details.
- C. The photographs shall show:
  - 1. Date photographs were taken
  - 2. Location of the photograph, house number and street name.

This information may be shown on a chalkboard in the photograph or by a label on the photo log.

- D. Photographs should show the condition of the following:
1. Esplanades and boulevards
  2. Yards (near side and far side of street)
  3. House walk, sidewalk and driveway.
  4. Curb.
  5. Area between walk and curb.
  6. Surface features (yard lights, fences, manholes, valve boxes, sprinkler heads, mail boxes, etc.)
  7. Trees, shrubs and grass.
  8. Any other items the contractor, Owner, and/or Owner's Representative requests or requires.
  9. Areas of damaged improvements that the Contractor desires to document preconstruction.

2.02 POST CONSTRUCTION PHOTOGRAPHS

- A. On completion of construction, provide photographs of any public or private property which has been repaired or restored and any damage which is the subject of complaints. Damaged areas that cannot be documented by photographs preconstruction will be the Contractor's responsibility for repair.
- B. Submit in same quantity and format as the preconstruction photographs.

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01410

TESTING LABORATORY SERVICES

1.0 GENERAL

1.1 CONDITIONS

- A. Testing, inspection, and control of materials required by these specifications shall be performed by a commercial testing laboratory meeting the specified requirements.
- B. Owner will select and pay for services of commercial testing laboratory to perform density tests for field control and to perform the various laboratory testing services necessary for field control of the work as specified in respective specification sections, except Contractor shall pay for services of commercial testing laboratory approved by Owner to perform the following:
  - 1. Pipe diameter deflection tests on all flexible and semi-rigid sanitary sewer collection system pipe installation.
  - 2. Testing of systems or partially completed systems, such as testing of water and sewer systems, water supply and drainage systems, air systems, electrical systems and grounding systems.
  - 3. Laboratory services required to establish mix design proposed for use for Portland cement concrete, asphaltic concrete mixtures, and other material mixes requiring control by testing laboratory.
  - 4. Analysis of aggregates, fixing gradations, and the preparation and testing of design cylinders, beams, or specimens, and other services required to establish design or redesign of material mixes requiring control by testing laboratory when required because of change in source of materials or other conditions not caused by Owner.
  - 5. Tests required to establish optimum moisture of earth and base materials and to determine required compactive effort to meet density requirements (Contractor shall pay for all proctor curves to establish optimum moisture and Owner shall pay for all density tests).
  - 6. Cores to test for thickness of paving that are performed at Contractor's election.

7. Testing and inspection performed for the Contractor's convenience.
  8. Retesting and repetitions of laboratory services when initial tests indicate work does not comply with requirements of Contract Documents.
- C. Specified testing frequencies are recommended standards, and may be increased or decreased by the Owner or Owner's Representative as deemed necessary for quality control of materials and the work.
  - D. Reports and commentaries by testing laboratory shall in no way relieve Contractor of his obligation to perform work in full compliance with standards and provisions of the Contract Documents.
  - E. The Contractor shall not be relieved of his obligation to perform work in full compliance with the standards and provisions of the Contract Documents by reason of the Owner's performance in testing or refraining from testing the work.
  - F. Owner reserves right to take samples and specimens, and conduct tests on material and work provided by Contractor to assure quality control.

## 1.2 REQUIREMENTS OF LABORATORY

- A. Meet basic requirements of ASTM E329, latest edition.
- B. Testing Equipment: Calibrated at maximum twelve month intervals by devices of accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.
- C. Testing laboratory is only required to have testing facilities for work included in this project.
- D. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during most recent tour of inspection.
- E. Submit memorandum of remedies of any deficiencies reported by inspection.

## 1.3 LABORATORY DUTIES AND LIMITATIONS OF AUTHORITY

- A. Cooperate with Owner's Representative, Owner and Contractor.
  1. Unless directed by Owner or Owner's Representative, types and frequencies of tests as specified in specifications sections for field quality control shall not be exceeded.

2. Owner may not accept charges for tests in excess of types and frequencies specified in specifications sections unless authorized by the Owner's Representative or Owner.
  3. Charges for tests to be paid for by Owner shall be submitted promptly to Owner's Representative to allow adequate time for his review before time for payment by Owner.
  4. Unless otherwise directed or stipulated, samples, specimens, and field test locations shall be selected under the control of the Owner's Representative.
- B. Provide qualified personnel promptly on notice.
- C. Perform required inspections, sampling, and testing of materials and methods of construction, including making and curing concrete test specimens.
- D. Ascertain Contractor's compliance with specifically named standards of the Contract Documents.
- E. Comply with specified testing and sampling standards, or recognized authoritative testing and sampling standards when none are specifically named in the Specifications.
- F. Immediately notify Owner's Representative, Owner and Contractor of irregularities or deficiencies of work which are observed during performance of services. Immediately is defined as the same day that the irregularity or deficiency is determined and shall be in person, by telephone or by e-mail.
- G. Promptly distribute copies of reports of inspections and tests:
1. Owner: One copy.
  2. Owner's Representative: One copy.
  3. Contractor: Two copies.
- H. Perform additional services as required by Owner.
- I. Laboratory is not authorized to:
1. Revoke, alter, enlarge on, or waive requirements of Contract Documents.
  2. Approve or accept any portion of work.

3. Reject or stop work, but only shall notify Owner's Representative or his representative of any failure, deficiencies, or irregularities immediately.
4. Perform any duties of Contractor.

#### 1.4 CONTRACTOR'S RESPONSIBILITIES

- A. Before starting to use proposed design mix and mix materials in construction, arrange for testing of design mixes and mix materials for Portland cement concrete, asphaltic concrete, and other material mixes requiring control by testing laboratory.
- B. Cooperate with laboratory personnel, provide access to work, and to construction and fabrication operations.
- C. Provide samples of materials to be tested in required quantities.
- D. Provide adequate on-site storage area for testing laboratory.
- E. Furnish copies of mill test reports for the materials being used on the job when requested by Owner's Representative.
  1. Mill certificates will be acceptable when it is definite that certified mill test sheets apply to the material being supplied.
- F. Furnish labor to provide access to work to be tested, to obtain and handle samples at site, and to facilitate inspections and tests.
- G. Notify laboratory and Owner's Representative 48 hrs. minimum in advance of operations requiring control by testing laboratory, to allow for assignment of personnel and scheduling of tests.
- H. Contractor shall notify the Laboratory and Owner's Representative immediately upon discovery of conditions or circumstances requiring cancellation of work.
- I. Arrange with laboratory and pay for:
  1. Retesting required for failed tests.
  2. Retesting for nonconforming Work.
  3. Additional sampling and tests requested by Contractor beyond specified requirements.

4. Insufficient notification of cancellation of tests for work scheduled but not performed.

1.5 SPECIFIC TESTS, INSPECTIONS AND METHODS REQUIRED

- A. Certification of Products: As required by respective specification sections.
- B. Test, Adjust and Balance of Equipment: As required by respective specification sections.
- C. Sampling and Laboratory Tests: As required by respective specification sections.

END OF SECTION



## SECTION 01420

## CONSTRUCTION INSPECTION SERVICES

## 1.0 GENERAL

## 1.1 SECTION INCLUDES

- A. Inspection services and references

## 1.2 CONDITIONS

- A. Owner reserves right to observe and inspect samples and specimens to be tested, and observe tests on material and work provided by Contractor to assure quality control.
- B. Inspection level of service may be increased or decreased by the Owner or Owner's Representative as deemed necessary for quality control of materials and work.
- C. Owner's Representative will appoint an Inspector as a representative of the Owner. Alternately, Owner's Representative may appoint, employ, and pay an independent firm to provide and/or supplement inspection services.
- D. Reports and commentaries by Inspector shall in no way relieve Contractor of his obligation to perform work in full compliance with standards and provisions of the Contract Documents.
- E. The Contractor shall not be relieved of his obligation to perform work in full compliance with the standards and provisions of the Contract Documents by reason of the Owner's performance in inspection or refraining from inspecting the work.

- F. The Contractor shall not be relieved of his obligation to perform the work safely and with all safety requirements by reason of the owner's performance of inspection or refraining from inspections of the work.

### 1.3 INSPECTORS DUTIES AND LIMITATIONS OF AUTHORITY

- A. Perform inspections, observe tests, and provide other services specified in individual Technical Specifications.
- B. Ascertain Contractor's compliance with specifically named standards of the Contract Documents.
- C. Produce reports to be submitted to Owner, Owner's Representative, and Contractor, indicating observations and compliance or non-compliance with Contract Documents and quantities installed.
- D. Perform additional services as required by Owner.
- E. Inspector is not authorized, without approval of Owner's Representative, to:
  - 1. Revoke, alter, enlarge, or waive requirements of the Contract Documents.
  - 2. Approve or accept any portion of work.
  - 3. Perform any duties of Contractor.
- F. Inspector has the authority to stop work when work is being performed in an unsafe manner or if other issues arise that he deems necessitate stopping work.

### 1.4 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with Inspector, provide access to work and to construction and fabrication operations.
- B. Furnish copies of mill test reports for the materials being used on the job when requested by Owner's Representative or Inspector.
  - 1. Mill certificates will be acceptable when it is definite that certified mill test sheets apply to the material being supplied.

- C. Furnish labor to provide access to work to be inspected, to obtain and handle samples at site, and to facilitate inspections and tests.
- D. Contractor shall sign and acknowledge reports for Inspector.
- E. Notify Owner's Representative 24 hrs. prior to expected time for operations requiring services. Notify independent firm when noted.
- F. Arrange with Inspector and pay for:
  - 1. Re-inspecting nonconforming Work.
  - 2. Insufficient notification of cancelation of work scheduled but not performed if such work required increase inspection services.
  - 3. Inspection services for work on weekends, City Holidays and after hours that has been approved at the request of the contractor.

END OF SECTION

## SECTION 01430

## CONTRACTOR'S QUALITY CONTROL

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Quality assurance and control of installation and manufacturer's field services and reports.

## 1.02 SUBMITTALS

- A. Make Submittals required by this section and in accordance with all provisions of these specifications.

## 1.03 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce the Work of specified quality at no additional cost to the Owner.
- B. Comply fully with manufacturers' installation instructions, including each step in sequence.
- C. Request clarification from the Owner's Representative before proceeding should manufacturers' instructions conflict with Contract Documents.
- D. Comply with specified Standards as a minimum requirement for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce the specified level of workmanship.
- F. Obtain copies of Standards and maintain at Project Site when required by individual Technical Specifications.

## 1.04 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual Technical Specifications, provide material or product suppliers' or manufacturers' technical representative to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, operator training, test, adjust, and balance of equipment as applicable, and to initiate operation, as required. Conform to minimum time requirements for start-up operations and operator training if defined in Technical Specifications.

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- B. At the Owner's Representative's request, submit qualifications of manufacturer's representative to Owner's Representative fifteen (15) days in advance of required representative's services. The representative shall be subject to approval of Owner's Representative.
  
- C. Manufacturer's representative shall report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions. Submit report within one (1) day of observation to Owner's Representative for review.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

## SECTION 01500

## TEMPORARY FACILITIES AND CONTROLS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Temporary facilities and the necessary controls for the project including utilities, telephone, sanitary facilities, field office, storage sheds and building, safety requirements, first aid equipment, fire protection, security measures, protection of the Work and property, access roads and parking, environmental controls, disposal of trash, debris, and excavated material, pest and rodent control, water runoff and erosion control.

## 1.02 UNIT PRICES

- A. No separate payment for work under this section. Include the costs for performing the work in project costs.

## 1.03 CONTRACTOR'S RESPONSIBILITY

- A. The facilities and controls specified in this section are considered minimum for the Project. The Contractor may provide additional facilities and controls for the proper execution of the Work and to meet Contractor's responsibilities for protection of persons and property.
- B. Comply with applicable requirements specified in other sections of the Specifications.
  - 1. Maintain and operate temporary facilities and systems to assure continuous service.
  - 2. Modify and extend systems as Work progress requires.
  - 3. Completely remove temporary materials and equipment when their use is no longer required.
  - 4. Restore existing facilities used for temporary services to specified or original condition.

## 1.04 TEMPORARY UTILITIES

- A. Obtaining Temporary Service.
  - 1. Make arrangements with utility service companies for temporary services.
  - 2. Abide by rules and regulations of the utility service companies or authorities having jurisdiction.

3. Be responsible for utility service costs until the Work is substantially complete. Included are fuel, power, light, heat, and other utility services necessary for execution, completion, testing, and initial operation of the Work.

B. Water

1. Provide water required for and in connection with Work to be performed and for specified tests of piping, equipment, devices, or for other use as required for proper completion of the Work.
2. Contractor shall not operate any fire hydrants without first having a meter from the City of Galveston and having placed this meter on the hydrant. The Contractor shall operate fire hydrant(s) only with an approved hydrant wrench.
3. Provide and maintain an adequate supply of potable water for domestic consumption by Contractor personnel.

C. Electricity and Lighting.

1. Provide electric power service as required for the Work, including testing of Work. Provide power for lighting, operation of the Contractor's equipment, or for any other use by Contractor.
2. Electric power service includes temporary power service or generator to maintain plant operations during any scheduled shutdown.
3. Minimum lighting level shall be 5 foot-candles for open areas; 10-foot-candles for stairs and shops.

D. Temporary Heat and Ventilation

1. Provide temporary heat as necessary for protection or completion of the Work.
2. Provide temporary heat and ventilation to assure safe working conditions; maintain enclosed areas at a minimum of 50°F.

E. Telephone

1. Provide emergency telephone service at the Contractor's field office, or by mobile telephone, for use by Contractor personnel and others performing work or furnishing services at the site.

F. Sanitary Facilities

1. Provide and maintain sanitary facilities for persons on the job site; comply with the regulations of State and local departments of health.

2. Enforce the use of sanitary facilities by construction personnel at the job site. Such facilities shall be enclosed. Pit-type toilets will not be permitted. No discharge will be allowed from these facilities. Collect and store sewage and waste so as not to cause a nuisance or health problem; have sewage and waste hauled off-site and properly disposed in accordance with local regulations.
3. Locate toilets near the Work site and secluded from view insofar as possible. Keep toilets clean and supplied throughout the course of the Work.

#### 1.05 FIELD OFFICE

- A. Provision of a field office is not required unless specified in the conditions of this contract. If the Contractor chooses to provide one, locate it in a place approved by the Owner Representative.

#### 1.06 STORAGE OF MATERIALS

- A. Provide adequately ventilated, watertight storage facilities with floor above ground level for materials and equipment susceptible to weather damage.
- B. Storage of materials not susceptible to weather damage may be on blocks off the ground.
- C. Store materials in a neat and orderly manner. Place materials and equipment to permit easy access for identification, inspection and inventory.
- D. Contractor is responsible for materials and equipment stored on and off site.

#### 1.07 SAFETY REQUIREMENTS

- A. Submit and follow a safety program. Include in the safety program documented response to trench safety requirements as specified in Section 01526 - Trench Safety System.
- B. Conduct operations in strict accord with applicable Federal, State and local safety codes and statutes and with good construction practice. The Contractor is fully responsible and obligated to establish and maintain procedures for safety of all work, personnel and equipment involved in the Project.
- C. Observe and comply with Texas Occupational Safety Act (Art. 5182a, V.C.S.) and with all safety and health standards promulgated by Secretary of Labor under Section 107 of Contract Work Hours and Standards Act, published in 29 CFR Part 1926 and adopted by Secretary of Labor as occupational safety and health standards under the Williams-Steiger Occupational Safety and Health Act of 1970, and to any other legislation enacted for safety and health of Contractor employees. Such safety and health standards apply to subcontractors and their employees as well as to the Contractor and its employees.
- D. Observance of and compliance with the regulations shall be solely and without qualification the responsibility of the Contractor without reliance or superintendence of



or direction by the Owner Representative. Immediately advise the Owner Representative of investigation or inspection by Federal Safety and Health inspectors of the Contractor or subcontractor's work or place of work on the job site under this Contract, and after such investigation or inspection, advise the Owner Representative of the results. Submit one copy of accident reports to Owner Representative within 10 business days of occurrence.

- E. Protect areas occupied by workmen using the best available devices for detection of lethal and combustible gases. Test such devices frequently to assure their functional capability. Constantly observe infiltration of liquids into the Work area for visual or odor evidences of contamination, immediate take appropriate steps to seal off entry of contaminated liquids to the Work area.
- F. Safety measures, including but not limited to safety personnel, first-aid equipment, ventilating equipment and safety equipment, in the specifications and shown on the Drawings are obligations of the Contractor.
- G. Maintain required coordination with the local Police and Fire Departments during the entire period covered by the Contract.
- H. Include project safety analysis in safety plan. Itemize major tasks and potential safe hazards. Plan to eliminate hazards or protect workers and public from each hazard.

#### 1.08 FIRST AID EQUIPMENT

- A. Provide a first aid kit throughout the construction period. List telephone numbers for physicians, hospitals, and ambulance services in each first aid kit.
- B. Have at least one person thoroughly trained in first aid procedures present on the site whenever Work is in progress. Contractor to conform to protocols and requirements for training and protection against "blood borne pathogens."

#### 1.09 FIRE PROTECTION

- A. Fire Protection Standards.
  - 1. Conform to specified fire protection and prevention requirements as well as those which may be established by Federal, State, or local governmental agencies.
  - 2. Comply with all applicable provisions of NFPA Standard No. 241, Safeguarding Building Construction and Demolition Operations.
  - 3. Provide portable fire extinguishers, rated not less than 2A or 5B in accordance with NFPA Standard No. 10, Portable Fire Extinguishers, for each temporary building, and for every 3000 square feet of floor area of facilities under construction.

4. Locate portable fire extinguishers within 50 feet maximum from any point in the Project area in which work is performed.
- B. Fire Prevention and Safety Measures.
1. Prohibit smoking in hazardous areas. Post suitable warning signs in areas which are continuously or intermittently hazardous.
  2. Use metal safety containers for storage and handling of flammable and combustible liquids.
  3. Do not store flammable or combustible liquids in or near stairways or exits.
  4. Maintain clear exits from all points within a structure.

#### 1.10 SECURITY MEASURES

- A. Protect all Work materials, equipment, and property from loss, theft, damage, and vandalism. Contractor's duty to protect property includes Owner's property.
- B. If existing fencing or barriers are breached or removed for purposes of construction. Provide and maintain temporary security fencing equal to existing.

#### 1.11 PROTECTION OF PUBLIC UTILITIES

- A. Prevent damage to existing public utilities during construction. These utilities are shown on the Drawings at their approximate locations, but all lines may not be shown. Pre-locate, by whatever means may be required (metal detection equipment, probes, excavation, survey), all underground utilities before excavating in area. All investigative work will be done and all repairs required after investigation will be accomplished by Contractor. Contractor is responsible for damages caused by failure to locate and preserve these underground utilities. Give owners of these utilities at least 48 hours notice before commencing Work in area, for locating utilities during construction and allow adequate time for making adjustments or relocation of the utilities when they conflict with proposed Work. Any temporary relocation of utilities if necessary to accommodate construction will not be paid for separately. Bypassing of sanitary waste to storm drainage facilities is not allowed. Utility service lines are not shown on Drawings. Anticipate that such service lines exist and repair them if damaged due to any construction activity. No separate payment will be made for this repair work.
- B. Prior to abandonment of utility, make appropriate arrangements with City and owner of utility to terminate service, remove meters, transformers, and poles as may be required by site conditions.
- C. When excavating near pipelines and prior to start of excavation, request a representative of pipeline company to come to construction site(s) to meet representatives of Contractor and Owner Representative to discuss actual procedures that will be used. Request

pipeline company's representative to probe and locate the pipelines in at least three locations: one at each side of proposed excavation and one at centerline of proposed utility. The Contractor may be required to locate the pipeline as directed by the pipeline company at no cost to the project. Representative of pipeline company and Owner Representative must be present to observe activities of Contractor at all times when excavation is being conducted within 15 feet of pipeline company's pipeline.

## 1.12 PROTECTION OF THE WORK AND PROPERTY

### A. Preventive Actions.

1. Take precautions, provide programs, and take actions necessary to protect the Work and public and private property from damage.
2. Take action to prevent damage, injury or loss, including, but not limited to, the following:
  - a. Store apparatus, materials, supplies, and equipment in an orderly, safe manner that will not unduly interfere with progress of the Work or the Work of any other contractor, any utility service company, or the Owner's operations.
  - b. Provide suitable storage for materials which are subject to damage by exposure to weather, theft, breakage, or otherwise.
  - c. Place upon the Work or any part thereof only such loads as are consistent with the safety of that portion of the Work.
  - d. Frequently clean up refuse, rubbish, scrap materials, and debris caused by construction operations, keeping the Project site safe and orderly.
  - e. Provide safe barricades and guard rails around openings, for scaffolding, for temporary stairs and ramps, around excavations, elevated walkways, and other hazardous areas.
3. Obtain written consent from proper parties before entering or occupying with workers, tools, materials or equipment, privately-owned land except on easements provided for construction.
4. Assume full responsibility for the preservation of public and private property on or adjacent to the site. If any direct or indirect damage is done by or on account of any act, omission, neglect, or misconduct in execution of the Work by the Contractor, it shall be restored by the Contractor to a condition equal to or better than that existing before the damage was done.

### B. Barricades and Warning Signals.

1. Where work is performed on or adjacent to any roadway, right-of-way, or public place; furnish and erect barricades, fences, lights, warning signs, and danger signals; provide watchmen; and take other precautionary measures for the protection of persons or property and protection of the Work. Barricades shall be painted to be visible at night. From sunset to sunrise, furnish and maintain at least one light at each barricade. Erect sufficient barricades to keep vehicles from being driven and pedestrians from walking on or into Work under construction. Furnish watchmen in sufficient numbers to protect the Work. Responsibility of maintenance of barricades, signs, lights and for providing watchmen shall continue until the Project is accepted by the Owner. Comply with Section -1570 – Traffic Control and Regulation
- C. Tree and Plant Protection. Comply with requirements of Section 01535 – Tree and Plant Protection.
- D. Protection of Existing Structures
  1. Underground Structures:
    - a. Underground structures are defined to include, but not be limited to, sewer, water, gas, and other piping, and manholes, chambers, electrical and signal conduits, tunnels, and other existing subsurface installations located within or adjacent to the limits of the Work.
    - b. Known underground structures, including water, sewer, electric, and telephone services are shown on the Drawings in accordance with the best information available, but are not guaranteed to be correct or complete.
    - c. Explore ahead of trenching and excavation work and uncover obstructing underground structures sufficiently to determine their location, to prevent damage to them and to prevent interruption of utility services. Restore to original condition damages to underground structure at no additional cost to the Owner.
    - d. Necessary changes in location of the Work may be made by the Owner Representative to avoid unanticipated underground structures.
    - e. If permanent relocation of an underground structure or other subsurface installations is required and not otherwise provided for in the Contract Documents, the Owner Representative will direct Contractor in writing to perform the Work, which shall be paid for under the provisions for changes in the Contract Price as described in the General Conditions.
  2. Surface Structures:
    - a. Surface structures are defined as existing buildings, structures and other constructed installations above the ground surface. Included with such

structures are their foundations or any extension below the surface. Surface structures include, but are not limited to buildings, tanks, walls, bridges, roads, dams, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks, guard cables, fencing, and other facilities that are visible above the ground surface.

3. Protection of Underground and Surface Structures:
  - a. Support in place and protect from direct or indirect injury to underground and surface structures located within or adjacent to the limits of the Work. Install such supports carefully and as required by the party owning or controlling such structure. Before installing structure supports, Contractor shall satisfy the Owner Representative that the methods and procedures to be used have been approved by the owner of the structure.
  - b. Avoid moving or in any way changing the property of public utilities or private service corporations without prior written consent of a responsible official of that service or public utility. Representatives of these utilities reserve the right to enter within the limits of this project for the purpose of maintaining their properties, or of making such changes or repairs to their property that may be considered necessary by performance of this Contract.
  - c. Notify the owners and/or operators of utilities and pipelines of the nature of construction operations to be performed and the date or dates on which those operations will be performed. When construction operations are required in the immediate vicinity of existing structures, pipelines, or utilities, give a minimum of 5 working days advance notice. Probe and flag the location of underground utilities prior to commencement of excavation. Keep flags in place until construction operation reach and uncover the utility.
  - d. Assume risks attending the presence or proximity of underground and surface structures within or adjacent to the limits to the Work including but not limited to damage and expense for direct or indirect injury caused by the Work to any structure. Immediately repair damage caused, to the satisfaction of the owner of the damaged structure.
- E. Employ a structural engineer to ensure protection measures are adequate for the safety and integrity of structures and facilities.
- F. Protection of Installed Products.
  1. Provide protection of installed products to prevent damage from subsequent operations. Remove protection facilities when no longer needed, prior to completion of Work.

2. Control traffic to prevent damage to equipment, materials, and surfaces.

### 1.13 ROADS AND PARKING

- A. Prevent interference with traffic and Owner operations on existing roads.
- B. Designate temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking. Locate as approved by Owner.
- C. Minimize use by construction traffic of existing residential streets and driveways.
- D. Do not allow heavy vehicles or construction equipment in existing parking areas.

### 1.14 ENVIRONMENTAL CONTROLS

- A. Provide and maintain methods, equipment, and temporary construction as necessary for controls over environmental conditions at the construction site and adjacent areas.
- B. Comply with statutes, regulations, and ordinances which relate to the proposed Work for the prevention of environmental pollution and preservation of natural resources, including but not limited to the National Environmental Policy Act of 1969, PL 91-190, Executive Order 11514.
- C. Recognize and adhere to the environmental requirements of the Project. Disturbed areas shall be strictly limited to boundaries established by the Contract Documents. Particularly avoid pollution of "on-site" streams, sewers, wells, or other water sources. The City recognizes that the project area has considerable natural value and that construction of projects should be completed with a minimum of impact to the surrounding environment. Attention is directed to this concept. Adopt construction procedures that do not cause unnecessary excavation and filling of the terrain, indiscriminate destruction of vegetation, air or stream pollution, nor the harassment or destruction of wildlife.
- D. Burning of rubbish, debris or waste materials is not permitted.

### 1.15 POLLUTION CONTROL

- A. Provide methods, means, and facilities required to prevent contamination of soil, water or atmosphere by discharge of noxious substances from construction operations.
- B. Provide equipment and personnel to perform emergency measures required to contain any spillage, and to remove contaminated soils or liquids. Excavate and dispose of any contaminated earth off-site in accordance with laws and regulations, and replace with suitable compacted fill and topsoil.

- C. Take special measures to prevent harmful substances from entering public waters. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.
- D. Provide systems for control of atmospheric pollutants.
  - 1. Prevent toxic concentrations of chemicals.
  - 2. Prevent harmful dispersal of pollutants into the environment.
- E. Use equipment during construction that conforms to current Federal, State, and local laws and regulations.

1.16 PEST AND RODENT CONTROL

- A. Provide rodent and pest control as necessary to prevent infestation of construction or storage areas.
- B. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.

1.17 NOISE CONTROL

- A. Provide vehicles, equipment, and construction activities that minimize noise to the greatest degree practicable. Noise levels shall conform to the latest OSHA standards and City Ordinances and in no case will noise levels be permitted which create a nuisance in the surrounding neighborhoods.
- B. Conduct construction operations during daylight hours except as approved by Owner Representative.

1.18 DUST CONTROL

- A. Control objectionable dust caused by operation of vehicles and equipment. Apply water or use other methods, subject to approval of the Owner Representative, which will control the amount of dust generated.

1.19 WATER RUNOFF AND EROSION CONTROL

- A. Provide methods to control surface water, runoff, subsurface water, and water pumped from excavations and structures to prevent damage to the Work, the site, or adjoining properties.
- B. Control fill, grading and ditching to direct water away from excavations, pits, and other construction areas; and to direct drainage to proper runoff courses so as to prevent any erosion, sedimentation or damage.

- C. Provide, operate, and maintain equipment and facilities of adequate size to control surface water.
- D. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas and in conformance with environmental requirements.
- E. Retain existing drainage patterns external to the construction site by constructing temporary earth berms, sedimentation basins, retaining areas, and temporary ground cover as needed to control conditions.
- F. Plan and execute construction and earth work by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.
  - 1. Keep to a minimum the area of bare soil exposed at one time.
  - 2. Provide temporary control measures, such as berms, dikes, and drains.
- G. Construct fills and waste areas by selective placement to eliminate surface silts or clays which will erode.
- H. Inspect earthwork periodically to detect any evidence of the start of erosion. Apply corrective measures as required to control erosion.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION



## SECTION 01505

## MOBILIZATION

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Mobilization of construction equipment and facilities onto the site.

## 1.02 UNIT PRICES

- A. Measurement for mobilization is on a lump sum basis.
- B. Mobilization payments will be included in monthly payment estimates upon written application by Contractor subject to the following provisions:
  - 1. Authorization for payment of 50 percent of the contract price for mobilization will be made upon receipt and approval by Owner's Representative of the following items, as applicable:
    - a. Schedule of values, if required
    - b. Trench safety program
    - c. Construction schedule
    - d. Pre-construction Photographs, if required
  - 2. Authorization for payment of the remaining 50 percent of the Contract Price for mobilization will be made upon completion of Work amounting to 5 percent of the Contract Price less the mobilization unit price.
- C. Mobilization payments will be subject to retainage amounts stipulated in the General Conditions.
- D. De-mobilization costs are incidental and the Contractor is responsible for de-mobilization from the site in conformance with the requirements of these contract documents.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION - NOT USED

END OF SECTION

## SECTION 01526

## TRENCH SAFETY SYSTEMS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Trench safety system for the construction of trench excavations.
- B. Trench safety system for structural excavations which fall under provisions of State and Federal trench safety laws.

## 1.02 UNIT PRICES

- A. Measurement for trench safety systems used on trench excavations is on a linear foot basis, when listed as a separate unit price within the bid proposal, measured along the centerline of the trench, including manholes and other line structures. If no trench safety unit price is listed within the bid proposal, any trench safety required for the work will be considered incidental to the work performed. No separate measurement will be made of shoring systems used by the Contractor for protection unless identified as Special Shoring on the Drawings. Shoring, other than Special shoring, will be included in the trench safety system measurements.
- B. Measurement for Special Shoring system installations shown on the Drawings and included in the bid schedule for trench excavations, is on a square foot basis, or lump sum basis, as specified in the bid proposal.
- C. No payment will be made for trench safety systems for structural excavations under this section. Include payment for trench safety system in applicable structure installation sections.

## 1.03 DEFINITIONS

- A. A trench is defined as a narrow excavation (in relation to its depth) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet.
- B. The trench safety system requirements apply to larger open excavations if the erection of structures or other installations limits the space between the excavation slope and the installation to dimensions equivalent to a trench as defined.
- C. Competent Person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous,

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or dangerous to employees, and who has authorization to take prompt corrective measure to eliminate them.

- D. Trench Safety Systems include both Protective Systems and Shoring Systems but are not limited to sloping, sheeting, trench boxes or trench shields, slide rail systems, sheet piling, cribbing, bracing, shoring, dewatering or diversion of water to provide adequate drainage.
1. Protective Systems: A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of an adjacent structure.
  2. Shoring System: A structure that supports the sides of an excavation and which is designed to prevent cave-ins, or to prevent movements of the ground affecting adjacent installations or improvements.
  3. Special Shoring: A shoring system meeting Special Shoring Requirements for locations identified on the Drawings.

#### 1.04 SUBMITTALS

- A. Submittals shall conform to requirements of sections and provisions of these specifications.
- B. Submit a safety program specifically for the construction of trench excavation. Design the trench safety program to be in accordance with OSHA 29CFR standards governing the presence and activities of individuals working in and around trench excavations, and in accordance with any Special Shoring requirements at locations shown on the Drawings.
- C. Have construction and shop drawings for trench safety systems sealed as required by OSHA by a licensed Professional Engineer retained and paid by the Contractor.
- D. Review of the safety program by the Owner Representative will only be in regard to compliance with the Contract Documents and will not constitute approval by the Owner or the Owner Representative nor relieve Contractor of obligations under State and Federal trench safety laws.

#### 1.05 REGULATORY REQUIREMENTS

- A. Install and maintain trench safety systems in accordance with the provision of Excavations, Trenching, and Shoring, Federal Occupation Safety and Health Administration (OSHA) Standards, 29CFR, Part 1926, Subpart P, as amended, including Final Rule, published in the Federal Register Vol. 54, No. 209 on Tuesday, October 31, 1989 and subsequent updates. The sections that are incorporated into

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these specifications by reference include Sections 1926-650 through 1926-652 and additional sections that may be adopted subsequent to the adoption of this specification.

- B. The Contractor can locate a copy of the OSHA standards included in "Subpart P - Excavations" from the Federal Register Vol. 54, No. 209 is available upon request to Contractors bidding on Owner's projects. The Owner assumes no responsibility for the accuracy of the reproduction. The Contractor is responsible for obtaining a copy of this section of the Federal Register.
- C. The Contractor must comply with any legislation that has been enacted by the Texas Legislature with regard to Trench Safety Systems, is hereby incorporated, by reference, into these specifications. Refer to Texas Health and Safety Code Ann., §756.021 (Vernon 1991).
- D. Reference materials, if developed for a specific project, will be issued with the Bid Documents, including the following:
  - 1. Geotechnical information obtained for use in design of the trench safety system.
  - 2. Special Shoring Requirements, if applicable.

#### 1.06 INDEMNIFICATION

- A. Contractor shall indemnify and hold harmless the Owner, its employees, and agents, from any and all damages, costs (including, without limitation, legal fees, court costs, and the cost of investigation), judgments or claims by anyone for injury or death of persons resulting from the collapse or failure of trenches constructed under this Contract.
- B. Contractor acknowledges and agrees that this indemnity provision provides indemnity for the Owner in case the Owner is negligent either by act or omission in providing for trench safety, including, but not limited to safety program and design reviews, inspections, failures to issue stop work orders, and the hiring of the Contractor.

#### PART 2 PRODUCTS - NOT USED

#### PART 3 EXECUTION

##### 3.01 INSTALLATION

- A. Install and maintain trench safety systems in accordance with provisions of OSHA 29CFR.

- B. Install specially designed trench safety systems shall be installed in accordance with the Contractor's trench excavation safety program for the locations and conditions identified in the program. Install Special Shoring at the locations shown on the Drawings.
- C. Obtain verification from a competent person, as identified in the Contractor's trench excavation safety program, that trench boxes and other pre-manufactured systems are certified for the actual installation conditions.

### 3.02 INSPECTION

- A. Conduct daily inspections by Contractor or Contractor's independently retained consultant, of the trench safety systems to ensure that the installed systems and operations meet OSHA 29CFR and other personnel protection regulations requirements.
- B. If evidence of possible cave-ins or slides is apparent, Contractor shall immediately stop work in the trench and move personnel to safe locations until necessary precautions have been taken to safeguard personnel.
- C. Contractor shall maintain a permanent record of daily inspections. Upon request, the Contractor shall supply to Owner a copy of these records.

### 3.03 FIELD QUALITY CONTROL

- A. Verify specific applicability of the selected or specially designed trench safety systems to each field condition encountered on the project.

END OF SECTION

## SECTION 01535

## TREE AND PLANT PROTECTION

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Tree and plant protection.

## 1.02 PROJECT CONDITIONS

- A. Preserve and protect existing trees and plants to remain from foliage, branch, trunk, or root damage that could result from construction operations.
- B. Prevent following types of damage:
  - 1. Compaction of root zone by foot or vehicular traffic, or material storage.
  - 2. Trunk damage from equipment operations, material storage, or from nailing or bolting.
  - 3. Trunk and branch damage caused by ropes or guy wires.
  - 4. Root poisoning from spilled solvents, gasoline, paint, and other noxious materials.
  - 5. Branch damage due to improper pruning or trimming.
  - 6. Damage from lack of water due to:
    - a. Cutting or altering natural water migration patterns near root zones.
    - b. Failure to provide adequate watering.
  - 7. Damage from alteration of soil PH factor caused by depositing lime, concrete, plaster, or other base materials near roots.
  - 8. Cutting of roots larger than one inch in diameter.

## 1.03 DAMAGE ASSESSMENT

- A. When trees other than those designated for removal are destroyed or badly damaged as a result of construction operations, remove and replace with same size, species, and variety up to and including 8 inches in trunk diameter. Tree larger than 8 inches in

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diameter shall be replaced with an 8-inch diameter tree of the same species and variety and total contract amount will be reduced by an amount determined from the following formula:  $0.7854 \times D^2 \times \$10.00$  where D is diameter in inches of tree or shrub trunk measured 12 inches above grade. Contractor shall contact Owner prior to removing any tree. Owner must approve removal of any trees.

## PART 2 PRODUCTS

### 2.01 MATERIALS

- A. Asphalt paint: Emulsified asphalt or other adhesive, elastic, antiseptic coating formulated for horticultural use on cut or injured plant tissue, free from kerosene and coal creosote.
- B. Burlap: Suitable for use as tree wrapping.
- C. Fertilizer: Liquid containing 20 percent nitrogen, 10 percent phosphorus, and 5 percent potash.
- D. All necessary tree replacements shall be as approved by Owner Representative.

## PART 3 EXECUTION

### 3.01 PROTECTION AND MAINTENANCE OF EXISTING TREES AND SHRUBS

- A. Except for trees and shrubs shown on Drawings to be removed, all trees and shrubs within the project area are to remain and be protected from damage.
- B. For trees to be removed, as designated on the Drawings, perform the following:
  - 1. Stake right-of-way limits and identify any tree of diameter greater than 4 inches which is to be removed. Mark trees prior to felling with an X in orange paint, clearly visible, on the trunk, and at eye level.
  - 2. After marking trees give a minimum of 48-hours notice in writing to the Owner Representative of intent to begin felling operations.
  - 3. Trees whose trunks are only partially in the right-of-way shall be protected and preserved as described in 3.01(C) below.
  - 4. Trees scheduled for removal shall be sawed down and debris hauled from the site the same day. The stump shall be ground to 6" below grade and excess grindings shall be hauled from the site the same day, so that a pile of grindings is not left where the stump was ground. Enough grindings should be left so that an open hole does not remain.

5. Only those trees called out for removal in the drawings shall be removed. Should it be determined that any additional trees must be removed, a permit must be applied for and approved from the City.
  6. Trees designated for removal shall be hauled off and removed at Contractors expense. Disposal methods are to be approved by Owner. Owner reserves the right to take possession of the removed trees.
- C. For trees or shrubs to remain, perform the following:
1. Trim trees and shrubs only as necessary and in accordance with the recommendations of a licensed arborist employed by the Contractor.
    - a. Trees and shrubs requiring pruning for construction should also be pruned for balance as well as to maintain proper form and branching habit.
    - b. Cut limbs at branch collar. No stubs should remain on trees. Branch cuts should not gouge outer layer of tree structure or trunk.
  2. Use extreme care to prevent excessive damage to root systems.
    - a. A licensed arborist shall be employed by the Contractor before any root damage occurs. Should root damage be unavoidable, with licensed arborist approval, the following should be followed:
      - (1). Roots in construction areas will be cut smoothly with a trencher before excavation begins. Do not allow ripping of roots with a backhoe or other equipment.
      - (2). Temporarily cover exposed roots with wet burlap to prevent roots from drying out.
      - (3). Cover exposed roots with soil as soon as possible.
  3. Prevent damage or compaction of root zone (area below dripline) by construction activities.
    - a. Do not allow scarring of trunks or limbs by equipment or other means.
    - b. Do not store construction materials, vehicles, or excavated material under dripline of trees.
    - c. Do not pour liquid materials under dripline.



4. Water and fertilize trees and shrubs that will remain to maintain their health during construction period.
  - a. Supplemental watering of landscaping during construction should be done once every 7 days in cold months and once every 4 days in hotter months.
  - b. This watering shall consist of saturating soils at least 6 to 8 inches beneath surface.
5. Water areas currently being served by private sprinkler systems while systems are temporarily taken out of service to maintain health of existing landscapes.
6. At option of the Contractor and with the Owner Representative's permission, trees and shrubs to remain may be temporarily transplanted and returned to original positions under supervision of a licensed arborist.

### 3.02 PROTECTION

#### A. Protection of Trees or Shrubs in Open Area:

1. Install steel drive-in fence posts in protective circle, approximately 8 feet on center, not closer than 4 feet to trunk of trees or stems of shrubs.
2. Drive steel drive-in fence posts 3 feet minimum into ground, leaving 5 feet minimum above ground.
3. Mount steel hog-wire on fence posts.
4. For trees or shrubs in paved areas, mount concrete-filled steel pipe 2-1/2 inches in diameter minimum in rubber auto tires filled with concrete (movable posts).

#### B. Timber Wrap Protection for Trees in Close Proximity of Moving or Mechanical Equipment and Construction Work:

1. Wrap trunk with layer of burlap.
2. Install 2 x 4's or 2 x 6's (5-foot to 6-foot lengths) vertically, spaced 3 inches to 5 inches apart around circumference of tree trunk.
3. Tie in place with 12 to 9 gage steel wire.

### 3.03 MAINTENANCE OF NEWLY PLANTED TREES

- #### A. Water trees during dry periods.

- B. The Contractor guarantees that trees planted for this Project shall remain alive and healthy at least until the end of a one-year warranty period.
1. Within four weeks of notice from Owner, Contractor shall replace, at his expense, any dead trees or any trees that in the opinion of Owner, have become unhealthy or unsightly or have lost their natural shape as a result of additional growth, improper pruning or maintenance, or weather conditions.
  2. When tree must be replaced, the guarantee period for that tree shall begin on date of replacement of tree, subject to the Owner's inspection, for no less than one year.
  3. Straighten leaning trees and bear entire cost.
  4. Dispose of trees rejected at any time by Owner Representative at Contractor's expense.

END OF SECTION

## SECTION 01563

## CONTROL OF GROUND WATER AND SURFACE WATER

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Dewatering, depressurizing, draining, and maintaining trench and structure excavations and foundation beds in dry and stable condition.
- B. Protecting work against surface runoff and rising flood waters.
- C. Disposing of removed water.

## 1.02 METHOD OF PAYMENT

- A. Subsurface investigation and groundwater control plan preparation and monitoring shall be incidental to the project and shall include subsurface investigation to identify groundwater conditions, design, install, operate, maintain, and monitor ground water control systems.
- B. No separate payment will be made for control of ground water and surface water except for well pointing and piezometer. Include the cost to control ground water and surface water in unit price for work requiring such controls. Dewatering required for the removal of standing water, surface drainage seepage, or to protect against rising waters or floods shall be considered incidental to work.
- C. No separate payment will be made for well pointing unless it is listed as a pay item on the bid documents. If the well pointing is denoted on the bid documents, well pointing shall be paid by the linear foot and measured along the centerline of the utility installed regardless if well pointing is required on one or both sides of the trench.
- D. Piezometers and environmental monitoring wells, if required, shall be paid for by the unit of each.

## 1.03 DEFINITIONS

- A. Ground water control includes both dewatering and depressurization of water-bearing soil layers.
  - 1. Dewatering includes lowering the water table and intercepting seepage which would otherwise emerge from slopes or bottoms of excavations and disposing

of removed water. The intent of dewatering is to increase stability of excavated slopes; prevent dislocation of material from slopes or bottoms of excavations; reduce lateral loads on sheeting and bracing; improve excavating and hauling characteristics of excavated material; prevent failure or heaving of the bottom of excavations; and to provide suitable conditions for placement of backfill materials and construction of structures and other installations.

2. Depressurization includes reduction in piezometric pressure within strata not controlled by dewatering alone, as required to prevent failure or heaving of excavation bottom.
- B. Excavation drainage includes keeping excavations free of surface and seepage water.
- C. Surface drainage includes use of temporary drainage ditches and dikes and installation of temporary culverts and sump pumps with discharge lines as required to protect the Work from any source of surface water.
- D. Equipment and instrumentation for monitoring and control of the ground water control system includes piezometers and monitoring wells, and devices, such as flow meters, for observing and recording flow rates.

#### 1.04 PERFORMANCE REQUIREMENTS

- A. Conduct subsurface investigations to identify groundwater conditions and to provide parameters for design, installation, and operation of groundwater control systems.
- B. Design a ground water control system, compatible with requirements of Federal Regulations 29 CFR Part 1926 and Section 01526 - Trench Safety Systems, to produce the following results:
  1. Effectively reduce the hydrostatic pressure affecting excavations.
  2. Develop a substantially dry and stable subgrade for subsequent construction operations.
  3. Preclude damage to adjacent properties, buildings, structures, utilities, installed facilities, and other work.
  4. Prevent the loss of fines, seepage, boils, quick condition, or softening of the foundation strata.
  5. Maintain stability of sides and bottom of excavations.

- C. Ground water control systems may include single-stage or multiple-stage well point systems, eductor and ejector-type systems, deep wells, or combinations of these equipment types.
- D. Provide drainage of seepage water and surface water, as well as water from any other source entering the excavation. Excavation drainage may include placement of drainage materials, such as crushed stone and filter fabric, together with sump pumping.
- E. Provide ditches, berms, pumps and other methods necessary to divert and drain surface water from excavation and other work areas.
- F. Locate ground water control and drainage systems so as not to interfere with utilities, construction operations, adjacent properties, or adjacent water wells.
- G. Assume sole responsibility for ground water control systems and for any loss or damage resulting from partial or complete failure of protective measures and any settlement or resultant damage caused by the ground water control operations. Modify ground water control systems or operations if they cause or threaten to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells, or affect potentially contaminated areas. Repair damage caused by ground water control systems or resulting from failure of the system to protect property as required.
- H. Provide an adequate number of piezometers installed at the proper locations and depths as required to provide meaningful observations of the conditions affecting the excavation, adjacent structures, and water wells.
- I. Provide environmental monitoring wells installed at the proper locations and depths as required to provide adequate observations of hydrostatic conditions and possible contaminant transport from contamination sources into the work area or into the ground water control system.
- J. Decommission piezometers and monitoring wells installed during design phase studies and left for Contractors monitoring and use.
- K. Contractor is responsible for determining the path for the flow of the diverted water. Further, Contractor shall obtain any easements and permits required for the path and follow all local, state and federal requirements, including requirements for erosion control. Path shall direct water to the bay if possible instead of ocean side of the island.

#### 1.05 SUBMITTALS

- A. Submittals shall conform to all sections and provisions of these contract documents.

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- B. Submit a Ground Water and Surface Water Control Plan for review by the Owner's Representative prior to start of any field work. Submit a plan to include the following:
1. Results of subsurface investigation and description of the extent and characteristics of water bearing layers subject to ground water control.
  2. Names of equipment suppliers and installation subcontractors.
  3. A description of proposed ground water control systems indicating arrangement, location, depth and capacities of system components, installation details and criteria, and operation and maintenance procedures.
  4. A description of proposed monitoring and control system indicating depths and locations of piezometers and monitoring wells, monitoring installation details and criteria, type of equipment and instrumentation with pertinent data and characteristics.
  5. A description of proposed filters including types, sizes, capacities and manufacturer's application recommendations.
  6. Design calculations demonstrating adequacy of proposed systems for intended applications. Define potential area of influence of ground water control operation near contaminated areas.
  7. Operating requirements, including piezometric control elevations for dewatering and depressurization.
  8. Excavation drainage methods including typical drainage layers, sump pump application and other necessary means.
  9. Surface water control and drainage installations.
  10. Proposed methods and locations for disposing of removed water.
- C. Submit the following records upon completed initial installation:
1. Installation and development reports for well points, eductors, and deep wells.
  2. Installation reports and baseline readings for piezometers and monitoring wells.
  3. Baseline analytical test data of water from monitoring wells.
  4. Initial flow rates.

- D. Submit the following records on a weekly basis during operations:
  - 1. Records of flow rates and piezometric elevations obtained during monitoring of dewatering and depressurization. Refer to Paragraph 3.02, Requirements for Eductor, Well Points, or Deep Wells.
  - 2. Maintenance records for ground water control installations, piezometers, and monitoring wells.
- E. Submit the following records at end of work. Decommissioning (abandonment) reports for monitoring wells and piezometers installed by other during the design phase and left for Contractor's monitoring and use.

#### 1.06 ENVIRONMENTAL REQUIREMENTS

- A. Comply with requirements of agencies having jurisdiction.
- B. Comply with Texas Commission on Environmental Quality regulations and Texas Water Well Drillers Association for development, drilling, and abandonment of wells used in dewatering system.
- C. Obtain permit from EPA under the Texas Pollutant Discharge Elimination System (TPDES), for storm water discharge from construction sites. Refer to Section 01565 TPDES Permit Requirements.
- D. Obtain all necessary permits from agencies with control over the use of groundwater and matters affecting well installation, water discharge, and use of existing storm drains and natural water sources. Because the review and permitting process may be lengthy, take early action to pursue and submit for the required approvals.
- E. Monitor ground water discharge for contamination while performing pumping in the vicinity of potentially contaminated sites.
- F. Discharge with high levels of salinity shall be discharge directly to salt water body and shall not be conveyed by surface drainage or open ditch that may kill vegetation.

### PART 2 PRODUCTS

#### 2.01 EQUIPMENT AND MATERIALS

- A. Equipment and materials are at the option of Contractor as necessary to achieve desired results for dewatering. Selected equipment and materials are subject to review of the Owner's Representative through submittals.

- B. Eductors, well points, or deep wells, where used, must be furnished, installed and operated by an experienced contractor regularly engaged in ground water control system design, installation, and operation.
- C. All equipment must be in good repair and operating order.
- D. Sufficient standby equipment and materials shall be kept available to ensure continuous operation, where required.
- E. When well-pointing in residential areas, utilize noise reducing pumps and said pumps must be approved by the Owner.

### PART 3 EXECUTION

#### 3.01 GROUND WATER CONTROL

- A. Perform a subsurface investigation by borings as necessary to identify water bearing layers, piezometric pressures, and soil parameters for design and installation of ground water control systems. Perform pump tests, if necessary to determine the drawdown characteristics of the water bearing layers. The results shall be presented in the Ground Water and Surface Water Control Plan (See Paragraph 1.05B.1).
- B. Provide labor, material, equipment, techniques and methods to lower, control and handle ground water in a manner compatible with construction methods and site conditions. Monitor effectiveness of the installed system and its effect on adjacent property.
- C. Install, operate, and maintain ground water control systems in accordance with the Ground Water and Surface Water Control Plan. Notify Owner's Representative in writing of any changes made to accommodate field conditions and changes to the Work. Provide revised drawings and calculations with such notification.
- D. Provide for continuous system operation, including nights, weekends, and holidays. Arrange for appropriate backup if electrical power is primary energy source for dewatering system.
- E. Monitor operations to verify that the system lowers ground water piezometric levels at a rate required to maintain a dry excavation resulting in a stable subgrade for prosecution of subsequent operations.
- F. Where hydrostatic pressures in confined water bearing layers exist below excavation, depressurize those zones to eliminate risk of uplift or other instability of excavation or installed works. Allowable piezometric elevations shall be defined in the Ground Water and Surface Water Control Plan.



- G. Maintain water level below subgrade elevation. Do not allow levels to rise until foundation concrete has achieved design strength.
- H. During backfilling, dewatering may be reduced to maintain water level a minimum of 5 feet below prevailing level of backfill. However, do not allow that water level to result in uplift pressures in excess of 80 percent of downward pressure produced by weight of structure or backfill in place. Do not allow water levels to rise into cement stabilized sand until at least 48 hours after placement.
- I. Provide a uniform diameter for each pipe drain run constructed for dewatering.
- J. Extent of construction ground water control for structures with a permanent perforated underground drainage system may be reduced, such as for units designed to withstand hydrostatic uplift pressure. Provide a means of draining the affected portion of underground system, including standby equipment. Maintain drainage system during operations and remove it when no longer required.
- K. Remove system upon completion of construction or when dewatering and control of surface or ground water is no longer required.
- L. Backfill all well-pointed holes.
- M. Compact backfill to not less than 95 percent of the maximum dry density in accordance with ASTM D698.

### 3.02 REQUIREMENTS FOR EDUCTOR, WELL POINTS, OR DEEP WELLS

- A. For aboveground piping in ground water control system, include a 12-inch minimum length of clear, transparent piping between every eductor well or well point and discharge header so that discharge from each installation can be visually monitored.
- B. Install sufficient piezometers or monitoring wells to show that all trench or shaft excavations in water bearing materials are predrained prior to excavation. Provide separate piezometers for monitoring of dewatering and for monitoring of depressurization. Install piezometers and monitoring wells for tunneling as appropriate for Contractor's selected method of work.
- C. Install piezometers or monitoring wells not less than one week in advance of beginning the associated excavation as required in Contractor's best judgment.
- D. Dewatering may be omitted for portions of underdrains or other excavations, but only where auger borings and piezometers or monitoring wells show that soil is predrained by an existing system such that the criteria of the ground water control plan are satisfied.

- E. Replace installations that produce noticeable amounts of sediments after development.
- F. Provide additional ground water control installations, or change the methods, in the event that the installations according to the ground water control plan does not provide satisfactory results based on the performance criteria defined by the plan and by the specification. Submit a revised plan. No separate pay for the additional plan.

### 3.03 MAINTENANCE AND OBSERVATION

- A. Conduct daily maintenance and observation of piezometers or monitoring wells while the ground water control installations or excavation drainage are operating in an area. Keep system in good condition.
- B. Replace damaged and destroyed piezometers or monitoring wells with new piezometers or wells as necessary to meet observation schedule.
- C. Cut off piezometers or monitoring wells in excavation areas where piping is exposed, only as necessary to perform observation as excavation proceeds. Continue to maintain and make observations, as specified.
- D. Remove and grout piezometers inside or outside the excavation area when ground water control operations are complete. Remove and grout monitoring wells when directed by the Owner's Representative.

### 3.04 MONITORING AND RECORDING

- A. Monitor and record average flow rate of operation for each deep well, or for each well point or eductor header used in dewatering system. Also monitor and record water level and ground water recovery. These records shall be obtained daily until steady conditions are achieved, and twice weekly thereafter.
- B. Observe and record elevation of water level daily as long as ground water control system is in operation, and weekly thereafter until the Work is completed or piezometers or wells are removed, except when Owner's Representative determines that more frequent monitoring and recording are required. Comply with Owner's Representative's direction for increased monitoring and recording and take measures as necessary to ensure effective dewatering for intended purpose.

### 3.05 SURFACE WATER CONTROL

- A. Intercept surface water and divert it away from excavations through use of dikes, ditches, curb walls, pipes, sumps or other approved means. The requirement includes temporary works required to protect adjoining properties from surface drainage caused by construction operations.

- B. Divert surface water and seepage water into sumps and pump it into drainage channels or storm drains, when approved by agencies having jurisdiction. Provide settling basins when required by such agencies.

**END OF SECTION**

## SECTION 01564

## WASTE MATERIAL DISPOSAL

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Disposal of waste material and salvageable material.

## 1.02 UNIT PRICES

- A. No separate payment will be made for waste material disposal under this Section. Include payment in unit price for related work.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all Sections and provisions of these contract documents.
- B. Obtain and submit disposal permits for proposed disposal sites if required by local ordinances. Disposed material placed as fill shall be approved by the Owner and shall be in accordance with all local, state and federal requirements.
- C. Submit a copy of written permission from 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.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

## 3.01 SALVAGEABLE MATERIAL

- A. Excavated material: When indicated on Drawings, load, haul, and deposit excavated material at a location or locations shown on Drawings outside the limits of Project.
- B. Base, surface, and bedding material: Deliver shell, gravel, bituminous, or other base and surfacing material designated for salvage to the location designated by the Owner's Representative.
- C. Pipe culvert: Deliver culverts designated for salvage to Owner's storage area.
- D. Other salvageable materials: Conform to requirements of individual Specification Sections.

01564-1

- E. Coordinate delivery of salvageable material with Owner's Representative.

3.02 EXCESS MATERIAL

- A. Vegetation, rubble, broken concrete, debris, asphaltic concrete pavement, excess soil, and other materials not designated for salvage, shall become the property of Contractor and shall be removed from the job site and legally disposed of at no cost to the Owner. Upon Owner's request, Contractor to provide disposal site of material.
- B. Excess soil may be deposited on private property adjacent to the Project when written permission is obtained from property owner and permits are obtained. See Paragraph 1.03 C 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.

END OF SECTION

SECTION 01565

TPDES REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Documentation to be prepared and signed by Contractor before conducting construction operations, in accordance with the Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit Number TXR 150000 issued February 15, 2008 (the Construction General Permit) or latest revision.
- B. Implementation, maintenance inspection, and termination 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 the Contract.
- C. Review implementation of the Storm Water Pollution Prevention Plan (SW3P or SWPPP) in a meeting with Project Manager prior to start of construction.

1.02 DEFINITIONS

- A. Commencement of Construction Activities: The exposure of soil resulting from activities such as clearing, grading, and excavating.
- B. Large Construction Activity: Project that:
  - 1. disturbs five acres or more, or
  - 2. disturbs less than five acres but is part of a larger common plan of development that will disturb five acres or more of land.
- C. Small Construction Activity: Project that:
  - 1. disturbs one or more acres but less than five acres, or
  - 2. disturbs less than one acre but is part of a larger common plan of development that will ultimately disturb one or more acres but less than five acres.
- D. TPDES Operator:
  - 1. Provide the name and contact information for the designated TPDES operator.
  - 2. The TPDES operator is the person or persons who have day-to-day operational control of the construction activities which are necessary to ensure compliance with the SW3P for the site or other Construction General Permit conditions.

## PART 2 PRODUCTS - Not Used

## PART 3 EXECUTION

## 3.01 SITE SPECIFIC STORM WATER POLLUTION PREVENTION PLAN (SW3P)

- A. Prepare a SW3P following Part III of the Construction General Permit, if required.
- B. Update or revise the SW3P as needed during the construction following Part III, Section E of the Construction General Permit.
- C. Submit the SW3P and any updates or revisions to Owner's Representative for review and address comments prior to commencing, or continuing, construction activities.

## 3.02 NOTICE OF INTENT FOR LARGE CONSTRUCTION ACTIVITY

- A. Fill out, sign, and date TCEQ Form 20022 (03/05/2008) "Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity under the TPDES Construction General Permit (TXR 150000)", **Attachment 1** of this section.
- B. Transmit the signed Contractor's copy of TCEQ Form 20022 (03/05/2008), along with a \$325.00 check or required fee, made out to Texas Commission on Environmental Quality, and the completed Payment Submittal Form to the Owner's Representative.
- C. Owner's Representative will complete a separate TCEQ Form 20022 (03/05/2008) for City's Notice of Intent, and will submit both Notices, along with checks for application fees, to the TCEQ.
- D. Submission of the Notice of Intent form by both the Contractor to TCEQ is required a minimum of two days before Commencement of Construction Activities.
- E. Fill out, sign, and date the "Construction Site Notice", Attachment 2A to TPDES General Permit TXR 150000, "Construction Site Notice", **Attachment 2A** of this section.
- F. Transmit the signed Construction Site Notice to at least seven days prior to Commencement of Construction Activity.

## 3.03 CONSTRUCTION SITE NOTICE FOR SMALL CONSTRUCTION ACTIVITY

- A. Fill out, sign, and date the "Construction Site Notice", Attachment 2B to TPDES General Permit TXR 150000, "Construction Site Notice", **Attachment 2B** of this section.
- B. Transmit the signed Construction Site Notice to Owner's Representative at least seven days prior to Commencement of Construction Activity.

## 3.04 CERTIFICATION REQUIREMENTS

- A. Fill out TPDES Operator's Information form, **Attachment 3** of this section, including Contractor's name, address, and telephone number, and the names of persons or firms

responsible for maintenance and inspection of erosion and sediment control measures. Use multiple copies as required to document full information.

- B. Contractor and Subcontractors shall sign and date the Contractor's / Subcontractor's Certification for TPDES Permitting, **Attachment 4** of this section. Include this certification with other Project certification forms.
- C. Submit properly completed certification forms to Owner's Representative for review before beginning construction operations.
- D. Conduct inspections in accordance with TCEQ requirements. Ensure persons or firms responsible for maintenance and inspection of erosion and sediment control measures read, fill out, sign, and date the Erosion Control Contractor's Certification for Inspection and Maintenance. Use the EPA NPDES Construction Inspection Form, **Attachment 5** of this section; and the Storm Water Pollution Prevention Plan Construction Site Inspection Report, **Attachment 6** of this section to record maintenance inspections and repairs.

### 3.05 RETENTION OF RECORDS

- A. Keep a copy of this document and the SW3P in a readily accessible location at the construction site from the Commencement of Construction Activity until submission of the Notice of Termination (NOT) for Storm Water Discharges Associated with Construction Activity under TPDES Construction General Permit (TXR 150000). Contractors with day-to-day operational control over SW3P implementation shall have a copy of the SW3P available at a central location, on-site, for the use of all operators and those identified as having responsibilities under the SW3P. Upon submission of the NOT, submit all required forms and a copy of the SW3P with all revisions to the Owner's Representative.

### 3.06 REQUIRED NOTICES

- A. Post the following notices from effective date of the SW3P until date of final site stabilization as defined in the Construction General Permit:
  - 1. Post the TPDES permit number for Large Construction Activity, or a signed TCEQ Construction Site Notice for Small Construction Activity. Signed copies of the Contractor's NOI must also be posted.
  - 2. Post notices near the main entrance of the construction site in a prominent place for public viewing. Post name and telephone number of Contractor's local contact person, brief project description and location of the SW3P.
    - a. If posting near a main entrance is not feasible due to safety concerns, coordinate posting of notice with Owner's Representative to conform to requirements of the Construction General Permit.
    - b. If Project is a linear construction project (e.g.: road, utilities, etc.), post notice in a publicly accessible location near active construction. Move notice as necessary.
  - 3. Post a notice to equipment and vehicles operators, instructing them to stop, check, and clean tires of debris and mud before driving onto traffic lanes. Post at each



- 4. stabilized construction exit area.  
Post a notice of waste disposal procedures in a readily visible location on site.



3.07 ON-SITE WASTE MATERIAL STORAGE

- A. On-site waste material storage shall be self-contained and shall satisfy appropriate local, state, and federal rules and regulations.
- B. Prepare list of waste material to be stored on-site. Update list as necessary to include up-to-date information. Keep a copy of updated list with the SW3P.
- C. Prepare description of controls to reduce Pollutants generated from on-site storage. Include storage practices necessary to minimize exposure of materials to storm water, and spill prevention and response measures consistent with industrial program best management practices. Keep a copy of the description with the SW3Ps.

3.08 NOTICE OF TERMINATION

- A. Submit a NOT, **Attachment 7** of this section, to Owner's Representative within 30 days after:
  - 1. Final stabilization has been achieved on all portions of the site that are the responsibility of the Contractor; or
  - 2. Another operator has assumed control over all areas of the site that have not been stabilized; and
  - 3. All silt fences and other temporary erosion controls have either been removed, scheduled to be removed as defined in the SW3P, or transferred to a new operator in the new operator has sought permit coverage.
- B. Contractor will complete NOT and submit Contractor and City's notices to the TCEQ and MS4 entities.

ATTACHMENT 1

	<p><b>Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity under TPDES General Permit (TXR150000)</b></p>	<p><b>TCEQ Office Use Only</b>                  Permit No.: TXR15                  RN:                  CN:                  Ref No:</p>																				
	<p><b>Sign up now for ePermits NOI at <a href="https://www6.tceq.state.tx.us/steers/">https://www6.tceq.state.tx.us/steers/</a> Get Instant Permit Coverage and only pay a \$225 application fee.</b></p> <p>If filing a paper NOI you can pay the application fee on line? Go to <a href="https://www6.tceq.state.tx.us/epay/">https://www6.tceq.state.tx.us/epay/</a></p> <p>Select Fee Type: GENERAL PERMIT CONSTRUCTION STORM WATER DISCHARGE NOI APPLICATION</p>	<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>Reset Form</b></div>																				
<p><b>IMPORTANT:</b></p> <ul style="list-style-type: none"> <li>•Use the INSTRUCTIONS to fill out each question in this form.</li> <li>•Use the attached CUSTOMER CHECKLIST to make certain all you filled out all required information.</li> <li>•Incomplete applications WILL delay approval or result in automatic Denial.</li> </ul>																						
<p><b>Renewal of General Permit</b></p> <p>Is this NOI to renew an ACTIVE permit?</p> <p><input type="checkbox"/> Yes - What is your permit number? Permit No. TXR15 _____</p> <p><input type="checkbox"/> No - a permit number will be issued.</p>																						
<p><b>Application Fee if mailing a paper NOI:</b></p> <p>You must pay the \$325 Application Fee to TCEQ for the application to be considered complete. Payment and NOI must be mailed to separate addresses. See instructions for correct mailing addresses.</p> <p><b>Provide your payment information below, for us to verify payment of the application fee:</b></p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;"><input type="checkbox"/> Mailed:</td> <td style="width:30%;">Check/Money Order No.:</td> <td style="width:60%;">Company Name on checking account:</td> </tr> <tr> <td><input type="checkbox"/> EPAY:</td> <td>Voucher No.:</td> <td>Is the Payment Voucher copy attached? <input type="checkbox"/> Yes</td> </tr> </table>			<input type="checkbox"/> Mailed:	Check/Money Order No.:	Company Name on checking account:	<input type="checkbox"/> EPAY:	Voucher No.:	Is the Payment Voucher copy attached? <input type="checkbox"/> Yes														
<input type="checkbox"/> Mailed:	Check/Money Order No.:	Company Name on checking account:																				
<input type="checkbox"/> EPAY:	Voucher No.:	Is the Payment Voucher copy attached? <input type="checkbox"/> Yes																				
<p><b>A. OPERATOR (applicant)</b></p> <p>1. If the applicant is currently a customer with TCEQ, what is the Customer Number (CN) issued to this entity?                  CN <span style="color: blue;">(Search Central Registry)</span></p> <p>2. What is the Legal Name of the entity (applicant) applying for this permit?</p> <p><i>(The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal document forming the entity.)</i></p> <p>3. What is the name and title of the person signing the application?                  (The person must be an official meeting signatory requirements in TAC 305.43(a).)</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Name:</td> <td style="width:50%;">Job Title:</td> </tr> </table> <p>4. What is the Operator's (applicant) mailing address as recognized by the US Postal Service? (verify at <a href="http://USPS.com">USPS.com</a>)</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:40%;">Address:</td> <td style="width:60%;">Suite No./Bldg. No./Mail Code:</td> </tr> <tr> <td>City:</td> <td>State: ZIP Code:</td> </tr> <tr> <td>Country Mailing Information (if outside USA):</td> <td>Country Code: Postal Code:</td> </tr> </table> <p>5. Phone No.: ( ) Extension:</p> <p>6. Fax No.: ( ) E-mail Address:</p> <p>7. Indicate the type of Customer:</p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> Individual</td> <td><input type="checkbox"/> Sole Proprietorship-D.B.A.</td> <td><input type="checkbox"/> Limited Partnership</td> </tr> <tr> <td><input type="checkbox"/> Corporation</td> <td><input type="checkbox"/> Federal Government</td> <td><input type="checkbox"/> General Partnership</td> </tr> <tr> <td><input type="checkbox"/> State Government</td> <td><input type="checkbox"/> County Government</td> <td><input type="checkbox"/> City Government</td> </tr> <tr> <td><input type="checkbox"/> Other Government</td> <td><input type="checkbox"/> Other (describe):</td> <td></td> </tr> </table>			Name:	Job Title:	Address:	Suite No./Bldg. No./Mail Code:	City:	State: ZIP Code:	Country Mailing Information (if outside USA):	Country Code: Postal Code:	<input type="checkbox"/> Individual	<input type="checkbox"/> Sole Proprietorship-D.B.A.	<input type="checkbox"/> Limited Partnership	<input type="checkbox"/> Corporation	<input type="checkbox"/> Federal Government	<input type="checkbox"/> General Partnership	<input type="checkbox"/> State Government	<input type="checkbox"/> County Government	<input type="checkbox"/> City Government	<input type="checkbox"/> Other Government	<input type="checkbox"/> Other (describe):	
Name:	Job Title:																					
Address:	Suite No./Bldg. No./Mail Code:																					
City:	State: ZIP Code:																					
Country Mailing Information (if outside USA):	Country Code: Postal Code:																					
<input type="checkbox"/> Individual	<input type="checkbox"/> Sole Proprietorship-D.B.A.	<input type="checkbox"/> Limited Partnership																				
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<input type="checkbox"/> State Government	<input type="checkbox"/> County Government	<input type="checkbox"/> City Government																				
<input type="checkbox"/> Other Government	<input type="checkbox"/> Other (describe):																					

ATTACHMENT 1

8. Independent Operator: <input type="checkbox"/> Yes <input type="checkbox"/> No (If governmental entity, subsidiary, or part of a larger corporation, check "No".)		
9. Number of Employees: <input type="checkbox"/> 0-20; <input type="checkbox"/> 21-100; <input type="checkbox"/> 101-250; <input type="checkbox"/> 251-500; or <input type="checkbox"/> 501 or higher		
10. Customer Business Tax and Filing Numbers (This item is not applicable to Individuals, Government, GP or Sole Proprietor.) <b>REQUIRED</b> for Corporations and Limited Partnerships (Verify the entity's status and filing no. with TX SOS at 512/463-5555)		
State Franchise Tax ID Number:		Federal Tax ID:
TX SOS Charter (filing) Number:		DUNS Number (if known):
<b>B. APPLICATION CONTACT</b>		
If TCEQ needs additional information regarding this application, who should be contacted?		
1. Name:	Title:	Company:
2. Phone No.: ( )		Extension:
3. Fax No.:		E-mail Address:
<b>C. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE</b>		
1. TCEQ Issued RE Reference Number (RN): RN (Search <a href="#">Central Registry</a> )		
2. Name of Project or Site (the name as known by the community where this facility/project is located):  (example: phase and name of subdivision or name of project that's unique to the site)		
3. Does the site have a physical address? If Yes, complete <b>Section A</b> for a physical address. If No, complete <b>Section B</b> for site location information.		
<b>Section A:</b> Enter the physical address for the site. (verify it with <a href="#">USPS.com</a> or other delivery source)		
Street Number:		Street Name:
City:		ZIP Code:
<b>Section B:</b> Enter the site location information.		
If no physical address (Street Number & Street Name), provide a written location access description to the site: (Ex.: phase 1 of Woodland subdivision located 2 miles west from intersection of Hwy 290 & IH35 accessible on Hwy 290 South)		
City where the site is located or nearest city to site:		ZIP Code where site is located:
4. Identify the county where the site is located:		
5. Latitude:		Longitude:
6. What is the primary business of this entity? In your own words, briefly describe the primary business of the Regulated Entity: (Do not repeat the SIC and NAICS code)		
7. What is the mailing address for the regulated entity?		
Is the RE mailing address the same as the Operator? <input type="checkbox"/> Yes, address is the same as Operator <input type="checkbox"/> No, provide the address		
Street Number:		Street Name:
City:	State:	ZIP Code:
<b>D. GENERAL CHARACTERISTICS</b>		
1. Is the site located on Indian Country Lands? <input type="checkbox"/> No <input type="checkbox"/> Yes – If Yes, do not submit this NOI. Contact EPA, Region VI If the site is on Indian country lands, you must obtain authorization through EPA, Region VI.		
2. What is the Standard Industrial Classification (SIC) code (see instructions for common codes): (Search <a href="#">Osha.gov</a> )		
Primary: _____		Secondary: _____

ATTACHMENT 1

3(a) What is the total number of acres disturbed? \_\_\_\_\_

3(b) Is the project site part of a larger common plan of development or sale?  Yes  No  
 If Yes, the total number of acres disturbed can be less than 5 acres.  
 If No, the total number of acres disturbed must be 5 or more. If the total number of acres disturbed is less than 5 then the project site does not qualify for coverage through this Notice of Intent. Coverage will be denied. See the requirements in the general permit for small construction sites.

**4. Discharge Information (all information MUST be provided or the permit will be denied)**

4(a) What is the name of the water body(s) to receive the storm water runoff or potential runoff from the site?  
 \_\_\_\_\_

4(b) What is the segment number(s) of the classified water body(s) that the discharge or potential discharge will eventually reach?  
 \_\_\_\_\_

4(c) Are any of the surface water bodies receiving discharges from the construction site on the latest EPA-approved CWA 303(d) list of impaired waters?  
 Yes  No  
 If Yes, provide the name of the impaired water body(s). \_\_\_\_\_

4(d) Is the discharge into an MS4?  Yes  No  
 If Yes, what is the name of the MS4 Operator? \_\_\_\_\_  
 Note: The general permit requires you to send a copy of the NOI to the MS4 Operator.

4(e) Is the discharge or potential discharge within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer?  
 Yes  No  
 If the answer is Yes, please note that a copy of the agency approved Plan required by the Edwards Aquifer Rule (30 TAC Chapter 213) must be included or referenced in the Storm Water Pollution Prevention Plan.

**E. CERTIFICATION**

Check "Yes" to the certifications below. **Failure to certify to all items will result in denial.**

<input type="checkbox"/> Yes	I certify that I have obtained a copy and understand the terms and conditions of the <a href="#">general permit (TXR150000)</a> .
<input type="checkbox"/> Yes	I certify that the full legal name of the entity (Operator) applying for this permit has been provided and is legally authorized to do business in Texas.
<input type="checkbox"/> Yes	I understand that a Notice of Termination (NOT) must be submitted when this authorization is no longer needed.
<input type="checkbox"/> Yes	I certify that a storm water pollution prevention plan has been developed and implemented prior to construction, and that is compliant with any applicable local sediment and erosion control plans and prepared and implemented as required in the general permit TXR150000.

**Operator Certification:**

I, \_\_\_\_\_  
 Typed or printed name (Required & must be legible) Title (Required & legible)

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under [30 Texas Administrative Code §305.44](#) to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
 (Use blue ink)

ATTACHMENT 1

**Did you complete everything? Use this checklist to be sure!**

Are you ready to mail your form to TCEQ? Go to the General Information Section of the Instructions for mailing addresses.

Customer GP Notice of Intent Checklist TXRI50000	
√	This checklist is for use by the operator to ensure a complete application. Missing information may result in denial of coverage under the permit. (See NOI Process description in the Instructions)
<input type="checkbox"/>	<b>Application Fee of \$325.00</b> was mailed separately to TCEQ's Cashiers's Office (separate from the NOI) or the EPAY payment voucher is attached.
√	<b>OPERATOR INFORMATION</b> - Confirm each item is complete: <input type="checkbox"/> Customer Number (CN) issued by TCEQ Central Registry <input type="checkbox"/> Legal Name as filed to do business in Texas (Call TX SOS 512/463-5555) <input type="checkbox"/> Name and Title of person signing the application. This person must meet signatory requirements in 30 TAC Section 305.43 <input type="checkbox"/> Operator Mailing Address is complete & verifiable with USPS. <a href="http://www.usps.com">www.usps.com</a> <input type="checkbox"/> Phone Numbers/E-mail Address <input type="checkbox"/> Type of Operator (Entity Type) <input type="checkbox"/> Independent Operator <input type="checkbox"/> Number of Employees <input type="checkbox"/> For Corporations or Limited Partnerships – Tax ID and SOS Filing numbers are REQUIRED
	<b>Application Contact person</b> we can call for questions about this application.
√	<b>REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE</b> - Confirm each item is complete: <input type="checkbox"/> Regulated Entity Reference Number (RN) (if site is already regulated by TCEQ) <input type="checkbox"/> Site/Project Name/Regulated Entity <input type="checkbox"/> Site/Project (RE) Physical Address Please do not use a rural route or post office box for a site location <input type="checkbox"/> Or if no physical address, the location information that includes description, zip code and city is listed. <input type="checkbox"/> Latitude and Longitude <a href="#">TCEQ USGS Topographic Map Viewer</a> or <a href="#">TerraServer-USA</a> <input type="checkbox"/> Business description <input type="checkbox"/> Site Mailing Address (checked same as operator or complete & verifiable with USPS. <a href="http://www.usps.com">www.usps.com</a> )
√	<b>GENERAL CHARACTERISTICS</b> - Confirm each item is complete: <input type="checkbox"/> Indian Country Lands –the facility is not on Indian Country Lands <input type="checkbox"/> Standard Industrial Classification (SIC) code <a href="http://www.osha.gov/oshstats/sicser.html">www.osha.gov/oshstats/sicser.html</a> <input type="checkbox"/> Acres Disturbed is provided and qualifies for coverage through a NOI. <input type="checkbox"/> Common plan of development or for sale? <input type="checkbox"/> Discharge Information: <input type="checkbox"/> receiving water body <input type="checkbox"/> segment number(s) is REQUIRED <input type="checkbox"/> water body on the latest EPA-Approved Clean Water Act 303(d) list of impaired waters <input type="checkbox"/> MS4 Operator <input type="checkbox"/> Edwards Aquifer Rule
<input type="checkbox"/>	<b>CERTIFICATION</b> Certification statements have been checked indicating "Yes" Signature meets <a href="#">30 Texas Administrative Code (TAC) §305.44</a> and is original and has been provided for the Operator.

ATTACHMENT 1

**Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity under TPDES General Permit (TXR150000)  
General Information and Instructions**

**GENERAL INFORMATION**

Where to Send the Notice of Intent (NOI) and other related forms:

**BY REGULAR U.S. MAIL**

Texas Commission on Environmental Quality  
Storm Water Processing Center (MC228)  
P.O. Box 13087  
Austin, TX 78711-3087

**BY OVERNIGHT/EXPRESS MAIL**

Texas Commission on Environmental Quality  
Storm Water Processing Center (MC228)  
12100 Park 35 Circle  
Austin, TX 78753

TCEQ Contact list:

Application Processing Questions relating to the status and form requirements:	512/239-3700, 512/245-0130 or <a href="mailto:swpermit@tceq.state.tx.us">swpermit@tceq.state.tx.us</a>
Technical Questions relating to the general permit:	512/239-4671 or <a href="mailto:swgp@tceq.state.tx.us">swgp@tceq.state.tx.us</a>
Environmental Law Division:	512/239-0600
Records Management for obtaining copies of forms submitted to TCEQ:	512/239-0900
Information Services for obtaining reports from program data bases (as available):	512/239-DATA (3282)
Financial Administration's Cashier's office:	512/239-0357 or 512/239-0187

Notice of Intent Process:

When your NOI is received by the program, the form will be processed as follows:

- 1. Administrative Review:** Each item on the form will be reviewed for a complete response. In addition, the operator's legal name must be verified with Texas Secretary of State as valid and active (if applicable). The address(s) on the form must be verified with the US Postal service as an address receiving regular mail delivery. Never give an overnight/express mailing address.
- 2. Notice of Deficiency:** If an item is incomplete or not verifiable as indicated above, a notice of deficiency (NOD) will be mailed to the operator. The operator will have 30 days to respond to the NOD. The response will be reviewed for completeness.
- 3. Acknowledgment of Coverage:** An Acknowledgment Certificate will be mailed to the operator. This certificate acknowledges coverage under the general permit.

-or-

**Denial of Coverage:** If the application is too incomplete to process, or the operator fails to respond to the NOD or the response is inadequate, coverage under the general permit may be denied. If coverage is denied, the operator will be notified.

**General Permit (Your Permit)**

**If filing the NOI through ePermits online application,** coverage under the general permit begins the day the NOI is submitted to TCEQ through epermits. **Sign up now for on line NOI at <https://www6.tceq.state.tx.us/steers/>**

If mailing a paper NOI, coverage under the general permit begins **seven (7) days after a completed NOI is postmarked for delivery to the TCEQ.** You should have a copy of your general permit when submitting your application.

You may view and print your permit for which you are seeking coverage, on the TCEQ web site [http://www.tceq.state.tx.us/permitting/water\\_quality/stormwater/TXR15\\_AIR.html](http://www.tceq.state.tx.us/permitting/water_quality/stormwater/TXR15_AIR.html).

**General Permit Forms**

The Notice of Intent (NOI), [Notice of Termination \(NOT\)](#), and [Notice of Change \(NOC\)](#) #20391 with instructions are available in Adobe Acrobat PDF format on the TCEQ web site [http://www.tceq.state.tx.us/permitting/water\\_quality/stormwater/TXR15\\_AIR.html](http://www.tceq.state.tx.us/permitting/water_quality/stormwater/TXR15_AIR.html). Sign up now for on line Notice of Termination application at <https://www6.tceq.state.tx.us/steers/>

**Change in Operator**

An authorization under the general permit is not transferable. If the operator or owner of the regulated entity changes, the present permittee must submit a Notice of Termination and the new operator must submit a Notice of Intent. The NOT and NOI must be submitted not later than 10 days prior to the change in Operator status.

ATTACHMENT 1

**TCEQ Central Registry Core Data Form**  
 The Core Data Form has been incorporated into this form. **Do not send a core data form to TCEQ.**

After final acknowledgment of coverage under the general permit, the program will assign a Customer Number (CN) and Regulated Entity Number (RN). For Construction Permits, a new RN will be assigned for each Notice of Intent filed with TCEQ, since construction project sites can overlap with other Customers. The RN assigned to your construction project will not be assigned to any other TCEQ authorization.

You can find the information on the Central Registry web site at [www4.tceq.state.tx.us/crpub](http://www4.tceq.state.tx.us/crpub). You can search by the Regulated Entity (RN), Customer Number (CN) or Name (Permittee), or by your permit number under the search field labeled "Additional ID". Capitalize all letters in the permit number.

The Customer (Permittee) is responsible for providing consistent information to the TCEQ, and for updating all CN and RN data for all authorizations as changes occur. For General Permits, a Notice of Change form must be submitted to the program area.

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**Application Fees:**

**\$225.00 application fee** if submitting the NOI through ePermits.  
**\$325.00 application fee** if submitting a paper NOI for processing.

The application fee is required to be paid at the time the NOI is submitted. Failure to submit payment at the time the application is filed will cause delay in acknowledgment or denial of coverage under the general permit.

- **Mailed Payments:**  
**DO NOT mail your check with the original Notice of Intent application.**  
 Use the attached Application Fee payment submittal form if mailing the payment. Do not include a copy of the NOI.

<p><b>BY REGULAR U.S. MAIL</b>                  Texas Commission on Environmental Quality                  Financial Administration Division                  Cashier's Office, MC-214                  P.O. Box 13088                  Austin, TX 78711-3088</p>	<p><b>BY OVERNIGHT/EXPRESS MAIL</b>                  Texas Commission on Environmental Quality                  Financial Administration Division                  Cashier's Office, MC-214                  12100 Park 35 Circle                  Austin, TX 78753</p>
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- **ePAY Electronic Payment:**  
 Go to <https://www6.tceq.state.tx.us/epay>  
 Select Water Quality, then select the fee category "GENERAL PERMIT CONSTRUCTION STORM WATER DISCHARGE NOI APPLICATION".  
 You must include a copy of the payment voucher with your NOI. Your NOI will not be considered complete without the payment voucher.

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**The Annual Water Quality Fee has been consolidated into the Application Fee effective March 5, 2008. An annual fee will not be assessed and billed to operators on 9/1/2008. This does not relieve the operator of fees due for prior fiscal year assessments.**

The operator will continue to receive an invoice for payment of any past due annual fee. A 5% penalty will be assessed if the payment is received by TCEQ after the due date. Annual fee assessments cannot be waived as long as the authorization under the general permit was active on September 1 of the FY billed.

## ATTACHMENT 1

## INSTRUCTIONS FOR FILLING OUT THE NOI FORM

**A. OPERATOR** (As defined in the general permit.)1. TCEQ Issued Customer Number (CN)

TCEQ's Central Registry will assign each customer a number that begins with "CN," followed by nine digits. This is not a permit number, registration number, or license number.

- If this customer has not been assigned a Customer Reference Number, leave the space for the Customer Reference Number blank.
- If this customer has already been assigned this number, enter the operator's Customer Reference Number in the space provided.

## 2. Legal Name

Provide the legal name of the facility operator, as authorized to do business in Texas. The name must be provided exactly as filed with the Texas Secretary of State (SOS), or on other legal documents forming the entity, that is filed in the county where doing business. You may contact the SOS at 512/463-5555, or go to <http://www.sos.state.tx.us/corp/contact.shtml> for more information related to filing in Texas. If filed in the county where doing business, provide a copy of the legal documents showing the legal name.

3. Name and Title of person signing the Notice of Intent application form. Signature meets 30 Texas Administrative Code (TAC) §305.44

## 4. Operator Mailing Address

Provide a complete mailing address for receiving mail from the TCEQ. The address must be verifiable with the US Postal Service at [www.usps.com](http://www.usps.com), for regular mail delivery (not overnight express mail). If you find that the address is not verifiable using the USPS web search, please indicate the address is used by the USPS for regular mail delivery.

## 5. Phone Number

This number should correspond to this customer's mailing address given earlier. Enter the area code and phone number here. Leave "Extension" blank if this customer's phone system lacks this feature.

## 6. Fax Number and E-mail Address

This number and E-mail address should correspond to operator's mailing address provided earlier. (Optional Information)

## 7. Type of Entity

Check only one box that identifies the type of entity. Use the descriptions below to identify the appropriate entity type:

Individual is a customer who has not established a business, but conducts an activity that needs to be regulated by the TCEQ.

Sole Proprietorship— D.B.A. is a customer that is owned by only one person and has not been incorporated. This business may:

- be under the person's name
- have its own name ("doing business as," or d.b.a.)
- have any number of employees

Partnership is a customer that is established as a partnership as defined by the Texas Secretary of State's Office.

Corporation is a customer that meets all of these conditions:

- is a legally incorporated entity under the laws of any state or country
- is recognized as a corporation by the Texas Secretary of State
- has proper operating authority to operate in Texas.

Government - Federal, state, county, or city government (as appropriate)

the customer is either an agency of one of these levels of government or the governmental body itself.

Other is Estate, Trust, etc.

the customer does not fit one of the above descriptions. Enter a short description of the type of customer in the blank provided.

## 8. Independent Operator

Check "No" if this customer is a subsidiary, part of a larger company, or is a governmental entity. Otherwise, check "Yes."

## 9. Number of Employees

Check one box to show the number of employees for this customer's entire company, at all locations. This is not necessarily the number of employees at the site named in the NOI.

## 10. State Franchise Tax ID Number

Corporations and limited liability companies that operate in Texas are issued a franchise tax identification number. If this customer is a corporation or limited liability company, enter this number here.

## Federal Tax ID

All businesses, except for some small sole proprietors, individuals, or general partnerships should have a federal taxpayer identification number (TIN).

Enter this number here. Use no prefixes, dashes, or hyphens. Sole proprietors, individuals, or general partnerships do not need to provide a federal tax ID.

## TX SOS Charter (filing) Number

Corporations and Limited Partnerships required to register with the Texas Secretary of State are issued a charter or filing number. You may obtain further information by calling SOS at 512/463-5555 <http://www.sos.state.tx.us/corp/contact.shtml>.



## ATTACHMENT 1

DUNS Number Most businesses have a DUNS (Data Universal Numbering System) number issued by Dun and Bradstreet Corp. If this customer has one, enter it here.
<b>B. Application Contact</b> Provide the name, title and communication information of the person that TCEQ can contact for additional information regarding this application. <b>If the application is missing information and there is no contact person to call, the application may be denied.</b>
<b>C. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE</b>
1. <u>Regulated Entity Reference Number (RN)</u> This is a number issued by TCEQ's Central Registry to sites (a location where a regulated activity occurs) regulated by TCEQ. This is not a permit number, registration number, or license number. <ul style="list-style-type: none"> <li>• If this Regulated Entity has not been assigned a Regulated Entity Number, leave this space blank.</li> <li>• If this customer has been assigned this number, enter the operator's Regulated Entity Number.</li> </ul>
2. Site/Project Name/Regulated Entity If the site is already regulated by TCEQ, use the same name as on the existing <u>Regulated Entity Reference Number (RN)</u> .  If new, provide the name of the site as known by the public in the area where the site is located. The name you provide on this application will be used in the TCEQ Central Registry as the Regulated Entity.
3. Site/Project (RE) Physical Address  <b>Section A:</b> Enter the complete physical address of where the site is located. This must be a street number and street name for a complete physical address. This address must be validated through US Postal Service or your local police (911 service) as a valid address. Please confirm this to be a complete and valid address. In some rural areas, new addresses are being assigned to replace rural route addresses. <b>Please do not use a rural route or post office box for a site location.</b>  <b>Section B:</b> If a site does not have an actual physical address that includes a street number and street name, then provide a complete written location access description, and the zip code and city where the site is located. For example: "The site is located 2 miles west from intersection of Hwy 290 & IH35, located on the southwest corner of the Hwy 290 South bound lane." This includes authorizations for construction projects such as highways and subdivision.
4. Identify the County where the site is located. If the site covers more than one county, provide the county that is most affected by the authorized activity and list the additional county(s) as secondary.
5. Latitude and Longitude Enter the latitude and longitude of the site in either degrees, minutes, and seconds or decimal form. For help obtaining the latitude and longitude, go to: <a href="#">TCEQ USGS Topographic Map Viewer</a> , or <a href="#">TerraServer-USA</a>
6. Description of Activity Regulated In your own words, briefly describe the primary business being conducted at the site. (A description specific to what you are doing that requires this authorization - Do not repeat the SIC Code(s).)
<b>SITE MAILING ADDRESS</b> Provide a complete mailing address to be used by TCEQ for receiving mail at the site. In most cases, the address is the same as the operator. If so, simply place a check mark in the box. If you provide a different address, please verify the address with USPS as instructed above for the operator address.
<b>D. GENERAL CHARACTERISTICS</b>
1. <b>Indian Country Lands</b> If your site is located on Indian Country Lands, the TCEQ does not have authority to process your application. You must obtain authorization through EPA, Region VI, Dallas. Do not submit this form to TCEQ.  Indian Country means (1) all land within the limits of any American Indian reservation under the jurisdiction of the U.S. government, notwithstanding the issuance of any patent, and including rights-of-way running throughout the reservation; (2) all dependent Indian communities within the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or outside the limits of a State; and (3) all Indian allotments, the Indian titles which have not been extinguished, including rights-of-way running through the same.  Indian Tribe means any Indian Tribe, band, nation, or community recognized by the Secretary of the Interior and exercising substantial governmental duties and powers.
2. <b>Standard Industrial Classification (SIC) code</b> Provide the SIC code that best describes the construction activity being conducted at the site. Common SIC Codes related to construction activities include: 1521 Construction of Single Family Homes; 1522 Construction of Residential Bldgs. Other than Single Family Homes; 1541 Construction of Industrial Bldgs. and Warehouses; 1542 Construction of Non-residential Bldgs. other than Industrial Bldgs. and Warehouses; 1611 Highway & Street Construction, except Highway Construction; 1622 Bridge, Tunnel, & Elevated Highway Construction; 1623 Water, Sewer, Pipeline & Communications, and Power Line Construction. For help with SIC codes, go to: <a href="http://www.osha.gov/oshstats/sicser.html">www.osha.gov/oshstats/sicser.html</a>

## ATTACHMENT 1

**3. Estimated Area of Land Disturbed**

- 3(a). Provide the approximate number of acres that the construction site will disturb.  
3(b). Indicate if the site is part of a common plan of development or for sale.

Construction activities that disturb less than one acre, unless they are part of a larger common plan that disturbs more than one acre, do not require permit coverage.

Construction activities that disturb between one and five acres, unless they are part of a common plan that disturbs five acres or more acres, do not require submission of an NOI. Therefore, the estimated area of land disturbed should not be less than five, unless the project is part of a larger common plan that disturbs five or more acres.

"Disturb" means any clearing, grading, excavating, or other similar activities. If you have any questions about this item, please call the storm water technical staff at (512)239-4671.

**4. Discharge Information**

4 (a). The storm water may be discharged directly to a receiving stream or through a MS4\* from your site. It eventually reaches a receiving water body such as a local stream or lake, possibly via a drainage ditch. You must provide the name of the water body that receives the discharge from the site (a local stream or lake).

4 (b). The classified segment number(s) is REQUIRED to get coverage. Go to the link to find the segment number of the classified water body where storm water will flow <http://www.tceq.state.tx.us/compliance/monitoring/water/quality/data/wqm/viewer/viewer.html>. Call Water Quality Assessments at 512/239-4671 for further assistance. Another source for segments is: [http://www.tceq.state.tx.us/comm\\_exec/forms\\_pubs/pubs/gi-316/index.html](http://www.tceq.state.tx.us/comm_exec/forms_pubs/pubs/gi-316/index.html)

4 (c). If any surface water body(s) receiving discharges from the construction site are on the latest EPA-approved CWA § 303(d) list of impaired waters, provide the name(s) of the water body(s).

EPA approved CWA 303d list of impaired waters can be found at: [Texas Water Quality Inventory and 303\(d\) List - Texas Commission on Environmental Quality - www.tceq.state.tx.us](http://www.tceq.state.tx.us/compliance/monitoring/water/quality/data/wqm/viewer/viewer.html)

4 (d). Identify the MS4\* Operator name if the storm water discharge is into an MS4.

\*MS4 is an acronym for **Municipal separate storm sewer system**. MS4 is defined as a separate storm sewer system owned or operated by a state, city, town, county, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law such as a sewer district, flood control or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, that discharges to water in the state.

**For assistance, you may call the technical staff of the Water Quality Assessment & Standards Section at 512/239-4671.**

**4 (e). Edwards Aquifer Rule**

See maps on the TCEQ website to determine if the site is located within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer at [http://www.tceq.state.tx.us/compliance/field\\_ops/eapp/viewer.html](http://www.tceq.state.tx.us/compliance/field_ops/eapp/viewer.html)

If the discharge or potential discharge is within the Recharge Zone, Contributing Zone, or Contributing Zone within the Transition Zone of the Edwards Aquifer, a site specific authorization approved by the Executive Director under the Edwards Aquifer Protection Program (30 TAC Chapter 213) is required before construction can begin.

The general permit requires the approved Contributing Zone Plan or Water Pollution Abatement Plan to be included as a part of the Storm Water Pollution Prevention Plan. The certification must be answered "Yes" for coverage under the general permit.

**E. CERTIFICATIONS**

Failure to indicate "Yes" to ALL of the certification items may result in denial of coverage under the general permit.

The certification must bear an original signature of a person meeting the signatory requirements specified under [30 Texas Administrative Code §305.44](http://www.tceq.state.tx.us/compliance/field_ops/eapp/viewer.html)

**IF YOU ARE A CORPORATION:**

The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(1) (see below). According to this code provision, any corporate representative may sign an NOI or similar form so long as the authority to sign such a document has been delegated to that person in accordance with corporate procedures. By signing the NOI or similar form, you are certifying that such authority has been delegated to you. The TCEQ may request documentation evidencing such authority.

**IF YOU ARE A MUNICIPALITY OR OTHER GOVERNMENT ENTITY:**

The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(3) (see below). According to this code provision, only a ranking elected official or principal executive officer may sign an NOI or similar form. Persons such as the City Mayor or County Commissioner will be considered ranking elected officials. In order to identify the principal executive officer of your government entity, it may be beneficial to consult your city charter, county or city ordinances, or the Texas statute(s) under which your government entity was formed. An NOI or

## ATTACHMENT 1

similar document that is signed by a government official who is not a ranking elected official or principal executive officer does not conform to §305.44(a)(3). The signatory requirement may not be delegated to a government representative other than those identified in the regulation. By signing the NOI or similar form, you are certifying that you are either a ranking elected official or principal executive officer as required by the administrative code. Documentation demonstrating your position as a ranking elected official or principal executive officer may be requested by the TCEQ.

If you have any questions or need additional information concerning the signatory requirements discussed above, please contact the Texas Commission on Environmental Quality's Environmental Law Division at 512/239-0600.

**30 Texas Administrative Code****§305.44. Signatories to Applications.**

(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

<p><b>Texas Commission on Environmental Quality</b>  <b>General Permit Payment Submittal Form</b>  <b>\$325 for a paper Construction NOI Application Fee</b></p>	
<p>Use this form to submit your Application Fee only if you are mailing your payment.</p>	
<ul style="list-style-type: none"> <li>• Complete items 1 through 5 below:</li> <li>• Staple your check in the space provided at the bottom of this document.</li> <li>• Do not mail this form with your NOI form.</li> <li>• Do not mail this form to the same address as your NOI.</li> </ul>	
<p><b>Mail this form and your check to:</b></p>	
<p>BY REGULAR U.S. MAIL</p> <p>Texas Commission on Environmental Quality                  Financial Administration Division                  Cashier's Office, MC-214                  P.O. Box 13088                  Austin, TX 78711-3088</p>	<p>BY OVERNIGHT/EXPRESS MAIL</p> <p>Texas Commission on Environmental Quality                  Financial Administration Division                  Cashier's Office, MC-214                  12100 Park 35 Circle                  Austin, TX 78753</p>
<p>Fee Code: <b>GPA</b> <span style="float: right;">General Permit: TXR150000</span></p>	
<p>1. Check / Money Order No:</p>	
<p>2. Amount of Check/Money Order:</p>	
<p>3. Date of Check or Money Order:</p>	
<p>4. Name on Check or Money Order:</p>	
<p>5. NOI INFORMATION</p>	
<p>If the check is for more than one NOI, list each Project/Site (RE) Name and Physical Address exactly as provided on the NOI. <b>DO NOT SUBMIT A COPY OF THE NOI WITH THIS FORM AS IT COULD CAUSE DUPLICATE PERMIT ENTRIES.</b></p>	
<p>See Attached List of Sites (If more space is needed, you may attach a list.)</p>	
<p>Project/Site (RE) Name:</p>	
<p>Project/Site (RE) Physical Address:</p>	
<p><b>Staple Check In This Space</b></p>	

ATTACHMENT 2A



LARGE CONSTRUCTION SITE NOTICE

FOR THE  
 Texas Commission on Environmental Quality (TCEQ)  
 Storm Water Program  
**TPDES GENERAL PERMIT TXR150000**

***“PRIMARY OPERATOR” NOTICE***

This notice applies to construction sites operating under Part II.E.3. of the TPDES General Permit Number TXR150000 for discharges of storm water runoff from construction sites equal to or greater than five acres, including the larger common plan of development. The information on this notice is required in Part III.D.2. of the general permit. This notice shall be posted along with a copy of the signed Notice of Intent (NOI), as applicable. Additional information regarding the TCEQ storm water permit program may be found on the internet at:

[http://www.tceq.state.tx.us/nav/permits/sw\\_permits.html](http://www.tceq.state.tx.us/nav/permits/sw_permits.html)

Site-Specific TPDES Authorization Number:	
Operator Name:	
Contact Name and Phone Number:	
Project Description: <i>Physical address or description of the site's location, and estimated start date and projected end date, or date that disturbed soils will be stabilized.</i>	
Location of Storm Water Pollution Prevention Plan:	

ATTACHMENT 2B



# SMALL CONSTRUCTION SITE NOTICE

FOR THE  
 Texas Commission on Environmental Quality (TCEQ)  
 Storm Water Program  
**TPDES GENERAL PERMIT TXR150000**

The following information is posted in compliance with **Part II.E.2.** of the TCEQ General Permit Number TXR150000 for discharges of storm water runoff from small construction sites. Additional information regarding the TCEQ storm water permit program may be found on the internet at:

[http://www.tceq.state.tx.us/nav/permits/wq\\_construction.html](http://www.tceq.state.tx.us/nav/permits/wq_construction.html)

Operator Name:	
Contact Name and Phone Number:	
Project Description: <i>Physical address or description of the site's location, estimated start date and projected end date, or date that disturbed soils will be stabilized</i>	
Location of Storm Water Pollution Prevention Plan:	

For Small Construction Activities Authorized Under Part II.E.2. (Obtaining Authorization to Discharge) the following certification must be completed:

I \_\_\_\_\_ (Typed or Printed Name Person Completing This Certification) certify under penalty of law that I have read and understand the eligibility requirements for claiming an authorization under Part II.E.2. of TPDES General Permit TXR150000 and agree to comply with the terms of this permit. A storm water pollution prevention plan has been developed and will be implemented prior to construction, according to permit requirements. A copy of this signed notice is supplied to the operator of the MS4 if discharges enter an MS4. I am aware there are significant penalties for providing false information or for conducting unauthorized discharges, including the possibility of fine and imprisonment for knowing violations.

Signature and Title \_\_\_\_\_ Date \_\_\_\_\_

\_\_\_\_\_ *Date Notice Removed*  
 \_\_\_\_\_ *MS4 operator notified per Part II.F.3.*

ATTACHMENT 3

TPDES OPERATOR'S INFORMATION

Owner's Name and Address: City of \_\_\_\_\_

Mr. \_\_\_\_\_  
(City Official)

Address: \_\_\_\_\_  
\_\_\_\_\_

Phone: \_\_\_\_\_

Contractors' Names and Addresses:

General Contractor: \_\_\_\_\_

Telephone: \_\_\_\_\_

Site Superintendent: \_\_\_\_\_

Telephone: \_\_\_\_\_

Erosion Control and  
Maintenance Inspection: \_\_\_\_\_

Telephone: \_\_\_\_\_

Subcontractors' Names and Addresses:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone: \_\_\_\_\_

Phone: \_\_\_\_\_

Note: Insert name, address, and telephone number of person or firms

ATTACHMENT 4

CONTRACTOR'S / SUBCONTRACTOR'S

CERTIFICATION FOR TPDES PERMITTING

I certify under penalty of law that I understand the terms and conditions of the general Texas Pollutant Discharge Elimination System (TPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Signature: \_\_\_\_\_

Name: (printed or typed) \_\_\_\_\_

Title: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: (printed or typed) \_\_\_\_\_

Title: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: (printed or typed) \_\_\_\_\_

Title: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Date: \_\_\_\_\_



ATTACHMENT 5



# EPA NPDES Construction Inspection Form

The following inspection is being performed in compliance with Part 3.10. of the NPDES Region 6 Storm Water Construction General Permit [68 FR 39087, July 7, 2003]. Qualified personnel (provided by the permittee or cooperatively by multiple permittees) shall inspect disturbed areas of the construction site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, placement and effectiveness of structural control measures, and locations where vehicles enter or exit the site. Inspections shall be performed either once every 7 days (this option not available in New Mexico per Part 9.C.1.c.) or once every 14 days and within 24 hours of the end of a storm event of 0.5 inches or greater. Where sites have been temporarily stabilized, runoff is unlikely due to winter conditions, or during seasonal arid periods in arid areas (0-10 inches of rainfall annually) and semi-arid areas (10-20 inches annually) such inspections shall be conducted at least once every month. This form is primarily intended for use with construction projects in New Mexico. Permittees on Indian Country lands in Texas, Oklahoma, Louisiana and Arkansas and some oil and gas facilities in Texas and Oklahoma may use this form if they are eligible for this permit and EPA is their NPDES permitting authority. Other facilities need to check with their NPDES authority before using this form.

If you do not know your NPDES Permit Number, contact the NOI Processing Center at 866-352-7755. This form was prepared as an example and it is not a required form for use with the permit. Alternative forms may be used if they contain all of the required information as set forth in the permit. This form and additional information regarding the NPDES Region 6 storm water program may be found on the Internet at [www.epa.gov/region6/gen/w/formsw.htm](http://www.epa.gov/region6/gen/w/formsw.htm). Any person with a complaint about the operation of this facility in regards to this permit should contact EPA Region 6 at (214)665-8060.

Permit Number(s) covered by this inspection (e.g., owners, developers, general contractor, builders).	
Signature and Certification in accordance with Appendix G, Section 11 of the permit.	<small>I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (Clean Water Act, 33 U.S.C. 1251 et seq.)</small>
Date of Inspection.	
Inspector Name.	
Is there a copy of the permit language with the SWPPP?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the inspector qualified and are the qualifications documented in the SWPPP?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is an NPDES storm water construction sign posted at the entrance for all permittees?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p>You may want to use EPA Region 6 construction checklist to assure components of the SWPPP are complete. This form, the construction sign, and the checklist are available on the Region 6 NPDES Storm Water Forms and Documents web page which may be found on the internet at <a href="http://www.epa.gov/earth1r6/gen/w/formsw.htm">http://www.epa.gov/earth1r6/gen/w/formsw.htm</a> In addition to the checklist, you should provide a narrative (see next page) on the existing Best Management Practices and Structural Controls found during each inspection. Any problems identified in an inspection should be corrected within 7 days. The inspection should cover all components of the SWPPP and all potential pollutants. While eroded soil is the primary pollutant of concern, do not forget to inspect for other pollutant sources such as fuel tanks, paints, solvents, stabilization materials, concrete hardner, batch plants, and construction debris. The inspector will need to update the SWPPP to reflect findings of the inspection. The site map should be updated after an inspection to show controls that have been added or removed, to ensure the site map is kept current in accordance with Part 3.11.A. of the permit.</p>	

July 29, 2003

**Narrative Findings of the inspection:**

Observations should include any findings of Best Management Practices or controls that are not in accordance with the SWPPP. If a control is not in place or failed, observe the reason why. A control removed temporarily for work is not necessarily a violation if properly recorded in the SWPPP. If it has been removed, record why it was removed and, if applicable, when it will be reinstalled. If the control has failed, observe the conditions so a conclusion may be made as to whether the control failed for improper maintenance or improper design. The qualified inspector will know when a failed control is inadequate and should be replaced by an improved control mechanism. Qualified inspectors are to have authority to make changes to the SWPPP to assure compliance. Controls that have not been installed should be given a reason why they are not installed and/or a scheduled date for installation if they are designed for a later phase of construction. After the inspection, the SWPPP and its site map should be updated to reflect current conditions of controls and Best Management Practices at the time of the inspection. This includes removing uninstalled controls from the site map or otherwise denoting on the site map if they are no longer installed if the controls have been removed because they are no longer necessary (e.g., stabilization has been achieved in that area).

Part 3.10.G. of the permit: For each inspection required above, you must complete an inspection report. At a minimum, the inspection report must include: 1. The inspection date; 2. Names, titles, and qualifications of personnel making the inspection; 3. Weather information for the period since the last inspection (or since commencement of construction activity if the first inspection) including a best estimate of the beginning of each storm event, duration of each storm event, approximate amount of rainfall for each storm event (in inches), and whether any discharges occurred; 4. Weather information and a description of any discharges occurring at the time of the inspection; 5. Location(s) of discharges of sediment or other pollutants from the site; 6. Location(s) of BMPs that need to be maintained; 7. Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location; 8. Location(s) where additional BMPs are needed that did not exist at the time of inspection; and 9. Corrective action required including any changes to the SWPPP necessary and implementation dates.

July 29, 2003

**EROSION CONTROL CONTRACTOR'S  
CERTIFICATION FOR INSPECTION AND MAINTENANCE**

I certify under penalty of law that I understand the terms and conditions of the general Texas Pollutant Discharge Elimination System (TPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Signature: \_\_\_\_\_

Name: (printed or typed) \_\_\_\_\_

Title: \_\_\_\_\_



Company \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Date: \_\_\_\_\_

ATTACHMENT 7

	<p><b>Notice of Termination (NOT) for Authorizations under TPDES General Permit TXR150000</b></p>	<p><b>TCEQ Office Use Only</b> Permit No.: RN: CN:</p>	<div style="border: 1px solid black; padding: 5px; color: red; font-weight: bold;">Reset Form</div>
 <p><b>Sign up now for on line NOT at <a href="http://www.tceq.state.tx.us/permitting/steers/steers.html">http://www.tceq.state.tx.us/permitting/steers/steers.html</a></b> Get your NOT Confirmation letter immediately after submitting the on line NOT form.</p>			
<p><b>What is the permit number to be terminated?</b> Processing will be delayed without the permit number. TXR15 _____</p>			
<b>A. OPERATOR (applicant)</b>			
1. What is the Customer Number (CN) issued to this entity? CN _____			
2. What is the full Legal Name of the current permittee?			
<i>This must be the current permittee of the permit to be terminated.</i>			
3. What is the applicant's mailing address as recognized by the <b>US Postal Service</b> ?			
Address: _____ Suite No./Bldg. No./Mail Code: _____			
City: _____		State: _____	ZIP Code: _____
Country Mailing Information (if outside USA): _____		Country Code: _____	Postal Code: _____
4. Phone No.: ( ) _____		Extension: _____	
5. Fax No.: ( ) _____		E-mail Address: _____	
<b>B. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE</b>			
1. What is the TCEQ Issued RE Reference Number (RN)? RN _____			
2. Name of Project or Site as currently permitted):			
<i>(example: phase and name of subdivision or name of project that's unique to the site)</i>			
3. Physical Address of Project or Site as currently permitted: (enter in spaces below)			
Street Number: _____		Street Name: _____	
City: _____	ZIP Code: _____	County (Counties if >1): _____	
4. If no physical address (Street Number & Street Name), provide the written location access description to the site:			
<b>C. REASON FOR TERMINATION</b>			
Check the reason for termination:			
<input type="checkbox"/> Final stabilization has been achieved on all portions of the site that are the responsibility of the Operator and all silt fences and other temporary erosion controls have either been removed, or scheduled for removal as defined in the SWP3.			
<input type="checkbox"/> Another permitted Operator has assumed control over all areas of the site that have not been finally stabilized, and temporary erosion controls that have been defined in the SWP3 have been transferred to the new Operator.			
<input type="checkbox"/> The activity is now authorized under an alternate TPDES permit.			
<input type="checkbox"/> The activity never began at this site that is regulated under the general permit.			
<b>D. CERTIFICATION</b>			
I, _____ Title _____			
<p>Typed or printed name</p>			
<p>certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.</p>			
<p>I further certify that I am authorized under <b>30 Texas Administrative Code §305.44</b> to sign and submit this document, and can provide documentation in proof of such authorization upon request.</p>			
Signature: _____		Date: _____	
<p>(Use blue ink)</p>			

ATTACHMENT 7

**Notice of Termination (NOT) for Authorizations under  
TPDES General Permit TXR150000  
General Information and Instructions**

**GENERAL INFORMATION**

Where to Send the Notice of Intent (NOI):

BY REGULAR U.S. MAIL  
Texas Commission on Environmental Quality  
Storm Water Processing Center (MC228)  
P.O. Box 13087  
Austin, TX 78711-3087

BY OVERNIGHT/EXPRESS MAIL  
Texas Commission on Environmental Quality  
Storm Water Processing Center (MC228)  
12100 Park 35 Circle  
Austin, TX 78753

TCEQ Contact list:

Application Processing Questions relating to the status and form requirements:	512/239-4671
Technical Questions relating to the general permit:	512/239-4671
Environmental Law Division:	512/239-0600
Records Management for obtaining copies of forms submitted to TCEQ:	512/239-0900
Information Services for obtaining reports from program data bases (as available):	512/239-DATA (3282)
Financial Administration's Cashier's office:	512/239-0357 or 512/239-0187

**Notice of Termination Process:**

A Notice of Termination is **effective on the date postmarked for delivery to TCEQ**.  
When your NOT is received by the program, the form will be processed as follows:

1. **Administrative Review:** The form will be reviewed to confirm the following:
  - the permit number is provided
  - the permit is active and has been approved
  - the entity terminating the permit is the current permittee
  - the site information matches the original permit record
  - the form has the required original signature with title and date
2. **Notice of Deficiency:** If an item is incomplete or not verifiable as indicated above, a phone call will be made to the applicant to clear the deficiency. A letter will not be sent to the permittee if unable to process the form.
3. **Confirmation of Termination:** A Notice of Termination Confirmation letter will be mailed to the operator.

**General Permit (Your Permit)**

Coverage under the general permit begins **48 hours after a completed NOI is postmarked for delivery to the TCEQ**. You should have a copy of your general permit when submitting your application. You may view and print your permit for which you are seeking coverage, on the TCEQ web site [www.tceq.state.tx.us](http://www.tceq.state.tx.us)

**General Permit Forms**

The Notice of Intent (NOI), Notice of Termination (NOT), and Notice of Change (NOC) with instructions are available in Adobe Acrobat PDF format on the TCEQ web site [www.tceq.state.tx.us](http://www.tceq.state.tx.us).

**Change in Operator**

An authorization under the general permit is not transferable. If the operator or owner of the regulated entity changes, the present permittee must submit a Notice of Termination and the new operator must submit a Notice of Intent. The NOT and NOI must be submitted not later than 10 days prior to the change in Operator status.

**TCEQ Central Registry Core Data Form**

The Core Data Form has been incorporated into this form. **Do not send a core data form to TCEQ.**

After final acknowledgment of coverage under the general permit, the program will assign a Customer Number (CN) and Regulated Entity Number (RN). For Construction Permits, a new RN will be assigned for each Notice of Intent filed with TCEQ, since construction project sites can overlap with other Customers. The RN assigned to your construction project will not be assigned to any other TCEQ authorization.

You can find the information on the Central Registry web site at <https://www6.tceq.state.tx.us/epay/>. You can search by the Regulated Entity (RN), Customer Number (CN) or Name (Permittee), or by your permit number under the search field labeled "Additional ID" Capitalize all letters in the permit number.

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The Customer (Permittee) is responsible for providing consistent information to the TCEQ, and for updating all CN and RN data for all authorizations as changes occur. For General Permits, a Notice of Change form must be submitted to the program area.

**Annual Water Quality Fee:** This fee is assessed to operators with an active authorization under the general permit on September 1 of each year. The operator will receive an invoice for payment of the annual fee in November of each year. The payment will be due 30 days from the invoice date. A 5% penalty will be assessed if the payment is received by TCEQ after the due date. Annual fee assessments cannot be waived as long as the authorization under the general permit is active on September 1.

It's important for the operator to submit a **Notice of Termination (NOT)** when coverage under the general permit is no longer required. A NOT is effective on the postmarked date of mailing the form to TCEQ. It is recommended that the NOT be mailed using a method that documents the date mailed and received by TCEQ.

**Mailed Payments:**

You must return your payment with the billing coupon provided with the billing statement.

**ePAY Electronic Payment:**

Go to <https://www6.tceq.state.tx.us/epay/>

You must enter your account number provided at the top portion of your billing statement. Payment methods include Mastercard, Visa, and electronic check payment (ACH). A transaction over \$500 can only be made by ACH.

**INSTRUCTIONS FOR FILLING OUT THE NOT FORM**

**A. OPERATOR (current permittee.)**

1. TCEQ Issued Customer Number (CN)

2. Legal Name of Operator

The operator must be the same entity as previously submitted on the original Notice of Intent for the permit number provided.

3. Operator Mailing Address

Provide a complete mailing address for receiving mail from the TCEQ. Update the address if different than previously submitted in the Notice of Intent or Notice of Change.

4. Phone Number, Fax Number, and E-mail Address

Provide updated contact information.

**B. REGULATED ENTITY (RE) INFORMATION ON PROJECT OR SITE**

1. Regulated Entity Reference Number (RN)

2. Site/Project Name/Regulated Entity

Provide the name of the site as previously submitted in the Notice of Intent for the permit number provided.

3. Site/Project (RE) Physical Address

Provide the physical address or location access description as previously submitted for the permit number provided.

**C. REASON FOR TERMINATION**

Indicate the reason for terminating the permit by checking one of the options. If the reason is not listed then provide an attachment that explains the reason for termination.

Please read your general permit carefully to determine when to terminate your permit. Permits will not be reactivated after submitting a termination form. The termination is effective on the date postmarked for delivery to TCEQ.

**D. CERTIFICATIONS**

The certification must bear an original signature of a person meeting the signatory requirements specified under 30 Texas Administrative Code (TAC) §305.44.

**IF YOU ARE A CORPORATION:**

The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(1) (see below). According to this code provision, any corporate representative may sign an NOI or similar form so long as the authority to sign such a document has been delegated to that person in accordance with corporate procedures. By signing the NOI or similar form, you are certifying that such authority has been delegated to you. The TCEQ may request documentation evidencing such authority.

**IF YOU ARE A MUNICIPALITY OR OTHER GOVERNMENT ENTITY:**

The regulation that controls who may sign an NOI or similar form is 30 Texas Administrative Code §305.44(a)(3) (see below). According to this code provision, only a ranking elected official or principal executive officer may sign an NOI or similar form. Persons such as the City Mayor or County Commissioner will be considered ranking elected officials. In order to identify the principal executive officer of your government entity, it may be beneficial to consult your city charter, county or city ordinances, or the Texas statute(s) under which your government entity was formed. An NOI or similar document that is signed by a government official who is not a ranking elected official or principal executive officer does not conform to

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§305.44(a)(3). The signatory requirement may not be delegated to a government representative other than those identified in the regulation. By signing the NOI or similar form, you are certifying that you are either a ranking elected official or principal executive officer as required by the administrative code. Documentation demonstrating your position as a ranking elected official or principal executive officer may be requested by the TCEQ.

If you have any questions or need additional information concerning the signatory requirements discussed above, please contact the Texas Commission on Environmental Quality's Environmental Law Division at 512/239-0600.

**30 Texas Administrative Code****§305.44. Signatories to Applications.**

(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

END OF SECTION

## SECTION 01566

## SOURCE CONTROLS FOR EROSION AND SEDIMENTATION

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Description of erosion and sediment control and other control-related practices which shall be utilized during construction activities.

## 1.02 UNIT PRICES

- A. No separate payment will be made for work performed under this Section. Include payment in unit price for related work.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

## 3.01 PREPARATION AND INSTALLATION

- A. No clearing and grubbing or rough cutting shall be permitted until erosion and sediment control systems are in place, other than site work specifically directed by the Owner's Representative to allow soil testing and surveying.
- B. Equipment and vehicles shall be prohibited by the Contractor from maneuvering on areas outside of dedicated rights-of-way and easements for construction. Damage caused by construction traffic to erosion and sediment control systems shall be repaired immediately by the Contractor.
- C. The Contractor shall be responsible for collecting, storing, hauling, and disposing of spoil, silt, and waste materials as specified in this or other Specifications and in compliance with applicable federal, state, and local rules and regulations.
- D. Contractor shall conduct all construction operations under this Contract in conformance with the erosion control practices described in the Drawings and this Specification.
- E. The Contractor shall install, maintain, and inspect erosion and sediment control measures and practices as specified in the Drawings and in this or other Specifications.

## 3.02 TOPSOIL PLACEMENT FOR EROSION AND SEDIMENT CONTROL SYSTEMS

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- A. When topsoil is specified as a component of another Specification, the Contractor shall conduct erosion control practices described in this Specification during topsoil placement operations.
  - 1. When placing topsoil, maintain erosion and sediment control systems, such as swales, grade stabilization structures, berms, dikes, silt fences, and sediment basins.
  - 2. Maintain grades which have been previously established on areas to receive topsoil.
  - 3. After the areas to receive topsoil have been brought to grade, and immediately prior to dumping and spreading the topsoil, loosen the subgrade by disking or by scarifying to a depth of at least 2 inches to permit bonding of the topsoil to the subsoil. The contractor is responsible for the grading plan and fill permit, if required.

### 3.03 DUST CONTROL

- A. Implement dust control methods to control dust creation and movement on construction sites and roads and to prevent airborne sediment from reaching receiving streams or storm water conveyance systems, to reduce on-site and off-site damage, to prevent health hazards, and to improve traffic safety.
- B. Control blowing dust by using one or more of the following methods:
  - 1. Mulches bound with chemical binders.
  - 2. Temporary vegetative cover.
  - 3. Tillage to roughen surface and bring clods to the surface.
  - 4. Irrigation by water sprinkling.
  - 5. Barriers using solid board fences, burlap fences, crate walls, bales of hay, or similar materials.
- C. Implement dust control methods immediately whenever dust can be observed blowing on the project site.

### 3.04 KEEPING STREETS CLEAN

- A. Keep streets clean of construction debris and mud carried by construction vehicles and equipment. If necessary to keep the streets clean, install stabilized construction exits at construction, staging, storage, and disposal areas. A vehicle/equipment wash

area (stabilized with coarse aggregate) may be installed adjacent to the stabilized construction exit, as needed. Release wash water into a drainage swale or inlet protected by erosion and sediment control measures. Construction exit and wash areas are specified in Section 01569 - Stabilized Construction Exit.

- B. In lieu of or in addition to stabilized construction exits, shovel or sweep the pavement to the extent necessary to keep the street clean. **Water hosing or sweeping of debris and mud off of the street into adjacent areas is not allowed.**

### 3.05 EQUIPMENT MAINTENANCE AND REPAIR

- A. Confine maintenance and repair of construction machinery and equipment to areas specifically designated for that purpose. Locate such areas so that oils, gasoline, grease, solvents, and other potential pollutants cannot be washed directly into receiving streams or storm water conveyance systems. Provide these areas with adequate waste disposal receptacles for liquid as well as solid waste. Clean and inspect maintenance areas daily.
- B. On a construction site where designated equipment maintenance areas are not feasible, take precautions during each individual repair or maintenance operation to prevent potential pollutants from washing into streams or conveyance systems. Provide temporary waste disposal receptacles.

### 3.06 WASTE COLLECTION AND DISPOSAL

- A. Contractor shall formulate and implement a plan for the collection and disposal of waste materials on the construction site. In plan, designate locations for trash and waste receptacles and establish a collection schedule. Methods for ultimate disposal of waste shall be specified and carried out in accordance with applicable local, state, and federal health and safety regulations. Make special provisions for the collection and disposal of liquid wastes and toxic or hazardous materials. Contractor is responsible for taking necessary precautions to prevent scattering of debris by winds.
- B. Keep receptacles and waste collection areas neat and orderly to the extent possible. Waste shall not be allowed to overflow its container or accumulate from day-to-day. Locate trash collection points where they will least likely be affected by concentrated storm water runoff.

### 3.07 WASHING AREAS

- A. Vehicles such as concrete delivery trucks or dump trucks and other construction equipment shall not be washed at locations where the runoff will flow directly into a watercourse or storm water conveyance system. Designate special areas for washing vehicles. Locate these areas where the wash water will spread out, or where the runoff can be collected in a temporary holding or seepage basin. Beneath wash areas

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construct a gravel or rock base to minimize mud production. Dispose of washout in a legal manner at end of project.

### 3.08 STORAGE OF CONSTRUCTION MATERIALS AND CHEMICALS

- A. Isolate sites where chemicals, cements, solvents, paints, or other potential water pollutants are stored in areas where they will not cause runoff pollution.
- B. Store toxic chemicals and materials, such as pesticides, paints, and acids in accordance with manufacturers' guidelines. Protect groundwater resources from leaching by placing a plastic mat, packed clay, tar paper, or other impervious materials on any areas where toxic liquids are to be opened and stored.

### 3.09 DEMOLITION AREAS

- A. Demolition activities which create large amounts of dust with significant concentrations of heavy metals or other toxic pollutants shall use dust control techniques to limit transport of airborne pollutants. However, water or slurry used to control dust contaminated with heavy metals or toxic pollutants shall be retained on the site and shall not be allowed to run directly into watercourses or storm water conveyance systems. Methods of ultimate disposal of these materials shall be carried out in accordance with applicable local, state, and federal health and safety regulations.

### 3.10 PESTICIDES

- A. Use and store pesticides during construction in accordance with manufacturers' guidelines and with local, state, and federal regulations. Avoid overuse of pesticides which could produce contaminated runoff. Take great care to prevent accidental spillage. Never wash pesticide containers in or near flowing streams or storm water conveyance systems.

END OF SECTION

## SECTION 01567

## FILTER FABRIC FENCE

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Installation of erosion and sediment control filter fabric fences used during construction and until final development of the site. The purpose of filter fabric fences is to contain pollutants from overland flow. Filter fabric fences are not for use in channelized flow areas.

## 1.02 UNIT PRICES

- A. Filter fabric fence will be measured by the linear foot, or lump sum as specified in the bid proposal for the project, 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 sediment control systems at the end of construction.

## 1.03 SUBMITTALS

- A. Manufacturer's catalog sheets and other product data on geotextile fabric.

## PART 2 PRODUCTS

## 2.01 FILTER FABRIC

- A. Provide woven or nonwoven geotextile filter fabric made of either polypropylene, polyethylene, ethylene, or polyamide material.
- B. Geotextile fabric shall have a grab strength of 100 psi in any principal direction (ASTM D-4632), Mullen burst strength exceeding 200 psi (ASTM D-3786), and the equivalent opening size between 50 and 140.
- C. Filter fabric material shall contain ultraviolet inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 degrees F to 120 degrees F.

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**PART 3 EXECUTION****3.01 PREPARATION AND INSTALLATION**

- A. Provide erosion and sediment control systems at the locations shown on Drawings. Such systems shall be of the type indicated and shall be constructed in accordance with the requirements shown on the Drawings and specified in this Section.
- B. No clearing and grubbing or rough cutting shall be permitted until erosion and sediment control systems are in place, other than site work specifically directed by the Owner's Representative to allow soil testing and surveying.
- C. Regularly inspect and repair or replace damaged components of filter fabric fences as specified in this Section. Unless otherwise directed, maintain the erosion and sediment control systems until the project area stabilization is accepted by the Owner. Remove erosion and sediment control systems promptly when directed or approved by the Owner's Representative. Discard removed materials off site.
- D. Remove sediment deposits and dispose of them at the designated spoil site for the project. If a project spoil site is not designated on the Drawings, dispose of sediment off site at a location not in or adjacent to a stream or floodplain. Off-site disposal is the responsibility of the Contractor. Sediment to be placed at the project site should be spread evenly throughout the site, compacted and stabilized. Sediment shall not be allowed to flush into a stream or drainage way. If sediment has been contaminated, it shall be disposed of in accordance with existing federal, state, and local rules and regulations.
- E. Conduct all construction operations under this Contract in conformance with the erosion control practices described in Section 01566 - Source Controls for Erosion and Sedimentation.

**3.02 CONSTRUCTION METHODS**

- A. Provide filter fabric fence systems in accordance with the Drawing detail for Filter Fabric Fences. Filter fabric fences shall be installed in such a manner that surface runoff will percolate through the system in sheet flow fashion and allow sediment to be retained and accumulated.
- B. Attach the filter fabric to 2-inch by 2-inch wooden stakes spaced a maximum of 3 feet apart and embedded a minimum of 8 inches. If filter fabric is factory preassembled with support netting, then maximum spacing allowable is 8 feet. Install wooden stakes at a slight angle toward the source of anticipated runoff.

- C. Trench in the toe of the filter fabric fence with a spade or mechanical trencher as shown on the Drawings. Lay filter fabric along the edges of the trench. Backfill and compact trench.
- D. Filter fabric fence shall have a minimum height of 18 inches and a maximum height of 36 inches above natural ground.
- E. Provide the filter fabric in continuous rolls and cut to the length of the fence to minimize the use of joints. When joints are necessary, splice the fabric together only at a support post with a minimum 6-inch overlap and seal securely.
- F. Inspect sediment filter barrier systems after each rainfall, daily during periods of prolonged rainfall, and at a minimum once each week. Repair or replace damaged sections immediately. Remove sediment deposits when silt reaches a depth one-third the height of the fence or 6 inches, whichever is less.

END OF SECTION

## SECTION 01568

## REINFORCED FILTER FABRIC BARRIER

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Installation of reinforced filter fabric barriers for erosion and sediment control used during construction and until the final development of the site. Reinforced filter fabric barriers are used to retain sedimentation in channelized flow areas.

## 1.02 UNIT PRICES

- A. Filter fabric barrier will be measured by the linear foot of completed and accepted filter fabric barrier between the limits of the beginning and ending fence posts. Filter fabric barrier, measured as stated, will be paid for at the unit price bid for Reinforced Filter Fabric Barrier, Complete in Place.
- B. Payment for filter fabric barrier will include and be full compensation for all labor, equipment, materials, supervision, and 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 sediment control systems at the end of construction.

## 1.03 SUBMITTALS

- A. Manufacturer's catalog sheets and other product data on geotextile fabrics.

## PART 2 PRODUCTS

## 2.01 FILTER FABRIC

- A. Provide woven or nonwoven geotextile filter fabric made of either polypropylene, polyethylene, ethylene, or polyamide material.
- B. Geotextile fabric shall have a minimum grab strength of 100 psi in any principal direction (ASTM D-4632), Mullen burst strength exceeding 200 psi (ASTM D-3786), and the equivalent opening size between 50 and 140.
- C. Filter fabric material shall contain ultraviolet inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 degrees F to 120 degrees F.

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## 2.02 FENCING

- A. Provide woven galvanized steel wire fence with minimum thickness of 14 gauge and a maximum mesh spacing of 6 inches.

## PART 3 EXECUTION

### 3.01 PREPARATION AND INSTALLATION

- A. Provide erosion and sediment control systems at the locations shown on the Drawings. Such systems shall be of the type indicated and shall be constructed in accordance with the requirements shown on the Drawings and specified in this Section.
- B. No clearing and grubbing or rough cutting shall be permitted until erosion and sediment control systems are in place, other than as specifically directed by the Owner's Representative to allow soil testing and surveying.
- C. Regularly inspect and repair or replace damaged components of the reinforced filter fabric barrier as specified in this Section. Unless otherwise directed, maintain the erosion and sediment control systems until the project area stabilization is accepted by the Owner. Remove erosion and sediment control systems promptly when directed by the Owner's Representative. Discard removed materials off site.
- D. Remove sediment deposits and dispose of them at the designated spoil site for the project. If a project spoil site is not designated on the Drawings, dispose of sediment off site at a location not in or adjacent to a stream or floodplain. Off-site disposal is the responsibility of the Contractor. Sediment to be placed at the project site should be spread evenly throughout the site, compacted and stabilized. Sediment shall not be allowed to flush into a stream or drainage way. If sediment has been contaminated, it shall be disposed of in accordance with existing federal, state, and local rules and regulations.
- E. Conduct all construction operations under this Contract in conformance with the erosion control practices described in Section 01566 - Source Controls for Erosion and Sedimentation.

### 3.02 CONSTRUCTION METHODS

- A. Provide filter fabric barriers in accordance with the Drawing detail for Reinforced Filter Fabric Barrier. Filter fabric barrier systems shall be installed in such a manner that surface runoff will percolate through the system in sheet flow fashion and allow sediment to be retained and accumulated.



- B. Attach the woven wire support to 2-inch by 2-inch wooden stakes spaced a maximum of 6 feet apart and embedded a minimum of 8 inches. Install wooden stakes at a slight angle toward the source of the anticipated runoff.
- C. Trench in the toe of the filter fabric barrier with a spade or mechanical trencher as shown on the Drawings. Lay filter fabric along the edges of the trench. Backfill and compact trench.
- D. Securely fasten the filter fabric material to the woven wire with tie wires.
- E. Reinforced filter fabric barrier shall have a height of 18 inches.
- F. Provide the filter fabric in continuous rolls and cut to the length of the fence to minimize the use of joints. When joints are necessary, splice the fabric together only at a support post with a minimum 6-inch overlap and seal securely.
- G. Inspect the reinforced filter fabric barrier systems after each rainfall, daily during periods of prolonged rainfall, and at a minimum once each week. Repair or replace damaged sections immediately. Remove sediment deposits when silt reaches a depth one-third the height of the barrier or 6 inches, whichever is less.

END OF SECTION

## SECTION 01569

## STABILIZED CONSTRUCTION EXIT

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Installation of erosion and sediment control for stabilized construction exits used during construction and until final development of the site.

## 1.02 SUBMITTALS

- A. Manufacturer's catalog sheets and other product data on geotextile fabric.
- B. Sieve analysis of aggregates conforming to requirements of this Specification.

## 1.03 UNIT PRICES

- A. 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 for which this work is a component.

## PART 2 PRODUCTS

## 2.01 GEOTEXTILE FABRIC

- A. Provide woven or nonwoven geotextile fabric made of either polypropylene, polyethylene, ethylene, or polyamide material.
- B. Geotextile fabric shall have grab strength of 270 psi in any principal direction (ASTM D-4632), and the equivalent opening size between 50 and 140.
- C. Both the geotextile and threads shall be resistant to chemical attack, mildew, and rot and shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable life at a temperature range of 0°F to 120°F.
- D. Representative Manufacturers: Mirafi, Inc., or equal.

## 2.02 COARSE AGGREGATES

- A. Coarse aggregate shall consist of crushed stone, gravel, crushed concrete, or a combination of these materials. Aggregate shall be composed of clean, hard, durable materials free from adherent coatings, salt, alkali, dirt, clay, loam, rebar, shale, soft or flaky materials, or organic and injurious matter.

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- B. Coarse aggregates shall conform to the following gradation requirements.

Sieve Size	Percent Retained
<u>(Square Mesh)</u>	<u>(By Weight)</u>
2-1/2"	0
2"	0 – 20
1-1/2"	15 – 50
¾"	60 – 80
No. 4	95 - 100

## PART 3 EXECUTION

### 3.01 PREPARATION AND INSTALLATION

- A. If necessary to keep the street clean of mud carried by construction vehicles and equipment, Contractor shall provide stabilized construction roads and exits at the construction, staging, parking, storage, and disposal areas. Such erosion and sediment controls shall be constructed in accordance with the requirements shown on the Drawings and specified in this Section.
- B. No clearing and grubbing or rough cutting shall be permitted until erosion and sediment control systems are in place, other than as specifically directed by the Owner's Representative to allow soil testing and surveying.
- C. Maintain existing erosion and sediment control systems located within the project site until acceptance of the project or until directed by the Owner's Representative to remove and discard the existing system.
- D. Regularly inspect and repair or replace components of stabilized construction exits. Unless otherwise directed, maintain the stabilized construction roads and exits until the project is accepted by the City. Remove stabilized construction roads and exits

promptly when directed by the Owner's Representative. Discard removed materials off site.

- E. Remove sediment deposits and dispose of them at the designated spoil site for the project. If a project spoil site is not designated on the Drawings, dispose of sediment off site at a permitted location not in or adjacent to a stream or floodplain. Off-site disposal is the responsibility of the Contractor. Sediment to be placed at the project site should be spread evenly throughout the site, compacted and stabilized. Sediment shall not be allowed to flush into a stream or drainage way. If sediment has been contaminated, it shall be disposed of in accordance with existing federal, state, and local rules and regulations.
- F. Equipment and vehicles shall be prohibited by the Contractor from maneuvering on areas outside of dedicated rights-of-way and easements for construction. Damage caused by construction traffic to erosion and sediment control systems shall be repaired immediately.
- G. Conduct all construction operations under this Contract in conformance with the erosion control practices described in the relevant sections of these specifications.

### 3.02 CONSTRUCTION METHODS

- A. Provide stabilized access roads, subdivision roads, parking areas, and other on-site vehicle transportation routes where shown on Drawings.
- B. Provide stabilized construction exits, and truck washing areas when approved by Owner's Representative, of the sizes and locations where shown on Drawings or as specified in this Section.
- C. Vehicles leaving construction areas shall have their tires cleaned to remove sediment prior to entrance onto public right-of-way. When washing is needed to remove sediment, Contractor shall construct a truck washing area. Truck washing shall be done on stabilized areas which drain into a drainage system protected by erosion and sediment control measures.
- D. Details for stabilized construction exit may be shown on the Drawings. Construction of all other stabilized areas shall be to the same requirements. Roadway width shall be at least 14 feet for one-way traffic and 20 feet for two-way traffic and shall be sufficient for all ingress and egress. Furnish and place geotextile fabric as a permeable separator to prevent mixing of coarse aggregate with underlying soil. Exposure of geotextile fabric to the elements between laydown and cover shall be a maximum of 14 days to minimize damage potential.

- E. Roads and parking areas shall be graded to provide sufficient drainage away from stabilized areas. Use sandbags, gravel, boards, or similar methods to prevent sediment from entering public right-of-way, receiving stream or storm water conveyance system.
- F. The stabilized areas shall be inspected and maintained daily. Provide periodic top dressing with additional coarse aggregates to maintain the required depth. Repair and clean out damaged control measures used to trap sediment. All sediment spilled, dropped, washed, or tracked onto public right-of-way shall be removed immediately.
- G. The length of the stabilized area may be as shown on the Drawings, but not less than 50 feet. The thickness shall not be less than 8 inches. The width shall not be less than full width of all points of ingress or egress.
- H. Stabilization for other areas shall have the same coarse aggregate, thickness, and width requirements as the stabilized construction exit, except where shown otherwise on the Drawings.
- I. Stabilized area may be widened or lengthened to accommodate truck washing area when authorized by Owner's Representative.
- J. Alternative methods of construction may be utilized when shown on Drawings, or when approved by the Owner's Representative. These methods include the following:
  - 1. Cement-Stabilized Soil - Compacted cement-stabilized soil or other fill material in an application thickness of at least 8 inches.
  - 2. Wood Mats/Mud Mats - Oak or other hardwood timbers placed edge-to-edge and across support wooden beams which are placed on top of existing soil in an application thickness of at least 6 inches.
  - 3. Steel Mats - Perforated mats placed across perpendicular support members.

END OF SECTION

## SECTION 01570

## TRAFFIC CONTROL AND REGULATION

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. 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 excavations.
- B. Qualifications and requirements for use of flagmen.

## 1.02 SUBMITTALS

- A. Make submittals in accordance with Section 01300 - Submittals

## 1.03 UNIT PRICES

- A. Measurement and payment is on a unite of time or lump sum basis for traffic control and regulation, including obtaining approvals by governing authorities, preparation and submittal of traffic control plan if different than shown on Drawings, and subsequent approval from Owner and any other entity prior to commencing work in their right-of-way, provision of traffic control devices, barrels, barricades, control panels, signage including arrow boards as necessary for the project, relocation of traffic signs and control devices as necessary, relocating and replacing existing signs and provision of equipment and personnel as necessary to protect the work and the public in accordance with the Texas Manual of Uniform Traffic Control Devices (TxMUTCD). The amount invoiced shall be determined based on the approved schedule of values for traffic control and regulation.
- B. No separate measurement will be made for flaggers as required for the Project. Flaggers shall be considered incidental to the traffic control and regulation bid item.

## 1.04 FLAGMEN

- A. Use only flagmen who are off-duty, regularly employed, uniformed peace officers when specified in the Special Conditions. The Contractor shall also utilize certified flagmen at locations approved by the Owner or Owner's Representative.
- B. Use flagmen to control, regulate and direct an even flow and movement of vehicular and pedestrian traffic, for periods of time as may be required to provide for public safety and convenience, where:

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1. Where multi-lane vehicular traffic must be diverted into single-lane vehicular traffic.
  2. Where vehicular traffic must change lanes abruptly.
  3. Where construction equipment either enters or crosses vehicular traffic lanes and walks.
  4. Where construction equipment may intermittently encroach on vehicular traffic lanes and unprotected walks and crosswalks.
  5. Where traffic regulation is needed due to rerouting of vehicular traffic around the work site.
  6. Where construction activities might affect public safety and convenience.
- C. The use of flagmen is for the purpose of assisting in the regulation of traffic flow and movement, and does not in any way relieve the contractor of full responsibility for taking such other steps and provide such other flagmen or personnel as the Contractor may deem necessary to protect the work and the public, and does not in any way relieve the Contractor of his responsibility for any damage for which he would otherwise be liable.

Flagmen shall be used and maintained at such points for such periods of time as may be required to provide for the public safety and convenience of travel.

## PART 2 PRODUCTS

### 2.01 SIGNS, SIGNALS, AND DEVICES

- A. Comply with Texas State Manual on Uniform Traffic Control Devices (latest revision).
- B. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.

## PART 3 EXECUTION

### 3.01 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. Coordinate activities with the Owner's Representative.

- B. Give Owner's Representative one-week notice before implementing approved traffic control phases. Inform local businesses of impending traffic control activities.
- C. Notify police department, fire department, and local schools, churches, and businesses in writing a minimum of five business days prior to beginning work.
- D. 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 the traffic control plan.
- E. 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 Owner's Representative.
- F. Contractor shall maintain local driveway access to residential and commercial properties adjacent to work areas at all times unless approved. Use all-weather materials approved by Owner's Representative to maintain temporary driveway access to commercial and residential driveways. The Contractor shall also give special consideration to maintain access by constructing temporary driveway pavement for schools, apartment complex, day care facilities, hospitals, clinics, retirement and assisted living facilities.
- G. Cleanliness of Surrounding Streets:
  - 1. Keep streets used for entering or leaving the job area free of excavated material, debris, and any foreign material resulting from construction operations in compliance with applicable ordinances.
- H. Remove existing signage and striping that conflict with construction activities or that may cause driver confusion.
- I. Provide safe access for pedestrians along major cross streets.
- J. Alternate closures of cross streets so that two adjacent cross streets are not closed simultaneously.
- K. Do not close more than two consecutive esplanade openings at a time without prior approval from Owner's Representative.

### 3.02 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and the Owner's operations.



- 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.

### 3.03 FLARES AND LIGHTS

- A. Provide lights during hours of low visibility to delineate traffic lanes and to guide traffic.

### 3.04 HAUL ROUTES

- A. Utilize haul routes designated by owner, 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 and minimize interference with public traffic.

### 3.05 TRAFFIC SIGNS AND SIGNALS

- A. Construct all necessary traffic control devices including but not limited to loop detectors, traffic signal conduits, traffic signal wiring and cross walk signals as shown on the plan drawings.
- B. Install traffic control devices at approaches to the site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- C. Relocate traffic signs and appurtenances as Work progresses to maintain effective traffic control.
- D. Unless otherwise approved by Owner's Representative, provide driveway signs with the name of business that can be accessed from the particular cross-over. Two signs will be required for each cross-over.
- E. Replace existing traffic control devices in the project area.
- F. Owner's Representative may direct Contractor to make adjustments to traffic control signage to eliminate driver confusion and maintain orderly traffic flow during construction at no additional cost to the Owner.

- G. Repair or replace signal control devices, detectors or cables where damage occurred due to Contractors construction efforts or operation of equipment related to paving repairs or removal.

### 3.06 BRIDGING TRENCHES AND EXCAVATIONS

- A. Whenever necessary, bridge trenches and excavation to permit an unobstructed flow of traffic. Provide steel plates that can be laid across construction areas and major drives of commercial businesses.
- B. Secure bridging against displacement by using adjustable cleats, angles, bolts or other devices whenever bridge is installed:
  - 1. On an 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 of one foot beyond edges of trench or excavation. Use temporary paving materials (premix) to feather edges of plates to minimize wheel impact on secured bridging.
- F. Use steel plates of sufficient thickness to support H-20 loading, truck or lane, which produces maximum stress.

### 3.07 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.

### 3.08 MAINTENANCE OF EQUIPMENT AND MATERIAL

- A. Designate individual to be responsible for maintenance of traffic handling around construction area. This individual must be accessible at all times to immediately correct any deficiencies in equipment and materials used to handle traffic, such as

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missing, damaged, or obscured signs, drums, barricades, or pavement markings. Give name, address and telephone number of designated individual to the Owner's Representative.

- B. Make daily inspections of signs, barricades, drums, lamps and temporary pavement markings to verify that these are visible, and in good working order, and in conformance with TxDOT or any other entity. When not in conformance immediately bring equipment and materials into conformance by replacement, repair, cleaning, relocation, and/or realignment.
- C. Keep all equipment and materials, especially signs and pavement markings, clean and free of dust, dirt, grime, oil, mud or debris.

END OF SECTION

## SECTION 01580

## PROJECT IDENTIFICATION SIGNS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Project identification sign description.
- B. Installation.
- C. Maintenance and removal.

## 1.02 UNIT PRICES

- A. 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 for which this work is a component.
- B. If changes to project identification signs are requested by the Owner's Representative to keep them current, payment will be made by change order.
- C. Skid-mounted signs shall be relocated as directed by the Owner's Representative at no additional cost to the Owner. Post-mounted signs shall be relocated, if directed in writing by the Owner's Representative, at no additional cost to the Owner.

## 1.03 SYSTEM DESCRIPTION

- A. Sign Construction: Project identification signs shall be constructed of new materials and painted new for the project. Construct post-mounted signs as shown on Construction Sign Details.
- B. Appearance: Project identification signs shall be maintained to present a clean and neat look throughout the project duration.
- C. Sign manufacturer/Maker: Experienced as a professional sign company.
- D. Sign Placement: Place signs at locations as directed by the Owner's Representative. The Owner's Representative will provide sign placement instructions at the Pre-construction Meeting.
  - 1. A linear project is one involving paving, overlay, sewer lines, storm drainage, or water mains that run in the right-of-way over a distance. A linear project requires a project identification sign at each end of the construction site.
  - 2. Single Site or Building Projects: Provide one project identification sign.

3. Multiple Sites: Provide one project identification sign at each site.
  4. Sign Relocation: As work progresses at each site, it may be necessary to move and relocate project identification signs. Relocate signs as directed in writing by the Owner's Representative.
- E. Alternate Skid-mounted Sign Construction: Post-mounted signs are preferred, but skid-mounted signs are allowed, especially for projects with noncontiguous locations where work progresses from one location to another. The skid structure shall be designed to that the sign will withstand a 60-mile-per-hour wind directly to the face or back of the sign. Use stakes, straps, or ballast. Approval of the use of skid-mounted signs shall not release the Contractor from responsibility of maintaining a project identification sign on the project site and shall not make the Owner responsible for the security of such signs.

#### 1.04 SUBMITTALS

- A. Submit shop drawings under provisions of relevant Sections of these specifications.
- B. Show content, layout, lettering style, lettering size, and colors. Make sign and lettering to scale, clearly indicating condensed lettering, if used.

### PART 2 PRODUCTS

#### 2.01 SIGN MATERIALS

- A. Structure and Framing: All sign materials shall be new.
  1. Sign Posts: Use 4-inch by 4-inch treated wood posts, sized to fix top of sign at **6 FEET ABOVE GROUND**.
  2. Sign Supports and Skid Bracing: 2-inch by 4-inch wood framing material.
  3. Skid Members: 2-inch by 6-inch wood framing material.
  4. Fasteners:
    - a. Use galvanized steel fasteners.
    - b. Use 3/8-inch by 5-1/2-inch button head carriage bolts to attach sign to posts. Secure with nuts and flat head washers at locations as recommended by Sign Manufacturer.
    - c. Cover button heads with white reflective film or paint to match sign background.
- B. Sign and Sign Header: Use medium density overlaid marine plywood, minimum 1/2-inch thick. Use full-size 4-foot by 8-foot sheets for sign and a single piece for header to minimize joints; do not piece wood to fabricate a sign face.

- C. Paint and Primers: White paint used to prime surfaces and to resist weathering shall be an industrial grade, fast-drying, oil-based paint with gloss finish. Paint structural and framing members white on all sides and edges to resist weathering. Paint sign and sign header material white on all sides and edges to resist weathering. Paint all sign surfaces with this weather-protective paint prior to adding any sign paint or adhesive applications.
- D. Colors:
  - 1. Follow criteria established by attached Exhibit.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. Install Project identification signs within 10 calendar days after Date of Commencement.
- B. Erect signs where designated by the Owner's Representative at the Pre-construction Meeting or as described in part 1.03 of this Section. Position the sign in such a manner as to be fully visible and readable to the general public.
- C. Erect sign level and plumb.
- D. If mounted on post, sink posts a minimum of 30-inches below grade in 10-inch diameter posthole. Stabilize posts with sharp sand or concrete to minimize lateral motion. Leave a minimum of 8-feet of post above existing grade for mounting of the sign and header.
- E. Erect sign so that the top edge of the sign is no higher than 6-feet above existing grade.

### 3.02 MAINTENANCE AND REMOVAL

- A. Keep signs and support clean. Repair deterioration and damage.
- B. Remove signs, framing, supports, and foundations to a depth of 2-feet upon completion of Project. Restore the area to a condition equal to or better than before construction.

END OF SECTION

## SECTION 01600

## MATERIAL &amp; EQUIPMENT

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Requirements for transportation, delivery, handling, and storage of materials and equipment.

## 1.02 MEASUREMENT AND PAYMENT

- A. Unless indicated as a Bid Item, no separate payment will be made for Work performed under this Section. Include cost in Bid Items for which this work is a component.
- B. No payment for stored material will be made unless stipulated or approved by owner.

## 1.03 PRODUCTS

- A. Products: Means material, equipment, or systems forming the Work. Does not include machinery and equipment used for preparation fabrication, conveying and erection of the Work. Products may also include existing materials or components designated for reuse.
- B. Do not reuse materials and equipment, designated to be removed, except as specified by the Contract Documents.
- C. Provide equipment and components from the fewest number of manufacturers as is practical, in order to simplify spare parts inventory and to allow for maximum interchangeability of components. For multiple components of the same size, type or application, use the same make and model of component throughout the Work.

## 1.04 TRANSPORTATION

- A. Make arrangements for transportation, delivery, and handling of equipment and materials required for timely completion of the Work.
- B. Transport and handle products in accordance with instructions.
- C. Consign and address shipping documents to the proper party giving name of Project, street number, and City. Shipments shall be delivered to the Contractor.

## 1.05 DELIVERY

- A. Arrange deliveries of products to accommodate the Construction Schedule and in ample time to facilitate inspection prior to installation. Avoid deliveries that cause lengthy delays or overburden of limited storage space.

- B. Coordinate deliveries to avoid conflict with Work and conditions at the Project Site and to accommodate the following:
  - 1. Work of other contractors or the Owner.
  - 2. Limitations of storage space.
  - 3. Availability of equipment and personnel for handling products.
  - 4. Owner's use of premises.
- C. Have products delivered to the Project Site in manufacturer's original, unopened, labeled containers.
- D. Immediately upon delivery, inspect shipment to assure:
  - 1. Product complies with requirements of Contract Documents.
  - 2. Quantities are correct.
  - 3. Containers and packages are intact; labels are legible.
  - 4. Products are properly protected and undamaged.
  - 5. Insure provisions on material safety data sheets (MSDS) are followed.

#### 1.06 PRODUCT HANDLING

- A. Coordinate the off-loading of materials and equipment delivered to the Project Site. If necessary to move stored materials and equipment during construction, Contractor shall relocate materials and equipment at no additional cost to the Owner.
- B. Provide equipment and personnel necessary to handle products, including those provided by the Owner, by methods to prevent damage to products or packaging.
- C. Provide additional protection during handling as necessary to prevent breaking, scraping, marring, or otherwise damaging products or surrounding areas.
- D. Handle products by methods to prevent over bending or overstressing.
- E. Lift heavy components only at designated lifting points.
- F. Handle materials and equipment in accordance with Manufacturer's recommendations.
- G. Do not drop, roll, or skid products off delivery vehicles. Hand carry or use suitable materials handling equipment.

#### 1.07 STORAGE OR MATERIAL



- A. Store and protect materials in accordance with manufacturer’s recommendations and requirements of these Technical Specifications. Control storage of potential water pollutants in compliance with all applicable provisions of all Sections of these specifications.
- B. Make necessary provisions for safe storage of materials and equipment. Place loose soil materials, and materials to be incorporated into the Work to prevent damage to any part of the Work or existing facilities and to maintain free access at all times to all parts of the Work and to utility service company installations in the vicinity of the Work.
- C. Keep materials and equipment neatly and compactly stored in locations that will cause a minimum of inconvenience to other contractors, public travel, adjoining owners, tenants, and occupants. Arrange storage in a manner to provide easy access to inspection.
- D. Provide adequately ventilated, watertight storage facilities with floor above ground level for materials and equipment susceptible to weather damage.
- E. Restrict storage to areas available on the construction site for storage of material and equipment as shown on Plans or approved by the Owner’s Representative.
- F. Provide off-site storage and protection when on-site storage is not adequate.
- G. Do not use lawns, grass plots, or other private property for storage purposes without written permission of the owner. Damage to lawns, sidewalks, streets or other improvements shall be repaired or replaced to the satisfaction of the Owner’s Representative.
- H. Protect stored materials and equipment against loss or damage. Contractor is fully responsible for loss and/or damage of stored material.
- I. Store materials in manufacturers’ unopened containers.
- J. Materials delivered and stored along the line of the Work shall be not closer than 3 feet to any fire hydrant. Public and private drives and street crossings shall be kept open.
- K. The total length which materials may be distributed along the route of construction at any one time is specified in Section 01015 – Contractor’s Use of Premises.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

## SECTION 01630

## PRODUCT OPTIONS AND SUBSTITUTIONS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Options for making product or process selections.
- B. Procedures for proposing equivalent construction products or processes, including preapproved, and approved products or processes.

## 1.02 DEFINITIONS

- A. Product: Means, materials, equipment, or systems incorporated into the Project. Product does not include machinery and equipment used for production, fabrication, conveying, and erection of the Work. Products may also include existing materials or components designated for re-use.
- B. Process: Any proprietary system or method for installing system components resulting in an integral, functioning part of the Work. For this Section, the word Product includes Processes.

## 1.03 SELECTION OPTIONS

- A. Preapproved Products: Construction products of certain manufacturers or suppliers are designated in the Specifications as "preapproved." Products of other manufacturers or suppliers will not be acceptable for this Project and will not be considered under the submittal process for approving alternate products.
- B. Approved Products: Construction products or processes of certain manufacturers or suppliers designated in the Specifications followed by the words "or approved equal." Approval of alternate products or processes not listed in the Specifications may be obtained through provisions in the Special Conditions, and by following the submittal procedures specified in Section 01300 - Submittals. The procedure for approval of alternate products is not applicable to preapproved products.
- C. Product Compatibility: To the maximum extent possible, provide products that are of the same type or function from a single manufacturer, make, or source. Where more than one choice is available as a Contractor's option, select a product which is compatible with other products already selected, specified, or in use by the Owner.

## 1.04 CONTRACTOR'S RESPONSIBILITY

- A. The Contractor's responsibility related to product options and substitutions is defined in the Special Conditions.
- B. Furnish information the Owner's Representative deems necessary to judge equivalency of the alternate product.
- C. Pay for laboratory testing, as well as any other review or examination costs, needed to establish the equivalency between products in order to obtain information upon which the Owner's Representative can base a decision.
- D. If the Owner's Representative determines that an alternate product is not equal to that named in the Specifications, the Contractor shall furnish one of the specified products.

#### 1.05 OWNER'S REVIEW

- A. Alternate products or processes may be used only if approved in writing by the Owner's Representative. The Owner's Representative's determination regarding acceptance of a proposed alternate product is final.
- B. Alternate products will be accepted if the product is judged by the Owner's Representative to be equivalent to the specified product or to offer substantial benefit to the Owner.
- C. The Owner retains the right to accept any product or process deemed advantageous to the Owner, and similarly, to reject any product or process deemed not beneficial to the Owner.

#### 1.06 SUBSTITUTION PROCEDURE

- A. Collect and assemble technical information applicable to the proposed product to aid in determining equivalency as related to the approved product specified.
- B. Submit a written request for a construction product to be considered as an alternate product.
- C. Submit the product information after the effective date of the Agreement and within two weeks of that date. After the submittal period has expired, requests for alternate products will be considered only when a specified product becomes unavailable because of conditions beyond the Contractor's control.
- D. Submit 5 copies of each request for alternate product approval. Include the following information:
  - 1. Complete data substantiating compliance of proposed substitution with Contract Documents

2. For products:
    - a. Product identification, including manufacturer's name and address
    - b. Manufacturer's literature with product description, performance and test data, and reference standards
    - c. Samples, as applicable
    - d. Name and address of similar projects on which product was used and date of installation. Include the name of the Owner, Owner's Representative, and installing contractor.
  3. For construction methods:
    - a. Detailed description of proposed method
    - b. Drawings illustrating methods
  4. Itemized comparison of proposed substitution with product or method specified
  5. Data relating to changes in construction schedule
  6. Relation to separate contracts, if any
  7. Accurate cost data on proposed substitution in comparison with product or method specified.
  8. Other information requested by the Owner's Representative.
- E. Approved alternate products will be subject to the same review process as the specified product would have been for shop drawings, product data, and samples.
- F. The Owner desires to have the products and processes as specified in the contract. The consideration and approval of the alternative product or process is at the sole discretion of the owner.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

## SECTION 01655

## STARTING SYSTEMS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Starting systems.
- B. Demonstration and instructions.
- C. Testing, adjusting and balancing.

## 1.02 MEASUREMENT AND PAYMENT

- A. Unless indicated as a bid item, no separate payment will be made for work performed under this Section. Include cost in Bid Items for which this work is a component.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

## 3.01 PREPARATION

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

## 3.02 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to the Owner Representative two (2) weeks prior to date of substantial completion.
- B. Utilize O&M manuals as the basis for instruction. Review contents of manual with the Owner Representative in detail to explain aspects of operation and maintenance.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at the equipment location.
- D. Prepare and insert additional data in O&M manuals when the need for additional data becomes apparent during instruction.
- E. At a minimum, the Contractor will demonstrate the following:
  - 1. Products and procedures to be used in maintaining various surfaces, e.g., counter tops, toilet partitions, tile floors and carpeting;
  - 2. Procedures to set and maintain landscape irrigation system;
  - 3. Procedures to set and maintain security and fire alarm systems; and
  - 4. Procedures to set and maintain HVAC systems.

### 3.03 TESTING, ADJUSTING AND BALANCING

- A. Contractor shall start, test, adjust, balance, and provide reports on all installed equipment as provided for in this section.
- B. Owner may also appoint, employ, and pay for services of an independent firm to perform testing, adjusting, and balancing.
- C. Reports will be submitted by both the Contractor and the independent firm (if utilized) to the Owner indicating observations and results of the tests and indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.
- D. Owner's employment of an independent firm shall not relieve the Contractor's responsibility under this section.

END OF SECTION

## SECTION 01700

## CONTRACT CLOSEOUT

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Closeout procedures including final submittals such as operation and maintenance data, warranties, and spare parts and maintenance materials.

## 1.02 CLOSEOUT PROCEDURES

- A. Comply with the General Conditions of Agreement regarding Final Completion and Final Payment when Work is complete and ready for Owner Representative's final inspection.
- B. Provide Project Record Documents prior to request for final closeout.
- C. Complete or correct items on punch list, with no new items added to said punch list.
- D. Any new items not on the original punch list that are discovered or arise after the punch list is a warranty item and will be addressed within no more than 30 days of notification by the City (or sooner if required by specific circumstances) during warranty period.
- E. The Owner will occupy portions of the Work as specified in other Sections.
- F. Provide submittals as required by governing authorities.
- G. Any punch list items will be completed to the Owner's satisfaction prior to final payment.

## 1.03 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Clean debris from drainage systems.
- C. Clean site; sweep paved areas, rake clean landscaped surfaces.
- D. Remove waste and surplus materials, rubbish, and temporary construction facilities from the site following the final test of utilities and completion of the work.

## 1.04 OPERATION AND MAINTENANCE DATA

- A. Submit operations and maintenance data in accordance with the sections and provisions of the specifications.

1.05 WARRANTIES

- A. Provide one original of each warranty from Subcontractors, suppliers, and manufacturers.
- B. Provide Table of Contents and assemble warranties in 3-ring/D binder with durable plastic cover.
- C. Submit warranties prior to final Application for Payment.
- D. Warranties shall commence in accordance with the requirements in the Special Conditions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION



## SECTION 01710

## CLEANING

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Execution of cleaning during progress of daily work, and at completion of work.
- B. Maintaining premises and public properties (including storage yards) free from accumulations of waste, debris and rubbish caused by operations.
- C. At completion of work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials:
  - 1. Clean all surfaces exposed to sight.
  - 2. Leave project clean and ready for occupancy or use.

## 1.02 UNIT PRICES

- A. No separate payment will be made for cleaning under this section. Include payment in unit price for related work.

## PART 2 PRODUCTS

## 2.01 MATERIALS

- A. Use cleaning materials recommended by manufacturer of surface to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.
- C. See each specification section for specific products if applicable.

## PART 3 EXECUTION

## 3.01 DURING CONSTRUCTION

- A. Execute cleaning to ensure that building, grounds and public properties are maintained free from accumulations of waste materials and rubbish.
- B. Wet down dry materials and rubbish to settle dust and prevent blowing dust.
- C. At daily intervals during progress of work, clean site and public properties.

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- D. Legally and properly dispose of waste materials, debris, and rubbish.
- E. Provide on-site containers for collection of waste materials, debris and rubbish.
- F. Provide wire fence or equivalent around debris piles to prevent blowing of debris from project site.
- G. Remove waste material, debris, and rubbish from site.
- H. Legally dispose of debris at public or private dumping areas off Owner's property.
- I. Handle materials in a controlled manner with as few handlings as possible.
- J. Owner may dictate cleaning equipment and methodology.

3.02 SAFETY REQUIREMENTS

- A. Hazards Control:
  - 1. Store volatile wastes in covered metal containers.
  - 2. Remove containers from premises daily.
  - 3. Prevent accumulation of wastes which create hazardous conditions.
  - 4. Provide adequate ventilation during use of volatile or noxious substances.
- B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws:
  - 1. Do not burn or bury rubbish and waste materials on project site.
  - 2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
  - 3. Do not dispose of wastes into stream or waterways.
  - 4. Cleanup after haul trucks.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Maintenance and Submittal of Record Documents and Samples.

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Maintain one record copy of documents at the site in accordance with the General Conditions.
- B. Store Record Documents and samples in field office if a field office is required by Contract Documents, or in a secure location. Provide files, racks, and secure storage for Record Documents and samples.
- C. Label each document "PROJECT RECORD" in neat, large, printed letters.
- D. Maintain Record Documents in a clean, dry, and legible condition. Do not use Record Documents for construction purposes.
- E. Keep Record Documents and Samples available for inspection by Owner's Representative.

1.03 RECORDING

- A. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
- B. Contract Drawings and Shop Drawings: Legibly mark each item to record all actual construction, or "as built" conditions, including:
  - 1. Measured horizontal locations and elevations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - 2. Elevations of underground utilities referenced to bench mark utilized for project.
  - 3. Field changes of dimension and detail.
  - 4. Changes made by modifications.
  - 5. Details not on original contract drawings.

6. References to related shop drawings and Modifications.

C. Record information with a red pen on a set of full size original construction drawings.

1.04 SUBMITTALS

A. At contract closeout, deliver Project Record Documents to Owner's Representative.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

## SECTION 01730

## OPERATION AND MAINTENANCE DATA

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Submittal requirements for manufacturers' operation and maintenance (O&M) data.
- B. Submittal requirements for O&M data notebooks.

## 1.02 UNIT PRICES

- A. The value and payment of approved equipment operation and maintenance manuals is incidental to the amount bid for equipment and installation. Project retainage will not be released until O&M manuals have been delivered and accepted by Owner.

## 1.03 REQUIREMENTS

- A. Furnish manufacturers' operation and maintenance data notebooks for equipment and components as required by the individual technical specifications in accordance with all sections and provisions of these specifications.
- B. Furnish O&M data notebooks in accordance with the requirements of this Section.

## 1.04 SUBMITTALS

- A. Submit O&M data for manufacturers' equipment and components, as required.
- B. For projects which include multiple facilities, provide separate O&M data submittals noted accordingly.
- C. Manufacturers' O&M data submittals shall have been reviewed and accepted by the Owner's Representative prior to requesting operational testing.
- D. Submit three (3) copies of complete O&M data notebooks and electronic copies on disks meeting the requirements of this Section to the Owner's Representative 14 days prior to the scheduled demonstration testing and facility start-up.
- E. Compile the O&M data notebook of all approved manufacturer O&M data submittals previously reviewed and accepted by the Owner's Representative and organize in accordance with the requirements of this Section.

- F. Incorporate revisions or additional data required for the O&M data notebook, due to system start-up and demonstration testing, and resubmit as a condition of final payment.

#### 1.05 O&M DATA

- A. For each product or system: list names, addresses, e-mail addresses and telephone numbers of suppliers and service representatives, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- D. Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- E. Warranties, Guarantees and Bonds: Bind in a copy of each.

#### 1.06 O&M REQUIREMENTS

- A. For each item of equipment and each system include a description of unit or system and component parts. Identify function, normal operating characteristics, and limiting conditions. Include function, normal operating characteristics, and limiting conditions. Include performance curves where applicable, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- B. Data submitted on equipment shall include complete maintenance instructions (including preventive and corrective maintenance) and parts lists in sufficient detail to facilitate ordering replacements.
- C. Operating Procedures: Include start-up, and normal operating instructions and sequence. Include regulation, control, stopping, shut-down, and emergency instructions.
- D. Provide servicing and lubrication schedule, and list of lubricants required. Cross-reference lubricants to products offered by at least three major lubricant suppliers. Note lubrication points on Drawings.
- E. Include manufacturer's printed operation and maintenance instructions.
- F. Include sequence of operation by controls manufacturer.
- G. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams, and diagrams required for maintenance.

- H. Troubleshooting guides.
- I. Complete spare parts list with predicted life of parts subject to wear, list of spare parts recommended on hand for both initial start-up and for normal operating inventory, and local or nearest source of spare parts availability.

1.07 O&M DATA NOTEBOOKS

- A. The Contractor shall compile O&M data notebooks for each facility consisting of the assembled manufacturer's O&M data submittals which were previously reviewed and accepted by the. Owner's Representative The O&M data notebooks are required before demonstration testing or start-up activities.
- B. Submit O&M data notebooks, bound in 8½ x 11 inch text pages, 3-ring/D binder notebooks with durable plastic covers as well as electronic media containing the O&M manuals in acceptable electronic format.
- C. Provide binder covers and spines with computer printed title "OPERATION AND MAINTENANCE DATA", title of project, facility name and address.
- D. For projects with multiple facilities, provide separate O&M data notebooks specific to each facility.
- E. Provide separate binder notebooks based on category of equipment or components submitted. Note as either "Mechanical", "Electrical", or "Instrumentation" on the cover and spine. DO NOT combine these into one binder.
- F. All binder notebooks shall be provided with labeled, tabbed, dividers logically arranged, and shall include a Table of Contents noting all sections, drawings, diagrams, vendor data, and other documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

## SECTION 02050

## DEMOLITION

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Demolishing and removing existing structures, equipment and materials only to the extent as required in the execution work detailed in the contract documents.
- B. Disposing of demolished materials and equipment.

## 1.02 UNIT PRICES

- A. Measurement for demolition is on a lump sum basis for each contiguous area, including submittal of proposed demolition and removal schedule.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all provisions and sections within these specifications.
- B. Submit proposed methods, equipment, materials and sequence of operations for demolition of structures. Describe coordination for shutting off, capping, and removing utilities. Plan operations to minimize temporary disruption of utilities to existing facilities or adjacent property.
- C. Submit proposed demolition and removal schedule for approval. Notify Owner's Representative in writing at least 72 hours before starting demolition.
- D. Submit an approved copy of demolition schedule to Fire Department prior to commencement of demolition operations.
- E. Obtain a permit for building demolition, as required.

## 1.04 OWNERSHIP OF MATERIAL AND EQUIPMENT

- A. Materials and equipment designated for reuse or salvage are listed in Section 01010 - Summary of Work. Protect items designated for reuse or salvage from damage during demolition, handling and storage. Restore damaged items to satisfactory condition.
- B. Materials and equipment not designated for reuse or salvage become the property of the Contractor.

## 1.05 STORAGE AND HANDLING



- A. Store and protect materials and equipment designated for reuse until time of installation.
- B. Deliver and unload items to be salvaged to storage areas indicated on Drawings.
- C. Remove equipment and materials not designated for reuse or salvage and all waste and debris resulting from demolition from site. Remove material as work progresses to avoid clutter.

#### 1.06 ENVIRONMENTAL CONTROLS

- A. Minimize spread of dust and flying particles. If required by governing regulations, use temporary enclosures and other suitable methods to prevent the spread of dust, dirt and debris.
- B. Use appropriate controls to limit noise from demolition to levels designated in local ordinances.
- C. Do not use water where it can create dangerous or objectionable conditions, such as localized flooding, erosion, or sedimentation of nearby ditches or streams.
- D. Stop demolition and notify Owner's Representative if underground fuel storage tanks, asbestos, PCB's, contaminated soils, or other hazardous materials are encountered.
- E. Dispose of removed equipment, materials, waste and debris in a manner conforming to applicable laws and regulations.

### PART 2 PRODUCTS

#### 2.01 EQUIPMENT AND MATERIALS FOR DEMOLITION

- A. Use equipment and materials approved under Paragraph 1.03, Submittals.
- B. Fires are not permitted.
- C. Do not use a "drop hammer" where the potential exists for damage to underground utilities, structures, or adjacent improvements.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Prior to demolition, make an inspection with Owner's Representative to determine the condition of existing structures and features adjacent to items designated for demolition. Provide photographs of adjacent properties prior to demolition.
- B. Owner's Representative will mark or list existing equipment to remain the property of the Owner.

- C. Do not proceed with demolition or removal operations until after the joint inspection and subsequent authorization by Owner's Representative.

### 3.02 PROTECTION OF PERSONS AND PROPERTY

- A. Provide safe working conditions for employees throughout demolition and removal operations. Observe safety requirements for work below grade.
- B. Maintain safe access to adjacent property and buildings. Do not obstruct roadways, sidewalks or passageways adjacent to the work.
- C. Perform demolition in a manner to prevent damage to adjacent property. Repair damage to City property, public right of way or adjacent property and facilities at no cost to the owner.
- D. The Contractor shall be responsible for safety and integrity of adjacent structures and shall be liable for any damage due to movement or settlement. Provide proper framing and shoring necessary for support. Cease operations if an adjacent structure appears to be endangered. Resume demolition only after proper protective measures have been taken.
- E. Erect and maintain enclosures, barriers, warning lights, and other required protective devices.

### 3.03 UTILITY SERVICES

- A. Follow rules and regulations of authorities or companies having jurisdiction over communications, pipelines, and electrical distribution services.
- B. Notify and coordinate with utility company and adjacent building occupants when temporary interruption of utility service is necessary.

### 3.04 DISPOSAL

- A. Remove from the site all items contained in or upon the structure not designated for reuse or salvage. Conform to requirements of Section 01500 - Temporary Facilities and Controls or Section 01564 - Waste Material Disposal.
- B. Follow method of disposal as required by regulatory agencies.

### 3.05 MECHANICAL WORK ITEMS

- A. Mechanical removals consist of dismantling and removing existing piping, pumps, motors, water tanks, equipment and other appurtenances. It includes cutting, capping, and plugging required to restore use of existing utilities.
- B. Remove existing process, water, chemical, gas, fuel oil and other piping not required for new work. Take out piping to the limits shown or to a point where it will not interfere with the new work. Piping not indicated to be removed or which does not

interfere with new work shall be removed to the nearest solid support, capped, and the remainder left in place. Purge chemical and fuel lines and tanks. Verify that such lines are safe prior to removal or capping.

- C. Where piping that is to be removed passes through existing walls, cut and cap piping on each side of the wall. Use cap appropriate for pipe material to be capped. Provide fire-rated sealant for walls classified as fire-rated.
- D. When underground piping, which is not located in the public right-of-way, is to be altered or removed, cap the remaining piping. Abandoned underground piping may be left in place unless it interferes with new work or is shown or specified to be removed. For piping to be abandoned, fill with sand, pressure grout or other approved method and plug with concrete or brick masonry bulkhead unless otherwise approved by the Owner.
- E. Remove waste and vent piping to points shown. Plug pipe and cleanouts and plugs. Where vent stacks pass through an existing roof that is to remain, remove the stack and patch the hole in the roof, making it watertight. Comply with requirements of existing roof installer so as to maintain roof warranty.
- F. Conform to applicable codes when making any changes to plumbing and heating systems.

### 3.06 ELECTRICAL WORK ITEMS

- A. Electrical removals consist of disconnecting and removing existing switchgear, distribution switchboards, control panels, bus duct, conduits and wires, panel boards, lighting fixtures, and miscellaneous electrical equipment.
- B. Remove existing electrical equipment and fixtures to prevent damage to allow continued operation of existing systems and to maintain the integrity of the grounding systems.
- C. Remove poles and metering equipment, if designated for removal on the Drawings. Coordinate electrical removals with the power company, as necessary. Verify that power is properly de-energized and disconnected.
- D. Where shown or otherwise required, remove wiring in underground duct systems. Verify function of wiring before disconnecting and removing. Plug ducts which are not to be reused at entry to buildings.
- E. Changes to electrical systems shall conform to applicable codes.

END OF SECTION

SECTION 02076

REMOVE EXISTING PAVEMENTS AND STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removing concrete paving, asphaltic concrete pavement, and base courses.
- B. Removing concrete curbs, concrete curb and gutters, sidewalks and driveways.
- C. Removing pipe culverts and sewers.
- D. Removing miscellaneous structures of concrete, masonry, or combination of concrete and masonry.

1.02 UNIT PRICES

- A. No separate payment will be made for removing existing pavements and structures under this Section unless included in bid documents. Include payment in unit price for work in appropriate sections.
- B. Measurement, when included in bid documents, will be as follows:
  - 1. Measurement for removing and disposing of concrete base and surfacing, and removing asphaltic surfacing, is on a square yard basis measured between lips of gutters.
  - 2. Measurement for removing and disposing of cement stabilized shell base course, with or without asphalt surfacing, is on a square yard basis.
  - 3. Measurement for removing and disposing of concrete base and surfacing with curbs is on a square yard basis measured from back to back of curbs. Payment includes removal of all base, asphaltic surfacing, concrete pavement, esplanade curbs, curb and gutters, and paving headers.
  - 4. Measurement for removing and disposing of concrete pavement is on a square yard basis measured from back to back of curbs.
  - 5. Measurement for removing and disposing of monolithic curb and gutter, removing monolithic concrete curb, and removing concrete curb is on a linear foot basis measured along the face of the curb.

6. Measurement for removing and disposing of concrete sidewalk and driveway is on a square yard basis.
  7. Measurement for removing and disposing of miscellaneous concrete and masonry items is on a cubic yard basis of the structure in place.
  8. Measurement for removing and disposing of pipe culverts and sewers is on a linear foot basis for each diameter of type of pipe removed.
- C. No payment will be made for work outside maximum payment limits indicated on Drawings, or in areas removed for Contractor's convenience.

### 1.03 REGULATORY REQUIREMENTS

- A. Conform to applicable codes for disposal of debris.
- B. Coordinate removal work with utility companies.

### PART 2 PRODUCTS - NOT USED

### PART 3 EXECUTION

#### 3.01 PREPARATION

- A. Obtain advance approval from Owner's Representative for dimensions and limits of removal work.
- B. Identify known utilities below grade. Stake and flag locations.

#### 3.02 PROTECTION

- A. Protect utilities that remain from damage.
- B. Protect trees, other plant growth, and features designated to remain.
- C. Protect adjacent public and private property from damage.
- D. Protect bench marks, monuments, and existing structures designated to remain from damage or displacement.

#### 3.03 REMOVALS

- A. Remove by methods that will not damage underground utilities. Do not use a drop hammer near existing underground utilities.
- B. Minimize amount of earth loaded during removal operations.

- C. Where existing pavement is to remain, make straight saw cuts in existing pavement to provide clean breaks prior to removal. Do not break concrete pavement or base with drop hammer unless concrete or base has been saw cut a minimum depth of 2 inches.
- D. Where street and driveway saw cut locations coincide or fall within three feet of existing construction or expansion joints, break-out to existing joint.
- E. Remove sidewalks and curbs to nearest existing dummy, expansion, or construction joint.

3.04 DISPOSAL

- A. Inlet frames, grates, and plates; and manhole frames and covers, may remain Owner property. Disposal shall be in accordance with requirements of Section 01564 - Waste Material Disposal.
- B. Remove debris resulting from Work under this section from site in accordance with requirements of Section 01564 - Waste Material Disposal.

END OF SECTION

SECTION 02100

RIGHT OF WAY PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clearing and grubbing.
- B. Removal of topsoil, stripping and stockpiling.
- C. Removal of debris and trash.
- D. Removal of obstructions.
- E. Removal and replacement of fence section.
- F. Temporary Fencing.
- G. Excavation and fill.
- H. Disposal of waste materials.
- I. Disposal of excess materials.
- J. Salvaging of designated items.

1.02 UNIT PRICES

- A. No separate payment will be made for work performed under this section. Include payment in unit price for related work unless stated otherwise in the Bid Proposal.
- B. Side streets and utility easements involving any work in this contract will not be measured separately and are considered incidental to the project.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Imported fill
  - 1. Sand, gravel, earth or combination, which can be compacted to form stable embankments and fills conforming to select borrow standards:
    - a. Liquid limit: 45 maximum, ASTM D 4318.
    - b. Plasticity index: 12 minimum, 20 maximum, ASTM D 4318.

- c. Free from trash, vegetation, organic matter, large stones, hard lumps of earth and frozen, corrosive or perishable material.
- d. Well broken up, free of clods of hard earth, rocks, and stones greater than 2-inch dimension.

### PART 3 EXECUTION

#### 3.01 PRESERVATION OF STAKING

- A. Use caution to preserve survey staking, monuments and property corners.
- B. Employ a Registered Public Surveyor to reset any missing, disturbed, or damaged monumentation.

#### 3.02 SITE CLEARING

- A. Protect trees and shrubs designated to remain in accordance with Section 01535 – Tree and Plant Protection.
- B. Protect utilities to remain free from damage.
- C. Topsoil Removal:
  - 1. Remove grass from areas before stripping.
  - 2. Topsoil is defined as surface soil found of depth of not less than 4 inches.
  - 3. Strip topsoil to depths encountered.
  - 4. Perform stripping in a manner to prevent intermingling of topsoil with underlying sterile subsoil and remove objectionable materials, including clay lumps, stones over 2 inches in diameter, weeds, roots, leave and debris.
  - 5. Where trees are designated by Owner to be left standing, stop topsoil stripping at extreme limits of tree drip line to prevent damage to main root system.
  - 6. Construct storage piles to freely drain surface water.
  - 7. Cover storage piles, if required, to prevent wind-blown dust.
  - 8. At completion, transport topsoil from stockpiles to work site for spreading and final fine grading.
- D. Clearing and Grubbing.
  - 1. Clear project site of trees, shrubs, and other vegetation, except for those designated by Owner to be left standing.



2. Completely remove stumps, roots, and other debris protruding through ground surface.
3. Use only hand methods for grubbing inside drip line of trees.
4. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.
5. Place fill material in horizontal layers not exceeding 6 inches loose depth and thoroughly compact to density equal to adjacent original ground.
6. On areas required for roadway, channel, or structural excavation, remove stumps and roots to depth of 2 feet below lower elevation of excavation.
7. On areas required for embankment construction, remove stumps and roots to depth of 2 feet below ground surface.
8. Blade entire area to prevent ponding of water and to provide drainage, except in areas to be immediately excavated.
9. Trees and stumps may be cut off as close to natural ground as practicable on areas which are to be covered by at least 3 feet of embankment.
10. Complete operations by bulldozing, blading, and grading so that prepared area is free of holes, unplanned ditches, abrupt changes in elevations and irregular contours, and preserve drainage of area.

### 3.03 UNSUITABLE MATERIAL

- A. Undercut and replace material which Owner's Representative designates as unsuitable for subsequent construction.
- B. Material used to replace unsuitable material shall be suitable material from site excavation or "Imported Fill" specified in this section.

### 3.04 EXCAVATION AND FILL

- A. Depressed site areas shall be filled using material from high areas, insofar as practicable.
- B. Fill to indicated rough grade elevations with "Imported Fill" material, when fill obtained from high areas is exhausted.
- C. Place and compact fill in accordance with Section 02221 – Embankment.

### 3.05 SALVAGEABLE ITEMS AND MATERIALS

- A. Items designated by the Owner's Representative to be salvaged are to be carefully removed, so as to cause no damage to the salvaged items and delivered to Owner's storage yard.

3.06 DISPOSAL

- A. Removal and dispose of excess material and debris resulting from work under this Section in accordance with requirements of Section 01564 – Waste Material Disposal.

END OF SECTION

SECTION 02105  
SITE PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clearing and grubbing.
- B. Removal of topsoil, stripping and stockpiling.
- C. Removal of debris and trash.
- D. Removal of obstructions.
- E. Cutting and filling.
- F. Rough grading.
- G. Disposal of waste materials.
- H. Disposal of excess materials.
- I. Salvaging of designated items.

1.02 UNIT PRICES

- A. All items within this section shall be considered incidental to the cost of the project.

1.03 PROTECTION

- A. Refer to article entitled "Protection" in General Requirements.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Asphaltic Horticultural Coating:
  - 1. Emulsified asphalt or other coating especially formulated for horticultural use on cut or injured plant tissue.
  - 2. Waterproof, adhesive, elastic, antiseptic tree wound compound free from kerosene and coal tar creosote.
- B. Liquid Fertilizer: Appropriate to the season and application.

**PART 3 EXECUTION****3.01 PRESERVATION OF STAKING**

- A. Site preparation operations shall preserve survey staking.
- B. At own expense, without charge to Owner, employ surveyor to check staking, and reset any missing, disturbed, or damaged staking upon completion of site preparation.
- C. Use staking to check that obstructions have been removed within designated construction areas, rights-of-way, or easements.

**3.02 SITE CLEARING**

- A. Trees and shrubs designated to remain that sustain cutting or injury to roots, trunk, or limbs shall be pruned by a tree surgeon and cut or injury painted with asphaltic horticultural coating without cost to Owner.

**3.03 DISPOSAL OF WASTE MATERIALS**

- A. Objectionable materials such as trash, debris, cleared and grubbed materials, and unsuitable, unusable, and undesirable materials necessary and designated by Owner to be removed from construction area shall be classified as follows:
  - 1. Combustible waste materials: Materials feasible, practical and non-toxic to dispose of by burning, including cleared and grubbed materials.
  - 2. Incombustible waste materials: Materials not burnable, not feasible, and not practical to dispose of by burning.
- B. Burning
  - 1. Burning of combustible waste materials and cleared and grubbed materials will not be permitted.
- C. Waste materials shall become property of Contractor and shall be legally disposed of by contractor outside the limits of Owner's controlled property.

**3.04 EXCESS MATERIAL**

- A. Excess material designated by the Owner to be removed shall become the property of the contractor and he shall remove excess material from Owner's controlled property and legally dispose of it. Excess material excavated cannot leave Galveston Island.

**3.05 ROUGH GRADING**

- A. The site shall be rough-graded to eliminate holes and sharp breaks in grade and to fit into area drainage pattern.
- B. The site shall drain readily.

END OF SECTION

## SECTION 02221

## EMBANKMENT

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Construction of embankments with excess excavated material and borrow.

## 1.02 UNIT PRICES

- A. No separate payment will be made for embankment. Include cost in the unit price for work in related item.

## 1.03 TESTS

- A. Tests and analysis of soil properties will be performed in accordance with ASTM D4318, ASTM D2216, and ASTM D698 under provisions of Section 01410 - Testing Laboratory Services.

## 1.04 PROTECTION

- A. Protect trees, shrubs, lawns, existing structures, and other features outside of embankment limits.
- B. Protect utilities above and below grade, which are to remain.
- C. Repair damage.

## PART 2 PRODUCTS

## 2.01 MATERIALS

- A. Topsoil: Conform to requirements of Section 02920.
- B. General Backfill: Excavated material, graded free of roots, lumps greater than 6 inches, rocks larger than 3 inches, organic material, and debris.
- C. Structural Backfill (under pavement or structures): Select general backfill material from excavation or borrow meeting the following requirements:
  - 1. Plasticity Index: not less than 12 or more than 20.
  - 2. Maximum Liquid Limit: 45 unless approved by Owner's Representative.

**PART 3 EXECUTION****3.01 EXAMINATION**

- A. Verify borrow and excess excavated materials to be reused are approved.
- B. Verify removals, and clearing and grubbing operations, have been completed.

**3.02 PREPARATION**

- A. Fill test pits, or stump holes and other surface irregularities such as small swales: Backfill with embankment materials and compact in proper lift depths to requirements for embankment compaction.
- B. Remove and dispose of muck and other unsuitable materials which will not consolidate. Backfill with embankment materials and compact to requirements for embankment.
- C. Complete backfill of new utilities below future grade.

**3.03 EMBANKMENT**

- A. Do not conduct placement operations during inclement weather or when existing ground or fill materials exceed 3 percent of optimum moisture content. Contractor may manipulate wet material to facilitate drying, by disking or windrowing at Contractor's expense.
- B. Do not place embankment fill until density and moisture content of previously placed material comply with specified requirements.
- C. Scarify areas to be filled to a minimum depth of 4 inches to bond existing and new materials. Mix with first fill layer.
- D. Spread fill material evenly, from dumped piles or windrows, into horizontal layers approximately parallel to finished grade. Place to meet specified compacted thickness. Break clods and lumps and mix materials by blading, harrowing, discing, or other approved method. Each layer shall extend across full width of fill.
- E. Each layer shall be homogeneous and contain uniform moisture content before compaction. Mix dissimilar abutting materials to prevent abrupt changes in composition of fill.
- F. Layers shall not exceed the following compacted thickness:

1. Areas indicated to be under future paving or shoulders, to be constructed within 6 months: 6 inches when compacted with pneumatic rollers, or 8 inches when compacted with other rollers.
  2. Other areas: 8 inches.
- G. Where shown on plans for steep slopes, cut benches into slope and scarify before placing fill. Place increasingly wide horizontal layers of specified depth, to the level of each bench.
- H. Build embankment layers on back slopes, adjacent to existing roadbeds, to level of old roadbed. Scarify top of old roadbed to minimum depth of four inches and recompact with next fill layer.
- I. Construct to lines and grades shown on drawings.
- J. Remove unsuitable material and excess soil not being used for embankment from the site in accordance with requirements of Section 01564 - Waste Material Disposal.

### 3.04 COMPACTION

- A. Maintain moisture content of embankment materials to attain required compaction density.
- B. Compact to following minimum densities at a moisture content of optimum to 3 percent above optimum as determined by ASTM D698, unless otherwise indicated on the Drawings:
1. Areas under future paving and shoulders: Minimum density of 95 percent of maximum dry density.
  2. Other areas: Minimum density of 90 percent of maximum dry density.

### 3.05 TOLERANCES

- A. Top of compacted surface: Plus or minus 1/2 inch in cross section, or in 16 foot length.

### 3.06 FIELD QUALITY CONTROL

- A. Compaction Testing will be performed in accordance with ASTM D1556 or ASTM D2922 and ASTM 3017 under provisions of Section 01410 - Testing Laboratory Services.
- B. For roadways, a minimum of three tests will be taken for each 1,000 linear feet per lane or 1000 square yards of embankment per lift for all other areas.



- C. If tests indicate work does not meet specified compaction requirements, recondition, recompact, and retest at Contractor's expense.

3.07 PROTECTION

- A. Conform to protection requirements of Section 02225 - Roadway Excavation.

END OF SECTION

## SECTION 02222

## BORROW

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Soil materials for embankment.
- B. Not to include beach or dune projects.

## 1.02 UNIT PRICES

- A. Payment for borrow is on cubic yard basis calculated by compacted volume quantities using average end area method based on the Construction Drawings.
- B. Borrow shall be measured at the site of embankment.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit location and description of proposed borrow area for approval. Borrow pits located on Galveston Island will require an excavation permit issued by the City.
- C. Submit material samples for testing.

## 1.04 TESTS

- A. Tests and analysis of soil materials will be performed in accordance with ASTM D4318 and ASTM D2216 under provisions of Section 01410 - Testing Laboratory Services.

## PART 2 PRODUCTS

## 2.01 SOIL MATERIAL

- A. Excavated material shall be graded free of lumps greater than 6 inches, rocks larger than 3 inches, organic material, chemical waste or other contamination, and debris. Take borrow material from sources approved by Owner's Representative.
- B. Material to be used for topsoil shall meet or exceed requirements for soil materials of Section 02920 - Topsoil.

PART 3 EXECUTION

3.01 PREPARATION

- A. Notify Owner's Representative and testing laboratory 5 days in advance of opening borrow source to permit obtaining samples for qualification testing.
- B. Clear approved source of trees, stumps, brush, roots, vegetation, organic matter, and other unacceptable material.

3.02 EXCAVATION

- A. Provide adequate drainage of surface water so that surface water run off does not enter borrow pit excavation.

3.03 HAULING

- A. Use covered trucks. Conform to requirements of Section 01570 - Traffic Control and Regulation and all local, County and State requirements.

3.04 EMBANKMENT

- A. Conform to requirements of Section 02221 - Embankment.

END OF SECTION

SECTION 02225

EXCAVATION AND BACKFILL FOR ROADWAYS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavation of materials for roadways.
- B. Compaction of roadway subgrade.
- C. Excavation of materials for roadside ditches and swales.
- D. Section 02920 - Topsoil: Topsoil materials and placement.

1.02 UNIT PRICES

- A. No separate payment will be made for excavation of material for roadway under this Section related roadway pavement items. Include payment in the unit price for applicable bid items.
- B. No separate payment will be made for excavation of material for roadside ditches and swales. Regrading of ditches and swales shall be incidental to applicable bid items.

1.03 TESTS

- A. Tests and analysis of soil materials will be performed in accordance with ASTM D4318, ASTM D2216, and ASTM D698 under provisions of Section 01410 - Testing Laboratory Services.

1.04 PROTECTION

- A. Protect trees, shrubs, lawns, existing structures, and other features outside of grading limits.
- B. Protect above and below grade utilities which are to remain.
- C. Repair damage caused by Contractor.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PREPARATION

- A. Identify required lines, levels, and datum. Coordinate with Section 01050 - Field Surveying.
- B. Identify and flag surface and aerial utilities.
- C. Notify utility companies to remove or relocate utilities. Galveston is not a part of Texas One Call. Call 409-797-3630 for Galveston Public Works Department during normal business hours and 409-766-2115 after business hours for emergency situations.
- D. Identify known utilities below grade. Stake and flag locations. Make temporary or permanent removals and replacements of underground pipes, ducts, or utilities where indicated on Drawings
- E. Upon discovery of unknown or badly deteriorated utilities, or concealed conditions, discontinue work. Notify Owner's Representative and obtain instructions before proceeding in such areas.
- F. Obtain approval of topsoil quality before excavating and stockpiling.

### 3.02 TOPSOIL EXCAVATION

- A. Excavate top 4 inches of topsoil for esplanades and areas to receive grass or landscaping from areas to be further excavated. Stockpile in area designated on site.
- B. Stockpile topsoil to height not exceeding 8 feet. Cover to protect from erosion.

### 3.03 SOIL EXCAVATION

- A. Excavate to lines and grades shown on drawings.
- B. Remove unsuitable material not meeting specifications. Backfill with embankment materials and compact to requirements of Section 02221 - Embankment.
- C. Maintain proper drainage.
- D. Fill over-excavated areas in accordance with requirements of Section 02221 - Embankment, at no cost to the Owner.
- E. Remove unsuitable material, and excess soil not being reused, from the site in accordance with requirements of Section 01564 - Waste Material Disposal.

### 3.04 COMPACTION

- A. Maintain optimum moisture content of subgrade to attain required compaction density.

- B. Compact to following minimum densities at a moisture content of optimum to 3 percent above optimum as determined by ASTM D698, unless otherwise indicated on the Drawings:
  - 1. Areas under future paving and shoulders: Minimum density of 95 percent of maximum dry density.
  - 2. Other areas: Minimum density of 90 percent of maximum dry density.

### 3.05 TOLERANCES

- A. Top of compacted surface: Comply with finished surface and thickness tolerances of Sections 02510- Asphaltic Concrete Pavement and Section- 02521.

### 3.06 FIELD QUALITY CONTROL

- A. Compaction Testing will be performed in accordance with ASTM D1556 or ASTM D2922 and ASTM 3017 under provisions of Section 01410 - Testing Laboratory Services.
- B. A minimum of three tests will be taken for each 1,000 linear feet per lane of roadway.
- C. If tests indicate work does not meet specified compaction requirements, recondition, recompact, and retest at Contractor's expense.

### 3.07 PROTECTION

- A. Prevent erosion at all times. Maintain ditches and cut temporary swales to allow natural drainage in order to avoid damage to roadway. Do not allow water to pond.
- B. Protect exposed areas having high moisture content from wheel loads that cause rutting.
- C. Maintain excavation and embankment areas until start of subsequent work. Repair and recompact slides, washouts, settlements, or areas with loss of density at no cost to the Owner.

END OF SECTION

SECTION 02226

EXCAVATION AND BACKFILL FOR STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavation, backfilling, and compaction of backfill for structures.

1.02 UNIT PRICES

- A. No payment will be made for structural excavation and backfill under this Section. Include payment in unit price or lump sum for applicable bid item.

1.03 DEFINITIONS

- A. Unsuitable Material: Unsuitable soil materials are the following:
  - 1. Materials that are classified as ML, CL-ML, MH, PT, OH and OL according to ASTM D 2487.
  - 2. Materials that cannot be compacted to the required density due to gradation, plasticity, or moisture content.
  - 3. Materials that contain large clods, aggregates, stones greater than 4 inches in any dimension, debris, vegetation, waste or any other deleterious materials.
  - 4. Materials that are contaminated with hydrocarbons or other chemical contaminants.
- B. Suitable Material: Suitable soil materials are those meeting specification requirements. Unsuitable soils meeting specification requirements for suitable soils after treatment with lime or cement shall be considered suitable, unless otherwise indicated.
- C. Select Material: Material as defined in Section 02229 - Utility Backfill Materials.
- D. Backfill: Select material meeting specified quality requirements, placed and compacted under controlled conditions around structures.
- E. Foundation Backfill Materials: Natural soil or manufactured aggregate meeting Class I requirements and geotextile filter fabrics, as required, to control drainage and material separation. Foundation backfill material is placed and compacted as backfill where needed to provide stable support for the structure foundation base. Foundation backfill materials may include concrete fill and seal slabs.

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- F. Foundation Base: For foundation base material, use crushed aggregate with filter fabric, as required, cement stabilized sand, or concrete seal slab. The foundation base provides a smooth, level working surface for the construction of the concrete foundation.
- G. Foundation Subgrade: Foundation subgrade is the surface of the natural soil which has been excavated and prepared to support the foundation base or foundation backfill, where needed.
- H. Ground Water Control Systems: Installations external to the excavation such as well points, eductors, or deep wells. Ground water control includes dewatering to lower the ground water, intercepting seepage which would otherwise emerge from the side or bottom of the excavation, and depressurization to prevent failure or heaving of the excavation bottom. Refer to Section 01563 - Control of Ground Water and Surface Water.
- I. Surface Water Control: Diversion and drainage of surface water runoff and rain water away from the excavation. Remove rain water and surface water which accidentally enters the excavation as a part of excavation drainage.
- J. Excavation Drainage: Removal of surface and seepage water in the excavation by sump pumping and using French drains surrounding the foundation to intercept the water.
- K. Over-Excavation and Backfill: Excavation of subgrade soils with unsatisfactory bearing capacity or composed of otherwise unsuitable materials below the foundation as shown on Drawings, and backfilled with foundation backfill material.
- L. Shoring System: A structure that supports the sides of an excavation to maintain stable soil conditions and prevent cave-ins.

#### 1.04 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these regulations.
- B. Submit a work plan for excavation and backfill for each structure with complete written description which identifies details of the proposed method of construction and the sequence of operations for construction relative to excavation and backfill activities. The descriptions, with supporting illustrations, shall be sufficiently detailed to demonstrate to the Owner's Representative that the procedures meet the requirements of the Specifications and Drawings.
- C. Submit excavation safety system plan.



1. The excavation safety system plan shall be in accordance with applicable OSHA requirements for all excavations.
  2. The excavation safety system plan shall be in accordance with the requirements of Section 01526 - Trench Safety System, for all excavations that fall under State and Federal trench safety laws.
- D. Submit a ground and surface water control plan in accordance with requirements in this Section and Section 01563 - Control of Ground Water and Surface Water.
- E. Submit backfill material sources and product quality information in accordance with requirements of Section 02229 - Utility Backfill Materials.
- F. Submit project record documents under provisions of Section 01720 - Project Record Documents. Record location of utilities, as installed, referenced to survey benchmarks. Include location of utilities encountered or rerouted. Give horizontal dimensions, elevations, inverts and gradients.

#### 1.05 TESTS

- A. Testing and analysis of backfill materials for soil classification and compaction during construction will be performed by an independent laboratory provided by the Owner in accordance with requirements of Section 01410 - Testing Laboratory Services and as specified in this Section.
- B. Contractor shall perform embedment and backfill material source qualification testing in accordance with requirements of Section 02229- Utility Backfill Materials.

### PART 2 PRODUCTS

#### 2.01 EQUIPMENT

- A. Perform excavation with equipment suitable for achieving the requirements of this Specification.
- B. Use equipment which will produce the degree of compaction specified. Backfill within 3 feet of walls shall be compacted with hand-operated equipment. Do not use equipment weighing more than 10,000 pounds closer to walls than a horizontal distance equal to the depth of the fill at that time. Use hand operated power compaction equipment where use of heavier equipment is impractical or restricted due to weight limitations.

#### 2.02 MATERIAL CLASSIFICATIONS

- A. Backfill materials shall conform to the classifications and product descriptions of Section 02229 - Utility Backfill Materials. The classification or product description for backfill applications shall be as shown on the Drawings and as specified.

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PART 3 EXECUTION

3.01 PREPARATION

- A. Conduct an inspection to determine condition of existing structures and other permanent installations.
- B. Set up necessary street detours and barricades in preparation for excavation if construction will affect traffic. Conform to requirements of Section 01570 - Traffic Control and Regulation. Maintain barricades and warning devices at all times for streets and intersections where work is in progress, or where affected by the Work, and is considered hazardous to traffic movements.
- C. Perform work in accordance with OSHA standards. Employ an excavation safety system as specified in Section 01526 - Trench Safety Systems for excavations over 5 feet deep.
- D. Remove old pavements and structures, including sidewalks and driveways, in accordance with requirements of Section 02076 - Removing Existing Pavements and Structures.
- E. Install and operate necessary dewatering and surface water control measures in accordance with requirements of Section 01563 - Control of Ground Water and Surface Water.

3.02 PROTECTION

- A. Protect trees, shrubs, lawns, existing structures, and other permanent objects outside of grading limits and within the grading limits as designated on the Drawings, and in accordance with requirements of Section 01535 - Tree and Plant Protection.
- B. Protect and support above-grade and below-grade utilities which are to remain.
- C. Restore damaged permanent facilities to pre-construction conditions unless replacement or abandonment of facilities is indicated on the Drawings.
- D. Prevent erosion of excavations and backfill. Do not allow water to pond in excavations.
- E. Maintain excavation and backfill areas until start of subsequent work. Repair and recompact slides, washouts, settlements, or areas with loss of density at no additional cost to the Owner.

3.03 EXCAVATION

- A. Perform excavation work so that the underground structure can be installed to depths and alignments shown on Drawings. Use caution during excavation work to avoid

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- disturbing surrounding ground and existing facilities and improvements. Keep excavation to the absolute minimum necessary. No additional payment will be made for excess excavation not authorized by Owner's Representative.
- B. Upon discovery of unknown utilities, badly deteriorated utilities not designated for removal, or concealed conditions, discontinue work. Notify Owner's Representative and obtain instructions before proceeding in such areas.
  - C. Immediately notify the agency or company owning any line which is damaged, broken or disturbed. Obtain approval from Owner's Representative and agency for any repairs or relocations, either temporary or permanent.
  - D. Avoid settlement of surrounding soil due to equipment operations, excavation procedures, vibration, dewatering, or other construction methods.
  - E. Provide surface drainage during construction to protect work and to avoid nuisance to adjoining property. Where required, provide proper dewatering and piezometric pressure control during construction.
  - F. Conduct hauling operations so that trucks and other vehicles do not violate the City's Stormwater Protection Ordinance. Verify that truck beds are sufficiently tight and loaded in such a manner that material will not spill onto streets. Promptly clear away any dirt, mud, or other materials that spill onto streets or are deposited onto streets by vehicle tires.
  - G. Maintain permanent benchmarks, monumentation, and other reference points. Unless otherwise directed, replace those which are damaged or destroyed by the Work.
  - H. Provide sheeting, shoring, and bracing where required to safely complete the Work, to prevent excavation from extending beyond limits indicated on Drawings, and to protect the Work and adjacent structures or improvements. Sheeting, shoring, and bracing used to protect workmen and the public shall conform to requirements of Section 01526 - Trench Safety Systems.
  - I. Prevent voids from forming outside of sheeting. Immediately fill voids with grout, concrete fill, cement stabilized sand, or other material approved by Owner's Representative.
  - J. After completion of the structure, remove sheeting, shoring, and bracing unless Owner's Representative has approved in writing that such temporary structures may remain. Remove sheeting, shoring and bracing in such a manner as to maintain safety during backfilling operations and to prevent damage to the Work and adjacent structures or improvements.
  - K. Immediately fill and compact voids left or caused by removal of sheeting with cement stabilized sand or material approved by Owner's Representative.

3.04 HANDLING EXCAVATED MATERIALS

- A. Classify excavated materials. Place material which is suitable for use as backfill in orderly piles at a sufficient distance from excavation to prevent slides or cave-ins.
- B. Provide additional backfill material in accordance with requirements of Section 02229 - Utility Backfill Materials, if adequate quantities of suitable material are not available from excavation and trenching operations at the site.

3.05 DEWATERING

- A. Provide ground water control per Section 01563 - Control of Ground Water and Surface Water.
- B. Maintain the ground water surface a minimum of two feet below the bottom of the foundation base.
- C. Maintain ground water control as directed by Section 01563 - Control of Ground Water and Surface Water and until the structure is sufficiently complete to provide the required weight to resist hydrostatic uplift with a minimum safety factor of 1.2.

3.06 FOUNDATION EXCAVATION

- A. Notify Owner's Representative at least 48 hours prior to planned completion of foundation excavations. Do not place the foundation base until the excavation is accepted by the Owner's Representative.
- B. Excavate to elevations shown on Drawings, as needed to provide space for the foundation base, forming a level undisturbed surface, free of mud or soft material. Remove pockets of soft or otherwise unstable soils and replace with foundation backfill material or a material as directed by the Owner's Representative. Prior to placing material over it, recompact the subgrade, scarifying, as needed, to 95 percent of the maximum Standard Proctor Density according to ASTM D 698. If the specified level of compaction cannot be achieved, moisture condition the subgrade and recompact until 95 percent is achieved, over-excavate to provide a minimum layer of 24 inches of foundation backfill material, or other means acceptable to the Owner's Representative.
- C. Fill unauthorized excessive excavation with foundation backfill material or other material as directed by the Owner's Representative.
- D. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in a satisfactory, undisturbed condition. Keep excavations free of standing water and completely free of water during concrete placement.

- E. Soils which become unsuitable due to inadequate dewatering or other causes, after initial excavation to the required subgrade, shall be removed and replaced with foundation backfill material, as directed by Owner's Representative, at no additional cost to the Owner.
- F. Place foundation base, or foundation backfill material, where needed, over the subgrade on same day that excavation is completed to final grade. Where base of excavations are left open for longer periods, protect them with a seal slab or cement-stabilized sand.
- G. All crushed aggregate, and other free draining Class I materials, shall have a geotextile filter fabric separating it from native soils or select material backfill. The fabric shall overlap a minimum of 12 inches beyond where another material stops contact with the soil.
- H. Crushed aggregate, and other Class I materials, shall be placed in uniform layers of 8-inch maximum thickness. Compaction shall be by means of at least two passes of a vibratory compactor.

### 3.07 FOUNDATION BASE

- A. After the subgrade is properly prepared, including the placement of foundation backfill where needed, the foundation base shall be placed. The foundation base shall consist of a 12-inch layer of crushed aggregate or cement stabilized sand. Alternately, a 4-inch minimum seal slab may be placed. The foundation base shall extend a minimum of 12 inches beyond the edge of the structure foundation. Refer to the project plans and comply with actual design requirement when more stringent than stated herein.
- B. Where the foundation base and foundation backfill are of the same material, both can be placed in one operation.

### 3.08 BACKFILL

- A. Complete backfill to surface of natural ground or to lines and grades shown on Drawings. Use existing material that qualifies as select material, unless indicated otherwise. Deposit backfill in uniform layers and compact each layer as specified.
- B. Do not place backfill against concrete walls or similar structures until laboratory test breaks indicate that the concrete has reached a minimum of 85 percent of the specified compressive strength. Where walls are supported by slabs or intermediate walls, do not begin backfill operations until the slab or intermediate walls have been placed and concrete has attained sufficient strength.
- C. Remove concrete forms before starting backfill and remove shoring and bracing as work progresses.

- D. Maintain fill material at no less than 2 percent below nor more than 2 percent above optimum moisture content. Place fill material in uniform 8-inch maximum loose layers. Compaction of fill shall be to at least 95 percent of the maximum Standard Proctor Density according to ASTM D 698 under paved areas. Compact to at least 90 percent around structures below unpaved areas.
- E. Where backfill is placed against a sloped excavation surface, run compaction equipment across the boundary of the cut slope and backfill to form a compacted slope surface for placement of the next layer of backfill.
- F. Place backfill using cement-stabilized sand in accordance with Section 02252 - Cement Stabilized Sand.

### 3.09 FIELD QUALITY CONTROL

- A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.
- B. Tests will be performed initially on minimum of three different samples of each material type for plasticity characteristics, in accordance with ASTM D 4318, and for gradation characteristics, in accordance with Tex-101-E and Tex-110-E. Additional classification tests will be performed whenever there is a noticeable change in material gradation or plasticity.
- C. In-place density tests of compacted subgrade and backfill will be performed according to ASTM D 1556, or ASTM D 2922 and ASTM D 3017, and at the following frequencies and conditions:
  - 1. A minimum of one test for every 100 cubic yards of compacted backfill material.
  - 2. A minimum three density tests for each full work shift.
  - 3. Density tests will be performed in all placement areas.
  - 4. The number of tests will be increased if inspection determines that soil types or moisture contents are not uniform or if compacting effort is variable and not considered sufficient to attain uniform density.
- D. At least three tests for moisture-density relationships will be initially performed for each type of backfill material in accordance with ASTM D 698. Additional moisture-density relationship tests will be performed whenever there is a noticeable change in material gradation or plasticity.
- E. If tests indicate work does not meet specified compaction requirements, recondition, recompact, and retest at Contractor's expense.

3.10 DISPOSAL OF EXCESS MATERIAL

- A. Dispose of excess materials in accordance with requirements of Section 01564 - Waste Material Disposal.

END OF SECTION

## SECTION 02227

## EXCAVATION AND BACKFILL FOR UTILITIES

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Excavation, trenching, foundation, embedment, and backfill for installation of utilities.

## 1.02 UNIT PRICES

- A. No additional payment will be made for trench excavation, embedment and backfill. Include payment in the unit price for applicable bid items.
- B. No separate or additional payment will be made for surface water control, or for excavation drainage. Include payment in the unit price for applicable bid items.

## 1.03 DEFINITIONS

- A. Pipe Foundation: Suitable and stable native soils that are exposed at the trench subgrade after excavation to depth of bottom of the bedding as shown on the Drawings, or foundation backfill material placed and compacted in over-excavations.
- B. Pipe Bedding: The portion of trench backfill that extends vertically from top of foundation up to a level line at bottom of pipe, and horizontally from one trench sidewall to opposite sidewall.
- C. Haunching: The material placed on either side of pipe from top of bedding up to springline of pipe and horizontally from one trench sidewall to opposite sidewall.
- D. Initial Backfill: The portion of trench backfill that extends vertically from springline of pipe (top of haunching) up to a level line 12 inches above top of pipe, and horizontally from one trench sidewall to opposite sidewall.
- E. Pipe Embedment: The portion of trench backfill that consists of bedding, haunching and initial backfill.

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- F. Trench Zone: The portion of trench backfill that extends vertically from top of pipe embedment up to pavement subgrade or up to final grade when not beneath pavement.
- G. Unsuitable Material: Unsuitable soil materials are the following:
1. Materials that are classified as ML, CL-ML, MH, PT, OH and OL according to ASTM D 2487.
  2. Materials that cannot be compacted to required density due to gradation, plasticity, or moisture content.
  3. Materials that contain large clods, aggregates, stones greater than 4 inches in any dimension, debris, vegetation, waste or any other deleterious materials.
  4. Materials that are contaminated with hydrocarbons or other chemical contaminants.
- H. Suitable Material: Suitable soil materials are those meeting specification requirements. Unsuitable soils meeting specification requirements for suitable soils after treatment with lime or cement are considered suitable, unless otherwise indicated.
- I. Backfill: Suitable material meeting specified quality requirements, placed and compacted under controlled conditions.
- J. Ground Water Control Systems: Installations external to trench, such as well points, eductors, or deep wells. Ground water control includes dewatering to lower ground water, intercepting seepage which would otherwise emerge from side or bottom of trench excavation, and depressurization to prevent failure or heaving of excavation bottom. Refer to Section 01563 - Control of Ground Water and Surface Water.
- K. Surface Water Control: Diversion and drainage of surface water runoff and rain water away from trench excavation. Rain water and surface water accidentally entering trench shall be controlled and removed as a part of excavation drainage.
- L. Excavation Drainage: Removal of surface and seepage water in trench by sump pumping and using a drainage layer, as defined in ASTM D 2321, placed on the foundation beneath pipe bedding or thickened bedding layer of Class I material.
- M. Trench Conditions are defined with regard to the stability of trench bottom and trench walls of pipe embedment zone. Maintain trench conditions that provide for effective placement and compaction of embedment material directly on or against undisturbed soils or foundation backfill, except where structural trench support is necessary.

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1. Dry Stable Trench: Stable and substantially dry trench conditions exist in pipe embedment zone as a result of typically dry soils or achieved by ground water control (dewatering or depressurization) for trenches extending below ground water level.
  2. Stable Trench with Seepage: Stable trench in which ground water seepage is controlled by excavation drainage.
    - a. Stable Trench with Seepage in Clayey Soils: Excavation drainage is provided in lieu of or to supplement ground water control systems to control seepage and provide stable trench subgrade in predominately clayey soils prior to bedding placement.
    - b. Stable Wet Trench in Sandy Soils: Excavation drainage is provided in the embedment zone in combination with ground water control in predominately sandy or silty soils.
  3. Unstable Trench: Unstable trench conditions exist in the pipe embedment zone if ground water inflow or high water content causes soil disturbances, such as sloughing, sliding, boiling, heaving or loss of density.
- N. Subtrench: Subtrench is a special case of benched excavation. Subtrench excavation below trench shields or shoring installations may be used to allow placement and compaction of foundation or embedment materials directly against undisturbed soils. Depth of a subtrench depends upon trench stability and safety as determined by the Contractor.
- O. Trench Dam: A placement of low permeability material in pipe embedment zone or foundation to prohibit ground water flow along the trench.
- P. Over-Excavation and Backfill: Excavation of subgrade soils with unsatisfactory bearing capacity or composed of otherwise unsuitable materials below top of foundation as shown on Drawings, and backfilled with foundation backfill material.
- Q. Foundation Backfill Materials: Natural soil or manufactured aggregate of controlled gradation, and geotextile filter fabrics as required, to control drainage and material separation. Foundation backfill material is placed and compacted as backfill to provide stable support for bedding. Foundation backfill materials may include concrete seal slabs.
- R. Trench Safety Systems include both Protective Systems and Shoring Systems as defined in Section 01526 - Trench Safety Systems.

- S. Trench Shield (Trench Box): A portable worker safety structure moved along the trench as work proceeds, used as a Protective System and designed to withstand forces imposed on it by cave-in, thereby protecting persons within the trench. Trench shields may be stacked if so designed or placed in a series depending on depth and length of excavation to be protected.
- T. Shoring System: A structure that supports sides of an excavation to maintain stable soil conditions and prevent cave-ins, or to prevent movements of the ground affecting adjacent installations or improvements.

#### 1.04 SCHEDULING

- A. Schedule work so that pipe embedment can be completed on the same day that acceptable foundation has been achieved for each section of pipe installation, manhole, or other structures.

#### 1.05 SUBMITTALS

- A. Submittals shall conform to the requirements of all provisions and sections of these specifications.
- B. Submit a written description for information only of the planned typical method of excavation, backfill placement and compaction, including:
  - 1. Sequence of work and coordination of activities.
  - 2. Selected trench widths.
  - 3. Procedures for foundation and embedment placement, and compaction.
  - 4. Procedure for use of trench boxes and other premanufactured systems while assuring specified compaction against undisturbed soil.
  - 5. Procedure for installation of Special Shoring at locations identified on the Drawings.
- C. Submit a ground and surface water control plan in accordance with requirements in this Section and Section 01563 - Control of Ground Water and Surface Water.
- D. Submit backfill material sources and product quality information in accordance with requirements of Section 02229 - Utility Backfill Materials.
- E. Submit a trench excavation safety program in accordance with requirements of Section 01526 - Trench Safety System. Include designs for special shoring meeting the requirements defined in Paragraph 1.03 of Section 01526.

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- F. Submit record of location of utilities as installed, referenced to survey control points. Include locations of utilities encountered or rerouted. Give stations, horizontal dimensions, elevations, inverts, and gradients.

#### 1.06 TESTS

- A. Perform backfill material source qualification testing in accordance with requirements of Section 02229 - Utility Backfill Materials.
- B. Testing and analysis of backfill materials for soil classification and compaction during construction will be performed by an independent laboratory provided by the Owner in accordance with requirements of Section 01410 - Testing Laboratory Services and as specified in this Section.

#### 1.07 PROTECTION

- A. Protect trees, shrubs, lawns, existing structures, and other permanent objects outside of grading limits and within the grading limits as designated on the Drawings, and in accordance with requirements of Section 01535 - Tree and Plant Protection.
- B. Protect and support above-grade and below-grade utilities which are to remain.
- C. Restore damaged permanent facilities to pre-construction conditions unless replacement or abandonment of facilities are indicated on the Drawings.

#### 1.08 SPECIAL SHORING DESIGN REQUIREMENTS

- A. Have Special Shoring designed or selected by the Contractor's Professional Engineer to provide support for the sides of the excavations, including soils and hydrostatic ground water pressures as applicable, and to prevent ground movements affecting adjacent installations or improvements such as structures, pavements and utilities. Special shoring may be a premanufactured system selected by the Contractors Professional Engineer to meet the project site requirements based on the manufacturer's standard design.

### PART 2 PRODUCTS

#### 2.01 EQUIPMENT

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- A. Perform excavation with hydraulic excavator or other equipment suitable for achieving the requirements of this Section.
- B. Use only hand-operated tamping equipment until a minimum cover of 12 inches is obtained over pipes, conduits, and ducts. Do not use heavy compacting equipment until adequate cover is attained to prevent damage to pipes, conduits, or ducts.
- C. Use trench shields or other Protective Systems or Shoring Systems which are designed and operated to achieve placement and compaction of backfill directly against undisturbed native soil.
- D. Use Special Shoring systems where required which may consist of braced sheeting, braced soldier piles and lagging, slide rail systems, or other systems meeting the Special Shoring design requirements.

## 2.02 MATERIAL CLASSIFICATIONS

- A. Embedment and Trench Zone Backfill materials: Conform to the classifications and product descriptions of Section 02229 - Utility Backfill Materials.
- B. Concrete Backfill: Conform to requirements for Class B concrete as specified in the pertinent Section.
- P. Geotextile (Filter Fabric): Conform to requirements of Section 02249 - Geotextile.
- Q. Concrete for Trench Dams: Concrete backfill or 3 sack premixed (bag) concrete.
- E. Timber Shoring Left in Place: Untreated oak.

## PART 3 EXECUTION

### 3.01 STANDARD PRACTICE

- A. Install flexible pipe, including "semi-rigid" pipe, to conform to standard practice described in ASTM D 2321, and as described in this Section. Where an apparent conflict occurs between the standard practice and the requirements of this Section, this Section governs.

- B. Install rigid pipe to conform to standard practice described in ASTM C 12, and as described in this Section. Where an apparent conflict occurs between the standard practice and the requirements of this Section, this Section governs.

3.02 PREPARATION

- A. Establish traffic control to conform to requirements of Section 01570 - Traffic Control and Regulation. Maintain barricades and warning lights for streets and intersections where Work is in progress or where affected by the Work, and is considered hazardous to traffic movements.
- B. Perform Work to conform to applicable safety standards and regulations. Employ a trench safety system as specified in Section 01526 - Trench Safety Systems.
- C. Immediately notify the agency or company owning any existing utility line which is damaged, broken, or disturbed. Obtain approval from the Owner's Representative and agency for any repairs or relocations, either temporary or permanent.
- D. Remove existing pavements and structures, including sidewalks and driveways, to conform to requirements of Section 02076 - Removing Existing Pavements and Structures, as applicable.
- E. Install and operate necessary dewatering and surface water control measures to conform to Section 01563 - Control of Ground Water and Surface Water.
- F. Maintain permanent benchmarks, monumentation, and other reference points. Unless otherwise directed in writing, replace those which are damaged or destroyed in accordance with Section 01050 - Field Surveying.
- G. PREPARATION: Complete, as incidental to construction, site preparation work including clearing and grubbing; removal and disposal of trash, rubbish, debris, and minor obstacles to construction; relocation of savable items; stripping topsoil within excavation areas, stockpiling topsoil; and, after construction, spreading topsoil over disturbed areas as required and finishing and grading surface within construction areas.
- H. Perform a "Potential Conflict Investigation" at all critical locations. Locate existing utilities ahead of pipe laying activities. Notify Owner's Representative in writing immediately upon identification of any conflict. In the event, Contractor will not be

entitled to extra cost for downtime including, but not limited, payroll, equipment, overhead demobilization and remobilization.

3.03 EXCAVATION

- A. Except as otherwise specified or shown on the Drawings, install underground utilities in open cut trenches with vertical sides.
- B. Perform excavation work so that pipe, conduit, and ducts can be installed to depths and alignments shown on the Drawings. Avoid disturbing surrounding ground and existing facilities and improvements. Excavate trench so that pipe is centered in trench. Do not obstruct sight distance for vehicles utilizing roadways or detours with stockpiled materials.
- C. Determine trench excavation widths using the following schedule (as a minimum) as related to pipe outside diameter (O.D.) or as shown on the drawings. Maximum trench width shall be the minimum trench width plus 24 inches.

Nominal <u>Pipe Size, Inches</u>	Minimum Trench <u>Width, Inches</u>
Less than 18	O.D. + 18
18 to 30	O.D. + 24
Greater than 30	O.D. + 36

- D. Use sufficient trench width or benches above the embedment zone for installation of well point headers or manifolds and pumps where depth of trench makes it uneconomical or impractical to pump from the surface elevation. Provide sufficient space between shoring cross braces to permit equipment operations and handling of forms, pipe, embedment and backfill, and other materials.
- E. Upon discovery of unknown utilities, badly deteriorated utilities not designated for removal, or concealed conditions, discontinue work at that location. Notify the Owner’s Representative and obtain instructions before proceeding.
- F. Shoring of Trench Walls.
  - 1. Install Special Shoring in advance of trench excavation or simultaneously with the trench excavation, so that the soils within the full height of the trench excavation walls will remain fully laterally supported at all times.

2. For all types of shoring, support trench walls in the pipe embedment zone throughout the installation. Provide trench wall supports sufficiently tight to prevent washing the trench wall soil out from behind the trench wall support.
  3. Unless otherwise directed by the Owner's Representative, leave sheeting driven into or below the pipe embedment zone in place to preclude loss of support of foundation and embedment materials. Leave rangers, walers, and braces in place as long as required to support sheeting, which has been cut off, and the trench wall in the vicinity of the pipe zone.
  4. Employ special methods for maintaining the integrity of embedment or foundation material. Before moving supports, place and compact embedment to sufficient depths to provide protection of pipe and stability of trench walls. As supports are moved, finish placing and compacting embedment.
  5. If sheeting or other shoring is used below top of the pipe embedment zone, do not disturb pipe foundation and embedment materials by subsequent removal. Maximum thickness of removable sheeting extending into the embedment zone 1 inch. Fill voids left on removal of supports with compacted backfill material.
- G. Use of Trench Shields. When a trench shield (trench box) is used as a worker safety device, the following requirements apply:
1. Make trench excavations of sufficient width to allow shield to be lifted or pulled freely, without damage to the trench sidewalls.
  2. Move trench shields so that pipe, and backfill materials, after placement and compaction, are not damaged nor disturbed, nor the degree of compaction reduced.
  3. When required, place, spread, and compact pipe foundation and bedding materials beneath the shield. For backfill above bedding, lift the shield as each layer of backfill is placed and spread. Place and compact backfill materials against undisturbed trench walls and foundation.
  4. Maintain trench shield in position to allow sampling and testing to be performed in a safe manner.
- H. Cover:
1. Provide 24 in. Minimum cover over top of pipe where surface grades are definitely established and 30 in. in other locations.
  2. Greater depth of cover may be necessary on vertical curves or to provide necessary clearance beneath pipes, conduits, drains, drainage structures or other obstructions encountered at normal pipe grades.
  3. For water mains, provide 4 ft. minimum cover unless noted otherwise.



4. Measure depth of backfill cover vertically from top of pipe to finish ground or pavement surface elevations.
- I. Trenching:
1. Excavation for pipe stubs to be laid transversely across streets may be made with trench hoe.
  2. Where surface or underground obstructions make excavation inaccessible to trenching machine, trench hoe may be used.
  3. Where trench hoe is used, do not use excavated material composed of large chunks and clods for backfill.
  4. No excavated material will be stockpiled along trench or on paved surfaces. Load excavated material into dump truck as trench is excavated.
  5. Topsoil excavated from the trench shall be returned to trench to be used as backfill material for the top 12 inches of the trench.
  6. For trench excavations requiring cement stabilized sand backfill to subgrade of pavement, stockpiling of cement stabilized sand on pavement is not permitted.
- J. Voids under paving area outside shield will require removal of pavement, consolidation and replacement of pavement in accordance with Contract Documents. Repair damage resulting from failure to provide adequate supports.
- K. Place sand or soil behind shoring or trench shield to prevent soil outside shoring from collapsing and causing voids under pavement. Immediately pack suitable material in outside voids following excavation to avoid caving of trench walls.
- L. Do not use excavators with side cutters installed while working within 15 feet of pipeline company=s pipeline. Use a small, rubber-tired excavator, such as a backhoe, to do exploratory excavation. Bucket that is used to dig in close proximity to pipelines shall not have teeth or shall have a guard installed over teeth to approximate a bucket without teeth. Excavate by hand within 1 foot of pipeline company's line. Do not use larger excavation equipment normally used to dig water main trench in vicinity of pipeline until all pipelines have been uncovered and fully exposed. Do not place large excavation and hauling equipment directly over pipelines unless approved by pipeline company=s representative.
- M. Regrade adjacent ground surfaces where surfaces have been disturbed during construction operations to original and matching grades.

- N. Trees and shrubs designated to remain that sustain cutting or injury to roots, trunk, or limbs shall be pruned by a tree surgeon and cut or injury painted with asphaltic horticultural coating without cost to Owner.
- O. Perform repair on pipe in locations shown on plans/specifications.
- P. Where pipe is to be installed in fill, complete area fill and compaction to an elevation not less than 1 ft. above top of pipe before open-cut excavation and trenching for pipe.
- Q. Excavate adequate, but not excessive, working space and clearances for installation of work and form removal.
- R. Allow not less than 6 in. clearance in horizontal dimensions of excavations for outside plastering of manholes and similar structures constructed of masonry units.
- S. Do not undercut excavation faces for extended footings of structures.
- T. Excavate by hand within 2 ft. of existing utility to remain.
- U. **BLASTING:** Use of explosions will not be permitted.
- V. **UNAUTHORIZED EXCAVATION:** Refill excavation below subgrade elevations with tamped sand, gravel, cement stabilized sand, or concrete.

#### 3.04 HANDLING EXCAVATED MATERIALS

- A. Use only excavated materials which are suitable as defined in this Section and conforming to Section 02229 - Utility Backfill Materials. Place material suitable for backfilling in stockpiles at a distance from the trench to prevent slides or cave-ins.
- B. When required, provide additional backfill material conforming to requirements of Section 02229 - Utility Backfill Materials.
- C. Do not place stockpiles of excavated materials on streets and adjacent properties. Maintain site conditions in accordance with Section 01500 - Temporary Facilities and Controls.
- D. Dispose of unsuitable excavated materials off-site in legal manner.

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- E. Excess excavated material shall become the property of the contractor to be disposed of off-site in a legal manner.

3.05 GROUND WATER CONTROL

- A. Implement ground water control according to Section 01563 - Control of Ground Water and Surface Water. Provide a stable trench to allow installation in accordance with the Specifications.

3.06 TRENCH FOUNDATION

- A. Excavate bottom of trench to uniform grade to achieve stable trench conditions and satisfactory compaction of foundation or bedding materials.
- B. Place trench dams in Class I foundations in line segments longer than 100 feet between manholes, and not less than one in every 300 feet of pipe placed. Install additional dams as needed to achieve workable construction conditions. Do not place trench dams closer than 5 feet from manholes.
- C. Where rock or other incompressible material is encountered, remove material to depth 6 in. below subgrade and backfill with tamped sand, gravel, or concrete.
- D. Reinforce trench bottoms or subgrade surfaces for concrete structures which are solid, but which become mucky on top due to construction operations with specified sand.
- E. Use only tamped sand, gravel, or concrete to bring fills to lines and grades indicated and for replacing unsatisfactory materials.

3.07 PIPE EMBEDMENT PLACEMENT AND COMPACTION

- A. Immediately prior to placement of embedment materials, the bottoms and sidewalls of trenches shall be free of loose, sloughing, caving, or otherwise unsuitable soil.
- B. Place geotextile to prevent particle migration from the in-situ into open-graded (Class I) embedment materials or drainage layers.
- C. Place embedment including bedding, haunching and initial backfill to meet requirements indicated on Drawings.

- D. For pipe installation, manually spread embedment materials around the pipe to provide uniform bearing and side support when compacted. Do not allow materials to free-fall from heights greater than 24 inches above top of pipe. Perform placement and compaction directly against the undisturbed soils in the trench sidewalls, or against sheeting which is to remain in place.
- E. Do not place trench shields or shoring within height of the embedment zone unless means to maintain the density of compacted embedment material are used. If moveable supports are used in embedment zone, lift the supports incrementally to allow placement and compaction of the material against undisturbed soil.
- F. Do not damage coatings or wrappings of pipes during backfilling and compacting operations. When embedding coated or wrapped pipes, do not use crushed stone or other sharp, angular aggregates.
- G. Place haunching material manually around the pipe and compact it to provide uniform bearing and side support. If necessary, hold small-diameter or lightweight pipe in place during compaction of haunch areas and placement beside the pipe with sand bags or other suitable means.
- H. Place electrical conduit directly on foundation without bedding.
- I. Shovel pipe embedment material in place and compact it using pneumatic tampers in restricted areas, and vibratory-plate compactors or engine-powered jumping jacks in unrestricted areas. Compact each lift before proceeding with placement of the next lift.
  - 1. Class I embedment materials.
    - a. Maximum 6-inches compacted lift thickness.
    - b. Systematic compaction by at least two passes of vibrating equipment. Increase compaction effort as necessary to effectively embed the pipe to meet the deflection test criteria.
    - c. Moisture content as determined by Contractor for effective compaction without softening the soil of trench bottom, foundation or trench walls.
  - 2. Class II embedment and cement stabilized sand.
    - a. Maximum 6-inches compacted thickness.
    - b. Compaction by methods determined by Contractor to achieve a minimum of 95 percent of the maximum dry density as determined according to ASTM D 698 for Class II materials and according to ASTM D 558 for cement stabilized materials.

- c. Moisture content of Class II materials within 3 percent of optimum as determined according to ASTM D 698. Moisture content of cement stabilized sands on the dry side of optimum as determined according to ASTM D 558 but sufficient for effective hydration.
  
- J. Place trench dams in Class I embedment in line segments longer than 100 feet between manholes, and not less than one in every 500 feet of pipe placed. Install additional dams as needed to achieve workable construction conditions. Do not place trench dams closer than 5 feet from manholes.

### 3.08 TRENCH ZONE BACKFILL PLACEMENT AND COMPACTION

- A. Place backfill for pipe or conduits and restore surface as soon as practicable. Leave only the minimum length of trench open as necessary for construction.
  
- B. Where damage to completed pipe installation work is likely to result from withdrawal of sheeting, leave the sheeting in place. Cut off sheeting 1.5 feet or more above the crown of the pipe. Remove trench supports within 5 feet from the ground surface.
  
- C. For sewer pipes, use backfill materials described here as determined by trench limits. As trench zone backfill in paved areas for streets and to one foot back of curbs and pavements, use cement stabilized sand for pipe of nominal sizes less than 36 inches, or bank run sand for pipe of nominal sizes 36 inches and larger or as indicated on the Drawings. Uniformly backfill trenches partially within limits one foot from streets and curbs according to the paved area criteria. Use select backfill within one foot below pavement subgrade for rigid pavement. For asphalt concrete or limestone roadway, use flexible base material within one foot below pavement subgrade.
  
- D. For water lines, backfill in trench zone, including auger pits, with bank run sand, select fill material as specified in Section 02229 - Utility Backfill materials.
  
- E. For trench excavations under pavement, place trench zone backfill in lifts and compact by methods indicated below or as stated on the plans. Fully compact each lift before placement of the next lift.
  - 1. Bank run sand.
    - a. Maximum 9-inches compacted lift thickness.
    - b. Compaction by vibratory equipment to a minimum of 95 percent of the maximum dry density determined according to ASTM D 698.
    - c. Moisture content within 3 percent of optimum determined according to ASTM D 698

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2. Cement-stabilized sand.
    - a. Place backfill in 8 in. maximum layers to achieve uniform placement and required compaction.
    - b. Compaction by vibratory equipment to a minimum of 95 percent of the maximum dry density determined according to ASTM D 558.
    - c. Moisture content on the dry side of optimum determined according to ASTM D 558 but sufficient for cement hydration.
  3. Select fill
    - a. Maximum 6-inches compacted thickness.
    - b. Compaction by equipment providing tamping or kneading impact to a minimum of 95 percent of the maximum dry density determined according to ASTM D 698.
    - c. Moisture content within 2 percent of optimum determined according to ASTM D 698.
    - d. Add backfill material as necessary where backfill settled below ground surface.
- F. Do not backfill with wet, mucky, or unsuitable materials or with large rocks or clods of material.
- G. Trench backfill above pipe embedment shall conform to requirements for type and location of pipe as shown on the drawing.
- H. Place backfill material to minimum depth 12 in. above pipe before ceasing backfilling operations for day.
- I. Base Material Backfill for Patching of Existing Pavement: Provide 12 in. of base material.
- J. Flooding of backfill for compaction (water tamping) is not acceptable. Obtain compaction by mechanical means which allows access to all areas of backfill.

### 3.09 MANHOLES, JUNCTION BOXES AND OTHER PIPELINE STRUCTURES

- A. Meet the requirements of adjoining utility installations for backfill of pipeline structures, as shown on the Drawings.

### 3.10 FIELD QUALITY CONTROL

- A. Test for material source qualifications as defined in Section 02229 - Utility Backfill Materials.
- B. Provide excavation and trench safety systems at locations and to depths required for testing and retesting during construction.
- C. Laboratory Quality Control by Contractor:
  - 1. Establish optimum moisture-maximum density curve for bedding and backfill material, ASTM D 698.
    - a. For those soils which will not exhibit a well-defined moisture-density relationship, determine maximum and minimum index densities of the soil, ASTM D4253 and D4254, for calculation of the relative density of the soil in the field.
  - 2. Establish optimum moisture-maximum density curve, ASTM D 698; Atterberg Limits, ASTM D 4318; and sieve analysis, ASTM D 422 for the following:
    - a. Borrow bedding and backfill material to be used.
    - b. Excavated material of questionable suitability for use as bedding and backfill material.
  - 3. One optimum moisture-maximum density curve, ASTM D 698, shall be established for each significant change in materials.
  - 4. Bedding and backfill materials which do not meet specified requirements shall be replaced with suitable materials.
- D. Field Quality Control by Owner
  - 1. Laboratory density testing of trench backfill:
    - a. One field in-place density test per 500 linear ft. of trench for each fill layer.
    - b. One field in-place density test per 150 linear ft. of trench for each fill layer under existing or proposed paved areas and at least one test per fill layer at each road crossing.
  - 2. Laboratory density testing of general fill: One field in-place density test per 100 cu. yds. of fill placed.
  - 3. Field in-place density tests shall be in compliance with ASTM D 1556, ASTM D 2922, or ASTM D 2167.
- E. Submit minimum 10 lb. Samples of any borrow bedding and backfill material to be used to materials testing laboratory.

- F. Recondition, recompact, and retest at Contractor's expense if tests indicate Work does not meet specified compaction requirements. For hardened soil cement with nonconforming density, core and test for compressive strength at Contractor's expense.
- G. Acceptability of crushed rock compaction will be determined by inspection.

### 3.11 DISPOSAL OF EXCESS MATERIAL

- A. Dispose of excess materials in accordance with requirements of Section 01564 - Waste Material Disposal.

### 3.12 POTENTIAL OBSTRUCTION INVESTIGATION

- A. Horizontal and vertical location of various underground lines shown on Drawings, including but not limited to water mains, gas lines, storm sewers, sanitary sewers, telephone lines, electric lines or power ducts, pipelines (petrochemical or petroleum product), concrete and debris, are based on best information available but are only approximate locations. At critical locations field verify horizontal and vertical locations of such lines within a zone 2 feet vertically and 4 feet horizontally of proposed main. Verify location of existing utilities prior to commencing construction. Use extreme caution and care when uncovering these lines. Any damage to known or unknown utilities or obstructions occurring during Potential Obstruction Investigation will be full responsibility of Contractor. No separate payment shall be made for performing such efforts.
- B. Prior to actual field verification phase, notify all utility companies involved and request that their respective utility lines be marked in field. If any utility or pipeline company requires their line be excavated, or exposed prior to construction, comply with that request and utilize a methodology approved by the said company in locating or exposing their lines. Provide Owner's Representative with 48 hours notice prior to any field excavation or related work.
- C. Once known, unknown or potential obstructions have been uncovered, survey vertical and horizontal locations relative to project baseline and datum and plot on 11" X 17" copy of Drawings.
- D. Submit 11" X 17" copy of Drawing with plotted utility or obstruction location titled Potential Obstruction Report to Owner's Representative before or simultaneous with pipe shop drawing submittal.

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- E. Owner's Representative will promptly review Potential Obstruction Report and approve construction of proposed main as designed or modify design if necessary. Contractor will be promptly notified of any design modifications.

END OF SECTION

SECTION 02228

EXTRA UNIT PRICE WORK FOR EXCAVATION AND BACKFILL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Measurement and payment applicable to extra Work items required for utility installations which are identified in the Proposal Form, and which have been authorized in advance by the Owner's Representative and made necessary by unusual or unforeseen circumstances encountered during utility excavation.

1.02 UNIT PRICES

- A. Special excavation: Measurement for special excavation is on a cubic yard basis, measured in place, without deduction for space occupied by portions of pipes, ducts, or other structures left in place across trenches excavated under this item.
  - 1. Cost for item shall include:
    - a. Dewatering and surface water control.
    - b. Protection of pipes, ducts, or other structures encountered including bracing, shoring, and sheeting necessary for support.
    - c. Replacement of pipes, ducts, or structures damaged by special excavation operations, except where payment for replacement is authorized by Owners Representative due to deteriorated condition of pipes, ducts, or structure.
    - d. Temporary disconnecting, plugging, and reconnecting of low volume water pipes, to allow machine excavation or augering, when approved by Owner's Representative. Pipe for replacement shall be new and conform to specification requirements for type of existing pipe removed.
    - e. Resodding required for surface restoration within designated limits of special excavation.
    - f. Disposal of excess excavated material not suitable for bedding or backfill, or not required for the Project.
  - 2. Include cost for following items in payment for applicable Division 2 Sections:

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- a. Trench safety system including sheeting and shoring.
  - b. Utility piping installed in trenches excavated under this item.
  - c. Removal and replacement of associated streets, driveways, and sidewalks.
- B. Extra hand or machine excavation: Measurement for extra hand excavation is on a cubic yard basis, measured in place.
1. Cost for item shall include:
    - a. Dewatering and surface water control.
    - b. Disposal of excess excavated material not suitable for bedding or backfill, or not required for the Project.
  2. Include cost for placement of extra hand excavation in payment for Extra Work Bid Item for Extra Placement of Material.
  3. Include cost for following items in payment for applicable Division 2 Sections:
    - a. Trench safety system including sheeting and shoring.
    - b. Removal and replacement of associated streets, driveways, and sidewalks.
- C. Extra placement of material:
1. Measurement for extra placement of material is on a cubic yard basis, measured in place. At the discretion of Owner's Representative, measurement of cubic yards may be calculated from the volume of Extra Hand Excavation or Extra Machine Excavation for which placement is made, minus the volume of any Extra Placement of Special Backfill authorized in conjunction with the Work.
  2. Cost for this item shall include resodding required for surface restoration within designated limits of Extra Hand Excavation or Extra Machine Excavation.
- D. Extra placement of special excavation:
1. Measurement for extra placement of special material is on a cubic yard basis, measured in place.

- 2. Cost for this item shall include geotextile material and concrete trench dams required to complete the placement of special material conforming to the Specifications.
- E. No payment will be made for delays in completion of Work resulting from extra unit price Work.
- F. Refer to Section 01025 - Measurement and Payment for unit price procedures.

1.03 DEFINITIONS

- A. Special excavation: Excavation necessitated by obstruction of pipes, ducts, or other structures, not shown on Drawings, which interfere with installation of utility piping by normal methods of excavation or augering. Contractor shall be responsible for locating such underground obstructions, sufficiently in advance of trench excavation or augering, to preclude damage to the obstructions.
- B. Extra hand excavation: Excavation by manual labor at locations designated by the Owner Representative, which is not included in, or is incidental to, bid items contained in the Schedule of Unit Prices.
- C. Extra machine excavation: Excavation by machine at locations designated by the Owner Representative, which is not included in, or is incidental to, bid items contained in the Schedule of Unit Prices.
- D. Extra replacement of material: Handling, backfill, and compaction of excavated material authorized under Extra Work Bid Items for Extra Hand Excavation or Extra Machine Excavation. Placement and compaction shall conform to requirements specified in appropriate Division 2 Sections.
- E. Extra placement of special backfill: Hauling, placing, and consolidating of special materials in conjunction with Extra Work Bid Item Extra Replacement of Material at locations designated by the Owner's Representative. Materials placed under this item shall conform to requirements for Bank Run Sand, Cement Stabilized Sand, Concrete Sand, Pea Gravel, Gem Sand, or Crushed Stone specified in Division 2 Sections.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 02229

UTILITY BACKFILL MATERIALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Material Classifications
- B. Utility Backfill Materials
  - 1. Concrete sand.
  - 2. Gem sand.
  - 3. Pea gravel.
  - 4. Crushed stone.
  - 5. Crushed concrete.
  - 6. Bank run sand.
  - 7. Select backfill.
  - 8. Random backfill.
- C. Material handling and quality control requirements.

1.02 UNIT PRICES

- A. No payment will be made for backfill material unless specifically listed in the Proposal Form. Include payment in unit price for applicable utility installation.
- B. Measurement for backfill material, when included as a separate pay item, is on a cubic yard basis for material placed and compacted within theoretical trench width limits and thickness of material according to Drawing details.
- C. Measurement for backfill of authorized over-excavation is in accordance with Section 02228 - Extra Unit Price Work for Excavation and Backfill.
- D. Refer to Section 01025 - Measurement and Payment for unit price procedures.

1.03 DEFINITIONS

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- A. Backfill: Suitable material meeting specified quality requirements for the designated application as embedment or trench zone backfill.
- B. Embedment: Material placed under controlled conditions within the embedment zone extending vertically upward from top of foundation to an elevation 12 inches above top of pipe, and including pipe bedding, haunching and initial backfill.
- C. Trench Zone Backfill: Material meeting specified quality requirements and placed under controlled conditions in the trench zone from top of embedment zone to base course in paved areas or to the surface grading material in unpaved areas.
- D. Foundation: Either suitable soil of the trench bottom, or material placed as backfill of over-excavation for removal and replacement of unsuitable or otherwise unstable soils.
- E. Source: A source selected by the Contractor for supply of embedment or trench zone backfill material. A selected source may be the project excavation, off-site borrow pits, commercial borrow pits, or sand and aggregate production or manufacturing plants.
- F. Refer to Section 02227 - Excavation and Backfill for Utilities, for other definitions regarding utility installation by trench construction.

#### 1.04 SUBMITTALS

- A. Conform to requirements of all sections and provisions of these specifications.
- B. Submit a description of source, material classification and product description, production method, and application of backfill materials.
- C. Submit test results for samples of off-site backfill materials to comply with Paragraph 3.03, Material Quality Control.
- D. Identify off-site sources for backfill materials at least 14 days ahead of intended use so that the Owner's Representative may obtain samples for verification testing.
- E. Before stockpiling materials, submit a copy of temporary easement or approval from landowner for stockpiling backfill material on private property.

#### 1.05 TESTS

- A. Perform tests of sources for backfill material in accordance with Paragraph 3.03A of this section.

- B. Verification tests of backfill materials may be performed by the Owner in accordance with Section 01410 - Testing Laboratory Services and in accordance with Paragraph 3.03B of this section.
- C. Random fill obtained from the Project excavation as source is exempt from prequalification requirements by Contractor, but must be inspected for unacceptable materials based on ASTM D 2488.

## PART 2 PRODUCTS

### 2.01 MATERIAL CLASSIFICATIONS

- A. Materials for backfill shall be classified for the purpose of quality control in accordance with the Unified Soil Classification Symbols as defined in ASTM D 2487. Material use and application is defined in utility installation specifications and Drawings either by class, as described in Paragraph 2.01B, or by product descriptions, as given in Paragraph 2.02 of this section.
- B. Class Designations Based on Laboratory Testing:
  - 1. Class I: Well graded sands and gravels, gravel-sand mixtures, crushed well graded rock, little or no fines (GW, SW)
    - a. Plasticity Index: Nonplastic
    - b. Gradation:  $D_{60}/D_{10}$  - greater than 4 percent. Amount passing No. 200 Sieve - less than or equal to 5 percent
  - 2. Class II: Poorly graded gravels and sands, silty sands and gravels, little to moderate fines (GM, GP, SP, SM)
    - a. Plasticity Index: Nonplastic to 4
    - b. Gradation (GP, SP): Amount passing No. 200 Sieve - less than 5 percent
    - c. Gradation (GM, SM): Amount passing No. 200 Sieve - between 12 percent and 50 percent
  - 3. Class III: Clayey gravels and sands, poorly graded mixtures of sand, gravel, and clay (GC, SC)
    - a. Plasticity Index: greater than 7
    - b. Gradation: Amount passing No. 200 Sieve - between 12 percent and 50 percent

4. Class IV: Lean clays (CL)
  - a. Plasticity Index: greater than 7
  - b. Liquid Limit: less than 50
  - c. Gradation: Amount passing No. 200 Sieve - greater than 50 percent
  - d. Inorganic
5. Use soils with dual class designation according to ASTM D 2487 according to the more restrictive class.

## 2.02 PRODUCT DESCRIPTIONS

- A. Soils classified as silt (ML), silty clay (CL - ML with PI of 4 to 7), elastic silt (MH), organic clay and organic silt (OL, OH), and organic matter (PT) are not acceptable as backfill materials. These soils may be used for site grading and restoration in unimproved areas as approved by Owner's Representative. Soils classified as fat clay (CH) may be used as backfill materials where allowed by the applicable backfill installation specification. Refer to Section 02226 - Excavation and Backfill for Structures and Section 02227 - Excavation and Backfill for Utilities.
- B. Provide backfill material that is free of stones greater than 3 inches, free of roots, waste, debris, trash, organic material, unstable material, non-soil matter, hydrocarbon or other contamination, conforming to the following limits for deleterious materials:
  1. Clay lumps: Less than 0.5 percent for Class I, and less than 2.0 percent for Class II, when tested in accordance with ASTM C 142.
  2. Lightweight pieces: Less than 5 percent when tested in accordance with ASTM C 123.
  3. Organic impurities: No color darker than standard color when tested in accordance with ASTM C 40.
- C. Manufactured materials may be substituted for natural soil or rock products where indicated in the product specification, and approved by Owner's Representative, provided that the physical property criteria are determined to be satisfactory by testing.
- D. Bank Run Sand: Durable bank run sand classified as SP, SW, or SM by the Unified Soil Classification System (ASTM D 2487) meeting the following requirements:



1. Less than 15 percent passing the number 200 sieve when tested in accordance with ASTM C 136. The amount of clay lumps or balls not exceeding 2 percent.
  2. Material passing the number 40 sieve shall meet the following requirements when tested in accordance with ASTM D 4318:
    - a. Liquid limit not exceeding 25.
    - b. Plasticity index not exceeding 7.
- E. Concrete Sand: Natural sand, manufactured sand, or a combination of natural and manufactured sand conforming to the requirements of ASTM C 33 and graded within the following limits when tested in accordance with ASTM C 136:

Sieve	Percent Passing
3/8"	100
No. 4	95 to 100
No. 8	80 to 100
No. 16	50 to 85
No. 30	25 to 60
No. 50	10 to 30
No. 100	2 to 10

- F. Gem Sand: Sand conforming to the requirements of ASTM C 33 for course aggregates specified for number 8 size and graded within the following limits when tested in accordance with ASTM C 136:

Sieve	Percent Passing

3/8"	95 to 100
No. 4	60 to 80
No. 8	15 to 40

G. Pea Gravel: Durable particles composed of small, smooth, rounded stones or pebbles and graded within the following limits when tested in accordance with ASTM C 136:

Sieve	Percent Passing
2"	100
3/8"	85 to 100
No. 4	10 to 30
No. 8	0 to 10
NO. 16	0 to 5

H. Crushed Aggregates: All crushed aggregates consist of durable particles obtained from an approved source and meeting the following requirements:

1. All materials of one product delivered for the same construction activity from a single source.
2. Non-plastic fines.
3. Los Angeles abrasion test wear not exceeding 40 percent when tested in accordance with ASTM C 131.
4. Gradations, as determined in accordance with TEX-110-E.

Sieve	Percent Passing by Weight for Pipe Embedment		
	By Ranges of Nominal Pipes Sizes		
	>15"	15" – 8"	<8"
1"	95 – 100	100	-

3/4"	60 – 90	90 – 100	100
1/2"	25 – 60	-	90 – 100
3/8"	-	20 – 55	40 – 70
No. 4	0 – 5	0 – 10	0 - 15
No. 8	-	0 – 5	0 - 5

- 5. Crushed stone: Produced from oversize quarried aggregate, sized by crushing from a naturally occurring single source. Crushed gravel or uncrushed gravel are not acceptable materials for utility embedment.
- 6. Crushed Concrete: Crushed concrete is an acceptable substitute for crushed stone as utility backfill. Gradation and quality control test requirements are the same as crushed stone. Provide crushed concrete produced from normal weight concrete of uniform quality; containing particles of aggregate and cement material, free from other substances such as asphalt, base course material, reinforcing steel fragments, soil, debris, or deteriorated concrete fragments.
  - I. Select Backfill: Class III clayey gravel or sand or Class IV lean clay with a plasticity index between 7 and 20 or clayey soils treated with lime in accordance with Section 02570 - Pavement Repair and Resurfacing, to meet plasticity criteria.
  - J. Random Backfill: Any suitable soil or mixture of soils within Classes I, II, III and IV; or fat clay (CH) where allowed by the applicable backfill installation specification. Refer to Section 02226 - Excavation and Backfill for Structures and Section 02227 - Excavation and Backfill for Utilities.
  - K. Cement Stabilized Sand: Conform to requirements of Section 02252 - Cement Stabilized Sand.
  - L. Concrete Backfill: Conform to Class B concrete as specified in Section 03305 - Concrete for Utility Construction or Section 03310 - Concrete for Structures.
  - M. Pavement Restoration: Conform to requirements of Section 02570 - Pavement Repair and Resurfacing.

PART 3 EXECUTION

3.01 SOURCES

- A. Use of material encountered in the trench excavations is acceptable, provided applicable specification requirements are satisfied. If excavation material is not acceptable, provide from other source.
- B. Obtain approval for each material source by the Owner's Representative before delivery is started. If sources previously approved do not produce uniform and satisfactory products, furnish materials from other approved sources. All materials may be subjected to inspection or additional verification testing after delivery. Materials which do not meet the requirements of the specifications will be rejected. Do not use material which, after approval, has become unsuitable for use due to segregation, mixing with other materials, or by contamination. Once a material is approved by the Owner's Representative, expense for sampling and testing required to change to a different material will be credited to the Owner through a change order.
- C. Bank run sand, select backfill, and random backfill, if available in the Project excavation, may be obtained by selective excavation and acceptance testing. Obtain additional quantities of these materials and other materials required to complete the work from off-site sources.
- D. The Owner does not represent or guarantee that any soil found in the excavation work will be suitable and acceptable as backfill material.

### 3.02 MATERIAL HANDLING

- A. When backfill material is obtained from either a commercial or non-commercial borrow pit, have that pit opened to expose the vertical faces of the various strata of acceptable material to be used. Excavate the material by vertical cuts extending through the exposed strata to achieve uniformity in the product.
- B. Establish temporary stockpile locations for practical material handling and control, and verification testing by the Owner's Representative in advance of final placement. Obtain approval from landowner for storage of backfill material on adjacent private property.
- C. When stockpiling backfill material near the Project site, use appropriate covers to eliminate blowing of materials into adjacent areas and prevent runoff containing sediments from entering the drainage system.
- D. Place stockpiles in layers to avoid segregation of processed materials. Load material by making successive vertical cuts through entire depth of stockpile.

### 3.03 MATERIAL QUALITY CONTROL

- A. Ensure that material selected, produced and delivered to the Project meets applicable specifications and is of sufficient uniform properties to allow practical construction and quality control. Responsibilities include:
1. Source or Supplier Qualification. Perform testing, or obtain representative tests by suppliers, for selection of material sources and products. Provide test results for a minimum of three samples for each source and material type. Test samples of processed materials from current production representing material to be delivered. Tests shall verify that the materials meet specification requirements. Repeat qualification test procedures each time the source characteristic changes or there is a planned change in source location or supplier. Qualification tests shall include, as applicable:
    - a. Gradation. Complete sieve analyses shall be reported regardless of the specified control sieves. The range of sieves shall be from the largest particle through the No. 200 sieve.
    - b. Plasticity
    - c. Los Angeles abrasion
    - d. Clay lumps
    - e. Light weight pieces
    - f. Organic impurities
  2. Production Testing. Establish a program to provide assurance that backfill materials delivered from the sources and placed in the Work meet applicable specification requirements. Report results to the Owner's Representative.
  3. Assist the Owner's Representative in obtaining material samples for verification testing at the source or at the production plant.
  4. Notify the Owner's Representative in the field when non-conforming material is detected.
- B. Quality Control
1. The Owner's Representative may sample and test backfill at:
    - a. Sources including borrow pits, production plants and Contractor's designated off-site stockpiles.
    - b. On-site stockpiles.

- c. Materials placed in the Work.
2. The may Owner's Representative resample material at any stage of work or location if changes in characteristics are apparent.
3. The Owner's Representative will notify Contractor at the Project site about non-conforming materials and will, as appropriate, resample materials to verify results.

C. Tolerances

The following tolerances apply to production quality control testing.

1. Embedment Material and Select Backfill: The Owner's Representative may accept material provided that not more than one out of the most recent five consecutive tests is out of the specification limits for:
  - a. Gradation: Not more than 5 percentage points on any individual sieve.
  - b. Plasticity: Not more than 2 percentage points.
2. Trench Zone Backfill Material: Except for select and random backfill, the Owner's Representative may accept the material provided that not more than one out of the most recent three consecutive tests is out of the specification limits for:
  - a. Gradation: Not more than 8 percentage points on any individual sieve.
  - b. Plasticity: Not more than 5 percentage points.
3. Select and Random Backfill: No quantified tolerances. Remove non-conforming material identifiable by visual-manual procedure.

END OF SECTION

## SECTION 02233

## CEMENT STABILIZED BASE COURSE

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Foundation course of cement stabilized crushed stone.
- B. Foundation course of cement stabilized bank run gravel.

## 1.02 UNIT PRICES

- A. Measurement for Cement Stabilized Base Course is on a square yard basis. Separate measurement will be made for each different required thickness of base course.
- B. Measurement for asphaltic seal cure is by the square yard.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit samples of crushed stone, gravel, and soil binder for testing.
- C. Submit weight tickets, certified by supplier, with each bulk delivery of cement to work site.
- D. Submit manufacturer's description and characteristics for pug mill and associated equipment, spreading machine, and compaction equipment for approval.

## 1.04 TESTS

- A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.
- B. Tests and analysis of aggregate and binder materials will be performed in accordance with ASTM D1557 and ASTM D4318.

## 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Make stockpiles from layers of processed aggregate so as to eliminate segregation of materials. Load material by making successive vertical cuts through entire depth of stockpile.

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- B. Store cement in weatherproof enclosures. Protect from ground dampness.

## PART 2 PRODUCTS

### 2.01 CEMENT

- A. ASTM C150 Type I; bulk or sacked.

### 2.02 WATER

- A. Water: Clean; clear; and free from oil, acids, alkali, or vegetable matter.

### 2.03 AGGREGATE

- A. Crushed Stone: material retained on the No. 40 Sieve meeting the following requirements:
  - 1. Durable particles of crusher-run broken limestone obtained from an approved source.
  - 2. Los Angeles abrasion test percent of wear not to exceed 40 when tested in accordance with ASTM C131.
- B. Gravel: Durable particles of bank run gravel or processed material.
- C. Soil Binder: Material passing the No. 40 Sieve meeting the following requirements when tested in accordance with ASTM D4318:
  - 1. Maximum Liquid limit: 35.
  - 2. Maximum Plasticity index: 10.
- D. Mixed aggregate and soil binder shall meet the following requirements:
  - 1. Grading in accordance with Tex-101-E and Tex-110-E within the following limits:



Sieve	Percent Retained			
	Crushed Stone	Processed GR. 1	Gravel GR. 2	Bankrun Gravel
1-3/4"	0 to 10	0 to 5	-	0 to 5
1/2"	-	-	0	-
No. 4	45 to 75	30 to 75	15 to 35	30 to 75
No. 40	55 to 80	60 to 85	55 to 85	65 to 85

2. Obtain prior permission from Owner’s Representative for use of additives to meet above requirements.

2.04 ASPHALTIC SEAL CURE

- A. Cut back asphalt: MC30 conforming to requirements of Section 02511.
- B. Emulsified petroleum resin: EPR-1 Prime conforming to requirements of Section 02511.

2.05 MATERIAL MIX

- A. Design mix for minimum average compressive strength of 200 psi at 48 hours using Tex-120-E unconfined compressive strength testing procedures. Provide minimum cement content of 1-1/2 sacks, weighing 94 pounds each sack, per ton of mix.
- B. Increase cement content if average compressive strength of tests on field samples fall below 200 psi. Refer to Part 3 concerning field samples and tests.
- C. Mix in stationary pug mill equipped with feeding and metering devices which shall add specified quantities of base material, cement, and water into mixer. Dry mix base material and cement sufficiently to prevent cement balls from forming when water is added.
- D. Resulting mixture shall be homogeneous and uniform in appearance.

2.06 SOURCE QUALITY CONTROL

- A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.

- B. Testing for unconfined compressive strength will be performed by Test Method Tex-120-E as follows:
  - 1. Three samples will be molded each day or for each 1,000 tons of production.
  - 2. Compressive strength shall be the average of three tests for each production lot.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify compacted subgrade is ready to support imposed loads.
- B. Verify lines and grades are correct.

#### 3.02 PREPARATION

- A. Complete backfill of new utilities below future grade.
- B. Prepare subgrade in accordance with requirements of Section 02221 and Section 02225 or Sections 02241.
- C. Correct subgrade deviations in excess of plus or minus 1/2 inch in cross section, or in 16 foot length by loosening, adding or removing material, reshaping and recompacting by sprinkling and rolling.
- D. Prepare sufficient subgrade in advance of base course for efficient operations.

#### 3.03 PLACEMENT

- A. Do not mix and place cement stabilized base when temperature is below 40 degrees F and falling. Base may be placed when temperature taken in shade and away from artificial heat is above 35 degrees F and rising.
- B. Place material on prepared subgrade in uniform layers to produce thickness indicated on Drawings. Depth of layers shall not exceed 8 inches. Do not dump material in piles or windrows.
- C. Spread with approved spreading machine. Conduct spreading so as to eliminate planes of weakness or pockets of nonuniformly graded material resulting from hauling and dumping operations.
- D. Provide construction joints between new material and stabilized base that has been in place 4 hours or longer. Joints shall be approximately vertical. Form joint with a

temporary header or make vertical cut of previous base immediately before placing subsequent base.

- E. Use only one longitudinal joint at center line under main lanes and shoulder. Do not use longitudinal joints under frontage roads and ramps.
- F. Place base so that projecting reinforcing steel from curbs remain at approximate center of base. Secure a firm bond between reinforcement and base.

### 3.04 COMPACTION

- A. Start compaction as soon as possible but not more than 60 minutes from start of moist mixing. Compact loose mixture with approved tamping rollers until entire depth is uniformly compacted. Do not allow stabilized base to mix with underlying material.
- B. Correct irregularities or weak spots immediately by replacing material and recompacting.
- C. Apply water to maintain moisture between optimum and 3 percent above optimum moisture as determined by ASTM D1557. Mix in with a spiked tooth harrow or equal. Reshape surface and lightly scarify to loosen imprints made by equipment.
- D. Remove and reconstruct sections where average moisture content exceeds ranges specified at time of final compaction.
- E. Finish by blading surface to final grade after compacting final course. Seal with approved pneumatic tired rollers which are sufficiently light to prevent surface hair line cracking. Rework and recompact at areas where hairline cracking develops.
- F. Compact to minimum density of 95 percent of modified Proctor density at a moisture content of treated material between optimum and 3 percent above optimum as determined by ASTM D1557, unless otherwise indicated on the Drawings.
- G. Maintain surface to required lines and grades throughout operation.

### 3.05 CURING

- A. Moist cure for minimum of 7 days before adding pavement courses. Restrict traffic on base to local property access. Keep subgrade surface damp by sprinkling.
- B. If indicated on Drawings, cover base surface with a curing membrane as soon as finishing operation is complete. Apply with approved self-propelled pressure distributor at following rates, or as indicated on Drawings:
  - 1. MC30: 0.1 gallon per square yard.

2. EPR-1 Prime: 0.15 gallon per square yard.
- C. Do not use cutback asphalt during the period of April 16 to September 15.

### 3.06 TOLERANCES

- A. Completed surface shall be smooth and conform to typical section and established lines and grades.
- B. Top surface of base course: Plus or minus 1/4 inch in cross section, or in 16-foot length.

### 3.07 FIELD QUALITY CONTROL

- A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.
- B. A minimum of one core will be taken at random locations per 1,000 linear feet per lane of roadway or 1000 square yards of base to determine in-place depth.
- C. Contractor may, at his own expense, request additional cores in the vicinity of cores indicating nonconforming in-place depths. If the average of the tests falls below the required depth, place and compact additional material at no cost to the Owner.
- D. Compaction Testing will be performed in accordance with ASTM D1556 or ASTM D2922 and ASTM 3017 at a random location near each depth determination core. Rework and recompact areas that do not conform to compaction requirements at no additional cost to the Owner.
- E. Fill cores and density test sections with new compacted cement stabilized base.

### 3.08 PROTECTION

- A. Maintain stabilized base in good condition until completion of work. Repair defects immediately by replacing base to full depth.
- B. Protect the asphalt membrane, if used, from being picked up by traffic. The membrane may remain in place when proposed surface courses or other base courses are to be applied.

END OF SECTION

## SECTION 02241

## LIME STABILIZED SUBGRADE

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Foundation course of lime stabilized natural subgrade material.

## 1.02 UNIT PRICES

- A. Measurement for Lime Stabilized Subgrade is on a square yard basis. Separate measurement will be made for each different required thickness of stabilized subgrade.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit certificates stating that hydrated lime, quicklime, or commercial lime slurry complies with these specifications.
- C. Submit weight tickets, certified by supplier, with each bulk delivery of lime to work site.
- D. Submit manufacturer's description and characteristics for rotary speed mixer and compaction equipment for approval.

## 1.04 TESTS

- A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.
- B. Tests and analysis of soil materials will be performed in accordance with ASTM D4318.
- C. Sampling and testing of lime slurry shall be in accordance with Tex-600-J.
- D. Sample mixtures of hydrated lime or quicklime in slurry form will be tested to establish compliance with specifications.
- E. Soil will be evaluated to establish percent of hydrated lime, quicklime, or lime slurry to be applied to subgrade material.

- F. Moisture-density relationship will be established on material sample from roadway, after stabilization with lime, in accordance with ASTM D698.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Bagged lime shall bear manufacturer's name, product identification, and certified weight. Bags varying more than 5 percent of certified weight may be rejected; average weight of 50 random bags in each shipment shall not be less than certified weight.
- B. Store lime in weatherproof enclosures. Protect lime from ground dampness.
- C. Quicklime can be dangerous; exercise extreme caution if used for the Work. Contractor shall become informed about recommended precautions in the handling, storage and use of quicklime.

### PART 2 PRODUCTS

#### 2.01 WATER

- A. Water shall be clean; clear; and free from oil, acids, alkali, or organic matter.

#### 2.02 LIME

- A. Type A - Hydrated lime: Dry material consisting essentially of calcium hydroxide or mixture of calcium hydroxide and an allowable percentage of calcium oxide and magnesium hydroxide.
- B. Type B - Commercial lime slurry: Liquid mixture consisting essentially of lime solids and water in slurry form. Water or liquid portion shall not contain dissolved material in sufficient quantity to be injurious or objectionable for purpose intended.
- C. Type C - Quicklime: Dry material consisting essentially of calcium oxide. Furnish quicklime in either of the following grades:
  - 1. Grade DS: Pebble quicklime of a gradation suitable for use in the preparation of a slurry for wet placing.
  - 2. Grade S: Finely-graded quicklime for use in the preparation of a slurry for wet placing. Do not use grade S quicklime for dry placing.

D. Lime shall conform to following requirements:

CHEMICAL COMPOSITION	TYPE		
	A	B	C
Active lime content, % by weight $\text{Ca(OH)}_2 + \text{CaO}$	90.0 min <sup>1</sup>	87.0 min <sup>2</sup>	-
Unhydrated lime content, % by weight CaO	5.0 max	-	87.0 min
Free water content, % by weight H <sub>2</sub> O:	5.0 max	-	-
SIZING			
Wet Sieve, as % by weight residue retained:			
No. 6	0.2 max	0.2 max <sup>2</sup>	8.0 max <sup>3</sup>
No. 30	4.0 max	4.0 max <sup>2</sup>	-
Dry sieve, as % by weight residue retained:			
1 – inch	-	-	0.0
3/4-inch	-	-	10.0 max
Notes:			
1. Maximum 5.0% by weight CaO shall be allowed in determining total active lime content.			
2. Maximum solids content of slurry.			
3. Total active lime content, as CaO, in material retained on the No. 6 sieve shall not exceed 2.0% by weight of original Type C lime.			

E. Lime slurry may be delivered to the job site as commercial lime, or may be prepared at the job site by using hydrated lime or quicklime. The slurry shall be free of liquids

other than water and shall be of a consistency that can be handled and uniformly applied without difficulty.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify compacted subgrade is ready to support imposed loads.
- B. Verify subgrade lines and grades are correct.

#### 3.02 PREPARATION

- A. Complete backfill of new utilities below future grade.
- B. Cut material to bottom of subgrade using an approved cutting and pulverizing machine meeting following requirements:
  - 1. Cutters accurately provide a smooth surface over entire width of cut to plane of secondary grade.
  - 2. Visible indication that cut is to proper depth.
- C. Alternatively, scarify or excavate to bottom of stabilized subgrade. Remove material or windrow to expose secondary grade. Correct wet or unstable material below secondary grade by scarifying, adding lime, and compacting. Obtain uniform stability.
- D. Proof roll subgrade prior to lime application.

#### 3.03 LIME SLURRY APPLICATION

- A. Mix hydrated lime or quicklime with water to form a slurry of the solids content specified. Commercial lime slurry shall have dry solids content as specified. Conform to cautionary requirements of Paragraph 1.05C concerning use of quicklime.
- B. Apply slurry with a distributor truck equipped with an agitator to keep lime and water in a consistent mixture. Make successive passes over measured section of roadway to attain proper moisture and lime content. Limit spreading to an area where preliminary mixing operations can be completed on the same working day.
- C. Apply so that dry subgrade will contain a minimum lime content of 5 percent by weight of dry subgrade unless otherwise instructed by Testing Laboratory.

#### 3.04 PRELIMINARY MIXING



- A. Do not mix and place material when temperature is below 40 degrees F and falling. Base may be placed when temperature taken in shade and away from artificial heat is above 35 degrees F and rising.
- B. Use approved single-pass or multiple-pass rotary speed mixers to mix soil, lime, and water to required depth. Obtain a homogeneous friable mixture free of clods and lumps.
- C. Shape mixed subgrade to final lines and grades.
- D. Eliminate following operations and final mixing if pulverization requirements of Paragraph 3.05C can be met during preliminary mixing:
  - 1. Seal subgrade as a precaution against heavy rainfall by rolling lightly with light pneumatic rollers.
  - 2. Cure soil-lime material for 3 days minimum. Keep subgrade moist during cure.

### 3.05 FINAL MIXING

- A. Use approved single-pass or multiple-pass rotary speed mixers to uniformly mix cured soil and lime to required depth.
- B. Add water to bring moisture content of soil mixture to a minimum of optimum or above.
- C. Mix and pulverize until all material passes a 1-3/4-inch sieve; a minimum of 85 percent, excluding nonslacking fractions, passes a 3/4-inch sieve; and a minimum of 60 percent excluding nonslacking fractions passes a No. 4 sieve.
- D. Shape mixed subgrade to final lines and grades.
- E. Do not expose hydrated lime to open air for 6 hours or more during interval between application and mixing. Avoid excessive hydrated lime loss due to washing or blowing.

### 3.06 COMPACTION

- A. Aerate or sprinkle to attain optimum moisture content as determined by Testing Laboratory. Remove and reconstruct sections where average moisture content exceeds ranges specified at time of final compaction.
- B. Start compaction immediately after final mixing, unless approved by Owner's Representative.

- C. Spread and compact in two or more approximately equal layers where total compacted thickness is to be greater than 8 inches.
- D. Compact with approved heavy pneumatic or vibrating rollers, or a combination of tamping rollers and light pneumatic rollers. Begin compaction at the bottom and continue until entire depth is uniformly compacted.
- E. Do not allow stabilized base to mix with underlying material. Correct irregularities or weak spots immediately by replacing material and recompacting.
- F. Compact to following minimum densities at a moisture content of optimum to 3 percent above optimum as determined by ASTM D698, unless otherwise indicated on the Drawings:
  - 1. Areas to receive pavement without subsequent base course: Minimum density of 98 percent of maximum dry density.
  - 2. Areas to receive subsequent base course: Minimum density of 95 percent of maximum dry density.
- G. Seal with approved light pneumatic tired rollers: Prevent surface hair line cracking. Rework and recompact at areas where hairline cracking develops.

### 3.07 CURING

- A. Moist cure for a minimum of 3 days before placing base or surface course, or opening to traffic. Time may be adjusted as approved by Owner's Representative. Subgrade may be opened to traffic after 2 days if adequate strength has been attained to prevent damage. Restrict traffic to light pneumatic rollers or vehicles weighing less than 10 tons.
- B. Keep subgrade surface damp by sprinkling. Roll with light pneumatic roller to keep surface knit together.
- C. Place base, surface, or seal course within 14 days after final mixing and compaction unless prior approval is obtained from Owner's Representative.

### 3.08 TOLERANCES

- A. Completed surface shall be smooth and conform to typical section and established lines and grades.
- B. Top of compacted surface: Plus or minus 1/4 inch in cross section or in 16-foot length.

### 3.09 FIELD QUALITY CONTROL

- A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.
- B. A minimum of one phenolphthalein test will be made at random locations per 1000 linear feet per lane of roadway or 1000 square yards of base to determine in-place depth.
- C. Contractor may, at his own expense, request additional cores in the vicinity of cores indicating nonconforming in-place depths. If the average of the tests falls below the required depth, place and compact additional material at no cost to the Owner.
- D. Compaction Testing will be performed in accordance with ASTM D1556 or ASTM D2922 and ASTM D3017 at a random location near depth determination tests. Rework and recompact areas that do not conform to compaction requirements at no cost to the Owner.
- E. Fill test sections with new compacted lime stabilized subgrade.

### 3.10 PROTECTION

- A. Maintain stabilized subgrade to lines and grades and in good condition until placement of base or surface course. Protect the asphalt membrane, if used, from being picked up by traffic.
- B. Repair defects immediately by replacing material to full depth.

END OF SECTION

## SECTION 02242

## LIME FLY ASH STABILIZED SUBGRADE

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Foundation course of lime-fly ash stabilized natural subgrade material.

## 1.02 UNIT PRICES

- A. Measurement for Lime Stabilized Subgrade is on a square yard basis. Separate measurement will be made for each different required thickness of base course.
- B. Measurement for hydrated lime and quicklime is by the ton of 2,000 pounds dry-weight basis.
- C. Measurement for commercial lime slurry is by the ton of 2,000 pounds of lime calculated on the percentage by weight of dry solids for the grade of slurry.
- D. Measurement for fly ash is by the ton of 2,000 pounds dry-weight basis.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit certificates stating that fly ash, hydrated lime, quicklime, or commercial lime slurry complies with these specifications.
- C. Submit weight tickets, certified by supplier, with each bulk delivery of lime to work site.
- D. Submit manufacturer's description and characteristics for rotary speed mixer and compaction equipment for approval.

## 1.04 TESTS

- A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.
- B. Tests and analysis of soil materials will be performed in accordance with ASTM D4318.
- C. Sampling and testing of lime slurry shall be in accordance with Tex-600-J.

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- D. Sample mixtures of hydrated lime or quicklime in slurry form will be tested to establish compliance with specifications.
- E. Soil will be evaluated to establish percent of fly ash and hydrated lime, quicklime, or lime slurry to be applied to subgrade material.
- F. Moisture-density relationship will be established on material sample from roadway, after stabilization with lime-fly ash, in accordance with ASTM D698.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Conform to requirements of Section 02241 - Lime Stabilized Subgrade.
- B. Quicklime can be dangerous: exercise extreme caution if used for the Work. Contractor shall become informed about recommended precautions in the handling, storage and use of quicklime.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Water shall be clean; clear; and free from oil, acids, alkali, or vegetable matter.
- B. Type A - hydrated lime, Type C - quicklime, and Type B - commercial lime slurry shall conform to requirements of Section 02241 - Lime Stabilized Subgrade.
- C. Fly Ash: Residue or ash remaining after burning finely pulverized coal at high temperatures conforming to the requirements of ASTM C618, Class C, and the following:
  - 1. Have a minimum CaO content of 20 percent.
  - 2. Loss on ignition shall not exceed 3 percent.
  - 3. Contain no lignite ash.
- D. Asphaltic seal cure: Conform to requirements of Section 02241.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify compacted subgrade is ready to support imposed loads.
- B. Verify subgrade lines and grades are correct.

#### 3.02 PREPARATION

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- A. Complete backfill of new utilities below future grade.
- B. Cut material to bottom of subgrade using an approved cutting and pulverizing machine meeting following requirements:
  - 1. Cutters accurately provide a smooth surface over entire width of cut to plane of secondary grade.
  - 2. Visible indication that cut is to proper depth.
- C. Alternatively, scarify or excavate to bottom of stabilized subgrade. Remove material or windrow to expose secondary grade. Correct wet or unstable material below secondary grade by scarifying, adding lime, and compacting. Obtain uniform stability.
- D. Proof roll subgrade prior to lime fly ash application.

### 3.03 LIME SLURRY APPLICATION

- A. Mix hydrated lime or quicklime and fly ash with water to form a slurry of the solids content specified. Commercial lime slurry shall have dry solids content as specified. Conform to cautionary requirements of Paragraph 1.05C concerning use of quicklime.
- B. Apply slurry with a distributor truck equipped with an agitator to keep lime, fly ash and water in a consistent mixture. Make successive passes over measured section of roadway to attain proper moisture and lime content. Limit spreading to an area where preliminary mixing operations can be completed on the same working day.
- C. Apply so that dry subgrade will contain a minimum lime content of 5 percent by weight of dry subgrade unless otherwise instructed by Testing Laboratory.

### 3.04 PRELIMINARY MIXING

- A. Do not mix and place material when temperature is below 40 degrees F and falling. Base may be placed when temperature taken in shade and away from artificial heat is above 35 degrees F and rising.
- B. Use approved single-pass or multiple-pass rotary speed mixers to mix soil, lime, fly ash and water to required depth. Obtain a homogeneous friable mixture free of clods and lumps.
- C. Contractor shall conduct operations to minimize elapsed time between mixing and compacting fly-ash stabilized subgrade in order to take advantage of rapid initial set characteristics. Complete compaction within 2 hours of commencing compaction, and not more than 6 hours after adding and mixing the last stabilizing agent.

- D. Shape mixed subgrade to final lines and grades.
- E. Eliminate following operations and final mixing if pulverization requirements of Paragraph 3.05C can be met during preliminary mixing:
  - 1. Seal subgrade as a precaution against heavy rainfall by rolling lightly with light pneumatic rollers.
  - 2. Cure soil-lime material for 3 days minimum. Keep subgrade moist during cure.

### 3.05 FINAL MIXING

- A. Use approved single-pass or multiple-pass rotary speed mixers to uniformly mix cured soil and lime to required depth.
- B. Add water to bring moisture content of soil mixture to a minimum of optimum or above.
- C. Mix and pulverize until all material passes a 1-3/4-inch sieve; a minimum of 85 percent, excluding nonslacking fractions, passes a 3/4-inch sieve; and a minimum of 60 percent excluding nonslacking fractions passes a No. 4 sieve.
- D. Shape mixed subgrade to final lines and grades.
- E. Do not expose hydrated lime to open air for 6 hours or more during interval between application and mixing. Avoid excessive hydrated lime loss due to washing or blowing.

### 3.06 COMPACTION

- A. Aerate or sprinkle to attain optimum moisture content as determined by Testing Laboratory. Remove and reconstruct sections where average moisture content exceeds ranges specified at time of final compaction.
- B. Start compaction immediately after final mixing, unless approved by Owner's Representative.
- C. Spread and compact in two or more approximately equal layers where total compacted thickness is to be greater than 8 inches.
- D. Compact with approved heavy pneumatic or vibrating rollers, or a combination of tamping rollers and light pneumatic rollers. Begin compaction at the bottom and continue until entire depth is uniformly compacted.

- E. Do not allow stabilized base to mix with underlying material. Correct irregularities or weak spots immediately by replacing material and recompacting.
- F. Compact to following minimum densities at a moisture content of optimum to 3 percent above optimum as determined by ASTM D698, unless otherwise indicated on the Drawings:
  - 1. Areas to receive pavement without subsequent base course: Minimum density of 98 percent of maximum dry density.
  - 2. Areas to receive subsequent base course: Minimum density of 95 percent of maximum dry density.
- G. Seal with approved light pneumatic tired rollers: Prevent surface hair line cracking. Rework and recompact at areas where hairline cracking develops.

### 3.07 CURING

- A. Moist cure for a minimum of 3 days before placing base or surface course, or opening to traffic. Time may be adjusted as approved by Owner's Representative. Subgrade may be opened to traffic after 2 days if adequate strength has been attained to prevent damage. Restrict traffic to light pneumatic rollers or vehicles weighing less than 10 tons.
- B. Keep subgrade surface damp by sprinkling. Roll with light pneumatic roller to keep surface knit together.
- C. Place base, surface, or seal course within 14 days after final mixing and compaction unless prior approval is obtained from Owner's Representative.

### 3.08 TOLERANCES

- A. Completed surface shall be smooth and conform to typical section and established lines and grades.
- B. Top of compacted surface: Plus or minus 1/4 inch in cross section or in 16-foot length.

### 3.09 FIELD QUALITY CONTROL

- A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.
- B. A minimum of one phenolphthalein test will be made at random locations per 1000 linear feet per lane of roadway or 1000 square yards of base to determine in-place depth.



- C. Contractor may, at his own expense, request additional cores in the vicinity of cores indicating nonconforming in-place depths. If the average of the tests falls below the required depth, place and compact additional material at no cost to the Owner.
- D. Compaction Testing will be performed in accordance with ASTM D1556 or ASTM D2922 and ASTM D3017 at a random location near depth determination tests. Rework and recompact areas that do not conform to compaction requirements at no cost to the Owner.
- E. Fill test sections with new compacted lime stabilized subgrade.

### 3.10 PROTECTION

- A. Maintain stabilized subgrade to lines and grades and in good condition until placement of base or surface course. Protect the asphalt membrane, if used, from being picked up by traffic.

### 3.11 REPAIR DEFECTS IMMEDIATELY BY REPLACING MATERIAL TO FULL DEPTH.

END OF SECTION

## SECTION 02249

## GEOTEXTILE

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Geotextile fabric, also called filter fabric, in applications such as a pipe embedment wrap, around the exterior of a tunnel liner, or around the foundations of pipeline structures and slope stabilization.

## 1.02 UNIT PRICES

- A. No separate payment will be made for work performed under this Section. Include the cost of such work in unit prices for work requiring geotextile, such as pipe embedment, sewer line in tunnel, or placement of manhole foundations, as appropriate.

## 1.03 SUBMITTALS

- A. Submittals shall conform to the requirements of all sections and provisions of these specifications.
- B. Submit the standard manufacturer's catalog sheets and other pertinent information, for approval, prior to installation.
- C. Submit installation methods, as a part of the work plan for tunneling or for excavation and backfill for utilities. Obtain approval from Owner's Representative for geotextile material and the proposed installation method prior to use of the geotextile.

## PART 2 PRODUCTS

## 2.01 GEOTEXTILE

- A. Provide a geotextile (filter fabric) designed for use in geotechnical applications which forms a permeable layer or media while retaining the soil matrix.
- B. Use a fabric which meets the physical requirements for Class A Subsurface Drainage installation conditions as defined in AASHTO M288 and as specified in paragraph 2.02.

## 2.02 PROPERTIES

- A. Material: Nonwoven, nonbiodegradable, fabric consisting only of continuous chain polymer filaments or yarns, at least 85 percent by weight polyolefins, polyesters or polyamide, formed into a dimensionally stable network.
- B. Chemical Resistance: Inert to commonly encountered chemicals and hydrocarbons over a pH range of 3 to 12.
- C. Physical Resistance: Resistant to mildew and rot, ultraviolet light exposure, insects and rodents.

D. Minimum Test Values:

<u>Property</u>	<u>Value (Min.)</u>	<u>Test Method</u>
Grab Strength	180 lbs.	ASTM D 4632
Trapezoidal Tear Strength	50 lbs.	ASTM D 4533
Puncture Strength	80 lbs.	ASTM D 4833
Mullen Burst Strength	290 psi.	ASTM D 3786
Apparent Opening Size <sup>(1)</sup>	0.25 mm	ASTM D 4751
Permittivity (sec <sup>-1</sup> )	0.2	ASTM D 4491

<sup>(1)</sup>Maximum average roll value

PART 3 EXECUTION

3.01 LINE WORK

- A. Use geotextile with backfill for utilities in conformance with Section 02227 - Excavation and Backfill for Utilities.

3.02 TUNNEL WORK

- A. Use geotextile outside of a tunnel primary liner to prevent the migration of soil fines into the excavated tunnel resulting in voids or settlement. Conform to Section 02310 - Tunnel Excavation and Primary Liner. Select a geotextile, subject to the minimum requirements of Paragraph 2.02, meeting tunnel liner design requirements and installation conditions.

END OF SECTION

## SECTION 02252

## CEMENT STABILIZED SAND

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Cement stabilized sand for backfill and bedding.

## 1.02 UNIT PRICES

- A. No payment will be made for cement stabilized sand under this Section unless an extra unit price item is included in the Bid Proposal and the application of the pay item is approved by the Owner's Representative. Include payment for cement stabilized sand in unit price for applicable bid items.
- B. If use of cement stabilized sand is allowed based on the Owner's Representative's direction the extra unit price item will be paid on a per ton basis. A conversion between volume calculated based on theoretical limits and total weight will be made based on a ratio of 1.64 tons per cubic yard.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit material qualification and mix design tests to include:
  - 1. Three series of tests of sand or fine aggregate material from the proposed source. Tests shall include procedures defined in Paragraph 2.01.
  - 2. Three moisture-density relationship tests prepared using the material qualified by the tests of Paragraph 1.03B.1. Blends of fine aggregate from crushed concrete and bank run sand shall be tested at the ratio to be used for the mix design testing.
  - 3. Mix design report to meet the design requirements of Paragraph 1.04. The mix design shall include compressive strength tests after 48-hours and 7 days curing.
- C. Submit stamped load tickets with time of loading directly after mixing.

## 1.04 DESIGN REQUIREMENTS

- A. Design sand-cement mixture to produce a minimum unconfined compressive strength of 100 pounds per square inch in 48 hours when compacted to 95 percent in accordance with ASTM D558 and when cured in accordance with ASTM D1632, and tested in accordance with ASTM D1633. Mix for general use shall contain a minimum of 1-1/2 sacks of cement per cubic yard. Mix for use as sanitary sewer embedment within 9 feet of waterlines shall contain 2 sacks of cement per cubic yard. Compact mix with a moisture content on the dry side of optimum.

## PART 2 PRODUCTS

### 2.01 MATERIALS

- A. Cement: Type 1 Portland cement conforming to ASTM C150.
- B. Sand: Clean, durable sand meeting grading requirements for fine aggregates of ASTM C33, or requirements for Bank Run Sand of Section 02229 - Utility Backfill Materials, and the following requirements:
1. Classified as SW, SP or SM by the United Soil Classification System of ASTM D2487.
  2. Deleterious materials:
    - a. Clay lumps, ASTM C142; less than 0.5 percent.
    - b. Lightweight pieces, ASTM C123; less than 5.0 percent.
    - c. Organic impurities, ASTM C40; color no darker than the standard color.
  3. Plasticity index of 4 or less when tested in accordance with ASTM D4318.
- C. Fine aggregate manufactured from crushed concrete meeting the quality requirements for crushed rock material of Section 02229 - Utility Backfill Materials, may be used as a complete or partial substitute for bank run sand. The blending ratio of fine aggregate from crushed concrete and bank run sand shall be defined in the mix design report.
- D. Water: Potable water, free of oils, acids, alkalis, organic matter or other deleterious substances, meeting requirements of ASTM C94.

### 2.02 MIXING MATERIALS

- A. Thoroughly mix sand, cement and water in proportions of the mix design using a pugmill-type mixer. The plant shall be equipped with automatic weight controls to ensure correct mix proportions.

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- B. Stamp batch ticket at plant with time of loading directly after mixing. Material not placed and compacted within 4 hours after mixing shall be rejected.
- C. No hand mixing is allowed on site.

## PART 3 EXECUTION

### 3.01 PLACING

- A. Place sand-cement mixture in 8-inch-thick loose lifts and compact to 95 percent of ASTM D558, unless otherwise specified. The moisture content during compaction shall be on the dry side of optimum but sufficient for hydration. Perform and complete compaction of sand-cement mixture within 4 hours after addition of water to mix at the plant.
- B. Do not place or compact sand-cement mixture in standing or free water.

### 3.02 FIELD QUALITY CONTROL

- A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.
- B. One sample of cement stabilized sand shall be obtained for each 150 tons of material placed per day with no less than one sample per day of production. Random samples of delivered cement stabilized sand shall be taken in the field at point of delivery in accordance with ASTM 3665. Obtain three individual samples of approximately 12 to 15 lb each from the first, middle, and last third of the truck and composite them into one sample for test purpose.
- C. Prepare and mold four specimens (for each sample obtained) in accordance with ASTM D 558, Method A, without adjusting moisture content. Samples will be molded at approximately same time material is being used, but no later than 4 hours after water is added to mix.
- D. After molding, specimens will be removed from molds and cured in accordance with ASTM D 1632.
- E. Specimens will be tested for compressive strength in accordance with ASTM D 1633, Method A. Two specimens will be tested at 48 hours plus or minus 2 hours and two specimens will be tested at 7 days plus or minus 4 hours.
- F. A strength test will be average of strengths of two specimens molded from same sample of material and tested at same age. Average daily strength will be average of strengths of all specimens molded during one day's production and tested at same age.

- G. Precision and Bias: Test results shall meet recommended guideline for precision in ASTM D 1633 Section 9.
- H. Reporting: Test reports shall contain, as a minimum, the following information:
1. Supplier and plant number
  2. Time material was batched
  3. Time material was sampled
  4. Test age (exact hours)
  5. Average 48-hour strength
  6. Average 7-day strength
  7. Specification section number
  8. Indication of compliance / non-compliance
  9. Mixture identification
  10. Truck and ticket numbers
  11. The time of molding
  12. Moisture content at time of molding
  13. Required strength
  14. Test method designations
  15. Compressive strength data as required by ASTM D 1633
  16. Supplier mixture identification
  17. Specimen diameter and height, in.
  18. Specimen cross-sectional area, sq. in.

### 3.03 ACCEPTANCE

- A. Strength level of material will be considered satisfactory if:
1. The average 48-hour strength is greater than 100 psi with no individual strength test below 70 psi.
  2. All 7-day individual strength tests (average of two specimens) are greater than or equal to 100 psi.
- B. Material will be considered deficient when 7-day individual strength test (average of two specimens) is less than 100 psi but greater than 70 psi. See Paragraph 3.04 Adjustment for Deficient Strength.
- C. The material will be considered unacceptable and subject to removal and replacement at Contractor's expense when individual strength test (average of two specimens) has 7-day strength less than 70 psi.
- D. When moving average of three daily 48-hour averages falls below 100 psi, discontinue shipment to project until plant is capable of producing material, which

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exceeds 100 psi at 48 hours. Five 48-hour strength tests shall be made in this determination with no individual strength tests less than 100 psi.

Testing laboratory shall notify Contractor, Project Manager, and material supplier by facsimile of tests indicating results falling below specified strength requirements within 24 hours.

- E. If any strength test of laboratory cured specimens falls below the specified strength, Contractor may, at his own expense, request test of cores drilled from the area in question in accordance with ASTM C42. In such cases, three (3) cores shall be taken for each strength test that falls below the values given in 3.03.A.
- F. Cement stabilized sand in an area represented by core tests shall be considered satisfactory if the average of three (3) cores is equal to at least 100 psi and if no single core is less than 70 psi. Additional testing of cores extracted from locations represented by erratic core strength results will be permitted.

#### 3.04 ADJUSTMENT FOR DEFICIENT STRENGTH

- A. When mixture produces 7-day compressive strength greater than or equal to 100 psi, then material will be considered satisfactory and bid price will be paid in full.
- B. When mixture produces 7-day compressive strength less than 100 psi and greater than or equal to 70 psi, material shall be accepted contingent on credit in payment. Compute credit by the following formula:

$$\text{Credit per Cubic Yard} = \frac{\$30.00 \times 2 (100 \text{ psi} - \text{actual psi})}{100}$$

- C. When mixture produces 7-day compressive strength less than 70 pounds per square inch, then remove and replace cement-sand mixture and paving and other necessary work at no cost to City.

END OF SECTION



## SECTION 02521

## CONCRETE PAVING

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Portland Cement Concrete Paving.

## 1.02 UNIT PRICES

- A. Measurement for concrete paving is on square yard basis. Separate measurement will be made for each different required thickness of pavement.
- B. Refer to Paragraph 3.15 for unit price adjustments.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit proposed mix design and test data for each type and strength of concrete in Work. Include proportions and actual compressive strength obtained from design mixes at required test ages.
- C. Submit manufacturer's description and characteristics for mixing equipment, and for traveling form paver, if proposed for use, for approval.
- D. Submit manufacturer's certificates giving properties of reinforcing steel. Provide specimens for testing when required by the Owner's Representative.

## 1.04 HANDLING AND STORAGE

- A. Do not mix different classes of aggregate without written permission of the Owner's Representative.
- B. Class of aggregate being used may be changed before or during Work with written permission of the Owner's Representative. New class shall comply with specifications.
- C. Segregated aggregate will be rejected. Before using aggregate whose particles are separated by size, mix them uniformly to grading requirements.
- D. Aggregates mixed with dirt, weeds or foreign matter will be rejected.

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- E. Do not dump or store aggregate in roadbed.

## PART 2 PRODUCTS

### 2.01 MATERIALS

#### A. Portland Cement:

1. Sample and test cement to verify compliance with Standards of ASTM C150, Type I or Type III.
2. Bulk cement which meets referenced standards may be used if the method of handling is approved by the Owner's Representative. When using bulk cement, provide satisfactory weighing devices.
3. Fly ash which meets standards of ASTM C618 may be used as mineral fill if the method of handling is approved by the Owner's Representative.

- #### B. Water: Fresh, clear and apparently clean conforming to requirements for water in ASTM C94.

C. Coarse Aggregate: Crushed stone or gravel, or combination thereof, which is clean, hard, and durable, conforms to requirements of ASTM C33, and has abrasion loss not more than 45 percent by weight when subjected to Los Angeles Abrasion Test (ASTM C131).

1. Maximum percentage by weight of deleterious substances shall not exceed following values:

Item	Percent by Weight of Total Sample Maximum
Clay lumps and friable particles	3.0
Material finer than 75- $\mu$ m (No. 200) sieve:	
Concrete subject to abrasion	3.0*
All Other concrete	5.0*
Coal and lignite:	
Where surface appearance of concrete is of importance	0.5
All other concrete	1.0

\* In case of manufactured sand, if material is finer than 75- $\mu$ m (No. 200) sieve consists of dust of fracture, essentially free from clay or shale, these limits may be increased to 5 and 7 percent, respectively.

2. Coarse aggregate (size 1-1/2 inch to No. 4 sieve) shall conform to requirements of ASTM C33. Gradation shall be within following limits when graded in accordance with ASTM C136:

Sieve Designation (Square Openings)	Percentage by Weight
Retained on 1-3/4" sieve	0
Retained on 1-1/2" sieve	0 to 5
Retained on 3/4" sieve	30 to 65
Retained on 3/8" sieve	70 to 90
Retained on No. 4 sieve	95 to 100
Loss by Decantation Test	
*Method Tex-406-A	1.0 maximum

\* In case of aggregates made primarily from crushing of stone, if material finer than the 200 sieve is dust of fracture essentially free from clay or shale as established by Part III of Tex-406-A, percent may be increased to 1.5.

- D. Fine Aggregate: Sand, manufactured sand, or combination thereof, composed of clean, hard, durable, uncoated grains, free from loams or other injurious foreign matter. Fine aggregate for concrete shall conform to requirements of ASTM C33. Gradation shall be within following limits when graded in accordance with ASTM C136:

Sieve Designation (Square Openings)	Percentage by Weight
Retained on 3/8" sieve	0
Retained on No. 4 sieve	0 to 5
Retained on No. 8 sieve	0 to 20
Retained on No. 16 sieve	15 to 50
Retained on No. 30 sieve	35 to 75
Retained on No. 50 sieve	65 to 90
Retained on No. 100 sieve	90 to 100
Retained on No. 200 sieve	97 to 100

1. When subjected to color test for organic impurities (ASTM C40), fine aggregate shall not show color darker than standard color. Fine aggregate shall be subjected to Sand Equivalent Test (Tex-203-F). Sand equivalent value shall not be less than 80, unless higher value is shown on Drawings.
- E. Mineral Filler: Class C fly ash of acceptable quality and meeting requirements of ASTM C618 may be used as mineral admixture in concrete mixture. When fly ash mineral filler is used, it shall be stored and inspected in accordance with ASTM C618. Fly ash shall not be used in amounts to exceed 30 percent by absolute volume of cementitious material in mix design. Cement content may be reduced if strength requirements can be met. Note: When fly ash is used, the term "cement" is defined as cement plus fly ash.
- F. Air Entraining Agent: Furnish an air entraining agent conforming to requirements of ASTM C260.
- G. Water Reducer: Water reducing admixture conforming to requirements of ASTM C494 may be used if required to improve the workability of concrete. Amount and type of such admixture shall be subject to approval by the Owner's Representative.

H. Reinforcing Steel:

1. Provide new billet steel manufactured by open hearth process and conforming to ASTM A615, Grade 60. Store steel to protect it from mechanical injury and rust. At time of placement, steel shall be free from dirt, scale, rust, paint, oil or other injurious materials.
2. Cold bend reinforcing steel to shapes shown. Once steel has been bent, it may not be rebent.

I. Fibrous Reinforcing: Conform to requirements of Section 03240. Not to be used in lieu of steel reinforcing.

2.02 EQUIPMENT

A. Equipment: Conform to requirements of ASTM C94.

2.03 MIXING

- A. Employ and pay certified testing laboratory to prepare mix designs. Compressive strength shall be as specified using test specimens prepared in accordance with ASTM C31 and tested in accordance with ASTM C39. Contractor shall determine and measure batch quantity of each ingredient, including all water for batch designs and all concrete produced for Work. Mix shall conform to these specifications and other requirements indicated on Drawings.
- B. Mix design to produce concrete which will have compressive strength of 3000 psi at 7 days and 3500 psi at 28 days. When high-early-strength cement is used, it shall reach at least 3250 psi at 72 hours and 3500 psi at 28 days. Slump of concrete shall be at least 1 inch, but no more than 5 inches, when tested in accordance with ASTM C143.
1. Concrete pavement shall contain at least 5-1/2 sacks (94 pounds per sack) of cement per cubic yard, with not more than 6.5 gallons of water, net, per sack of cement (water cement ratio maximum 0.57). Cement content shall be determined in accordance with ASTM C138. Addition of mineral filler may be used to improve workability or plasticity of concrete to limits specified.
  2. Coarse dry aggregate shall not exceed 85 percent of loose volume of concrete.
  3. Add air-entraining admixture to ensure uniform distribution of agent throughout batch. Base air content of freshly mixed air-entrained concrete upon trial mixes with materials to be used in Work, adjusted to produce concrete of required plasticity and workability. Percentage of air entrainment in mix shall be 4-1/2 percent plus or minus 1-1/2 percent. Air content shall be determined by testing in accordance with ASTM C231.

4. Use retardant when temperature exceeds 90 degrees F. Proportion shall be as recommended by manufacturer. Use same brand as used for air-entraining agent. Add and batch material using same methods as used for air-entraining agent.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify compacted base is ready to support imposed loads and meets compaction requirements.
- B. Verify lines and grades are correct.

#### 3.02 PREPARATION

- A. Properly prepare, shape and compact each section of subgrade before placing forms, reinforcing steel or concrete. After forms have been set to proper grade and alignment, use subgrade planer to shape subgrade to its final cross section. Check contour of subgrade with template.
- B. Remove subgrade that will not support loaded form. Replace and compact subgrade to required density.

#### 3.03 EQUIPMENT

- A. Alternate equipment and methods, other than those required by this article, may be used provided the Contractor demonstrates that equal, or better, results will be obtained and if approved by the Owner's Representative. Maintain equipment for preparing subgrade and for finishing and compacting concrete in good working order.
- B. Subgrade Planer and Template:
  1. Use subgrade planer with adjustable cutting blades to trim subgrade to exact section shown on Drawings. Select planer mounted on visible rollers which ride on forms. Planer frame must have sufficient weight so that it will remain on form at all times, and have such strength and rigidity that, under tests made by changing support from wheels to center, planer will not develop deflection of more than 1/8 inch. Tractors used to pull planer shall not produce ruts or indentations in subgrade. When slip form method of paving is used, operate subgrade planer on prepared track grade or have it controlled by electronic sensor system operated from string line to establish horizontal alignment and elevation of subbase.
  2. Provide template for checking contour of subgrade. Template shall be long enough to rest upon side forms and have such strength and rigidity that, when

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supported at center, maximum deflection shall not exceed 1/8 inch. Fit template with accurately adjustable rods projecting downward at 1-foot intervals. Adjust these rods to gauge cross sections of slab bottom when template is resting on side forms.

- C. Machine Finisher: Provide a power-driven, transverse finishing machine designed and operated to strike off and consolidate concrete. Machine shall have two screeds accurately adjusted to crown of pavement and with frame equipped to ride on forms. Use finishing machine with rubber tires if it operates on concrete pavement.
- D. Hand Finishing (Only to be used when approved by the Owner):
  - 1. Provide mechanical strike and tamping template 2 feet longer than width of pavement to be finished. Shape template to pavement section.
  - 2. Provide two bridges to ride on forms and span pavement for finishing expansion and dummy joints. Provide floats and necessary edging and finishing tools.
- E. Belt Finishing: While concrete is still workable, give surface final belting to produce a uniform surface of gritty texture. Perform belting with short rapid transverse strokes having sweeping longitudinal motion.
- F. Vibrators: Furnish mechanically operated synchronized vibrators mounted on tamping bar which rides on forms and hand-manipulated mechanical vibrators. Furnish vibrators with frequency of vibration to provide maximum consolidation of concrete without segregation.
- G. Traveling Form Paver: Approved traveling form paver may be used in lieu of construction methods employing forms, consolidating, finishing and floating equipment. Requirements of this specification for subgrade, pavement tolerances, pavement depth, alignments, consolidation, finishing and workmanship shall be met. If traveling form paver does not provide concrete paving that meets the compaction, finish and tolerances requirements of this specification, its use shall be immediately discontinued when so ordered by the Owner's Representative and conventional methods shall be used.
  - 1. Equip traveling paver with longitudinal transangular finishing float adjustable to crown and grade. Float shall be long enough to extend across pavement to side forms or edge of slab.
  - 2. Insure that continuous deposit of concrete can be made at paver to minimize starting and stopping. Use conventional means of paving locations



inaccessible to traveling paver, or having horizontal or vertical curvature that traveling paver cannot negotiate.

3. Where Drawings require tie bars for adjacent paving, securely tie and support bars to prevent displacement. Tie bars may be installed with approved mechanical bar inserter mounted on traveling-form paver. Replace any pavement in which tie bars assume final position other than that shown on Drawings, unless corrective alternates are authorized in writing by the Owner's Representative.

### 3.04 FORMS

- A. Side Forms: Use metal or wood forms of approved shape and section. Preferred depth of form shall be equal to required edge thickness of pavement. Forms with depths greater or less than required edge thickness of pavement will be permitted, provided difference between form depth and edge thickness is not greater than 1 inch, and further provided that forms of depth less than pavement edge are brought to required edge thickness by securely attaching wood or metal strips to bottom of form, or by grouting under form. Aluminum forms are not allowed. All forms shall be approved by the Owner's Representative. Length of form sections shall be not less than 10 feet and each section shall provide for staking in position with not less than 3 pins. Flexible or curved forms of wood or metal of proper radius shall be used for curves of 200-foot radius or less. Forms shall have ample strength and shall be provided with adequate devices for secure setting so that when in-place they will withstand, without visible springing or settlement, impact and vibration of finishing machine. Forms shall be free from warp, bends or kinks and shall be sufficiently true to provide reasonable straight edge on concrete. Top of each form section, when tested with straight edge, shall conform to requirements specified for surface of completed pavement. Provide sufficient forms for satisfactory placement of concrete. For short radius curves, forms less than 10 feet in length or curved forms may be used. For curb returns at street intersections and driveways, wood forms of good grade and quality may be used.
- B. Form Setting:
  1. Rest forms directly on subgrade. Do not shim with pebbles or dirt. Accurately set forms to required grade and alignment and, during entire operation of placing, compacting and finishing of concrete, do not deviate from this grade and alignment more than 1/8 inch in 10 feet of length. Do not remove forms for at least 8 hours after completion of finishing operations. Provide supply of forms that will be adequate for orderly and continuous placing of concrete. Set forms and check grade for at least 300 feet ahead of mixer or as approved by the Owner's Representative.

2. Adjacent slabs may be used instead of forms, provided that concrete is well protected from possible damage by finishing equipment. These adjacent slabs shall not be used for forms until concrete has aged at least 7 days.

### 3.05 REINFORCING STEEL AND JOINT ASSEMBLIES

- A. Accurately place reinforcing steel and joint assemblies and position them securely as indicated on Drawings. Tie reinforcing bars with wire securely together at intersections and splices. Bars and coatings shall be free of rust, dirt or other foreign matter when concrete is placed. Place all reinforcing steel and secure to chairs.
- B. Place pavement joint assemblies at required locations and elevations, and rigidly secure all parts in required positions. Install dowel bars accurately in joint assemblies as shown, each parallel to pavement surface and to center line of pavement. Rigidly secure in required position to prevent displacement during placing and finishing of concrete. Accurately cut header boards, joint filler and other material used for forming joints to receive each dowel bar. Drill dowels into existing pavement, secure with epoxy, and provide paving headers, as required, to provide rigid pavement sections.

### 3.06 FIBROUS REINFORCING

- A. Do not use fibrous reinforcing to replace structural, load bearing or moment reinforcing steel.
- B. Mix and place in accordance with requirements of Section 03240 (Only when specified).

### 3.07 PLACEMENT

- A. Place concrete only when air temperature taken in shade and away from artificial heat is above 35 degrees F and rising. Concrete shall not be placed when temperature is below 40 degrees F and falling.

When concrete temperature is 85 degrees F or above, do not exceed 60 minutes between introduction of cement to the aggregates and discharge. When the weather is such that the concrete temperature would exceed 90 degrees F, employ effective means, such as pre-cooling of aggregates and mixing water, using ice or placing at night, as necessary to maintain concrete temperature, as placed, below 90 degrees F.

- B. Place concrete within 90 minutes of mixing if concrete temperature is 85 degrees or less. Remove and dispose of concrete not placed within this period.
- C. Concrete slump during placement shall be 1 to 5 inches, except when using traveling-form paver slump shall be maximum of 2 inches.
- D. Deposit concrete rapidly and continuously on subgrade or subbase in successive batches. Distribute concrete to required depth and for entire width of placement in manner that will require as little rehandling as possible. Where hand spreading is necessary, distribute concrete with shovels or by other approved methods. Use only concrete rakes in handling concrete. At end of day or in case of unavoidable interruption of more than 30 minutes, place transverse construction joint at point of stopping work. Remove and replace sections less than 10 feet long.
- E. Take special care in placing and spading concrete against forms and at longitudinal and transverse joints to prevent honeycombing. Voids in edge of finished pavement will be cause for rejection.

### 3.08 COMPACTION

- A. Consolidate the concrete using mechanical vibrators as specified herein. Extend a vibratory unit across the pavement, not quite touching side forms. Space individual vibrators at close enough intervals to vibrate and consolidate entire width of pavement uniformly. Mount mechanical vibrators to avoid contact with forms, reinforcement, transverse or longitudinal joints.
- B. Furnish enough hand-manipulated mechanical vibrators for proper consolidation of concrete along forms, at joints and in areas not covered by mechanically controlled vibrators.

### 3.09 FINISHING

- A. Finish concrete pavement with power-driven transverse finishing machines or by hand finishing methods (Hand finishing allowed only if approved by the Owner).
  - 1. Use transverse finishing machine to make at least two trips over each area. Make last trip continuous run of not less than 40 feet. After transverse screeding, use hand-operated longitudinal float to test and level surface to required grade.
  - 2. Hand finish with mechanical strike and tamping template as wide as pavement to be finished. Shape template to pavement section. Move strike template forward in direction of placement, maintaining slight excess of material in front of cutting edge. Make at least two trips over each area. Screenshot pavement surface to required section. Work screed with combined transverse

and longitudinal motion in direction work is progressing. Maintain screed in contact with forms. Use longitudinal float to level surface.

- B. On narrow strips and transitions, finish concrete pavement by hand. Thoroughly work concrete around reinforcement and embedded fixtures. Strike off concrete with strike-off screed. Move strike-off screed forward with combined transverse and longitudinal motion in direction work is progressing, maintaining screed in contact with forms, and maintaining slight excess of materials in front of cutting edge. Tamp concrete with tamping template. Use longitudinal float to level surface.
- C. While concrete is still workable, give surface final belting to produce a uniform surface of gritty texture and striations of 1/16" to 1/8" deep.

### 3.10 JOINTS AND JOINT SEALING

- A. Conform to requirements of Section 02523.

### 3.11 CONCRETE CURING

- A. Conform to requirements of Section 02525.

### 3.12 TOLERANCES

- A. Test entire surface before initial set and correct irregularities or undulations. Bring surface within requirements of following test and then finish. Place 10-foot straightedge parallel to center of roadway to bridge any depressions and touch all high spots. Do not permit ordinates measured from face of straight edge to surface of pavement to exceed 1/16 inch per foot from nearest point of contact. Maximum ordinate with 10-foot straightedge shall not exceed 1/8 inch. Grind spots in excess of requirements of this paragraph to meet surface test requirements, only if approved by the Owner and Owner's representative. Restore texture by grooving concrete to meet surface finishing specifications.

### 3.13 FIELD QUALITY CONTROL

- A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.
- B. Compressive Strength Test Specimens: Four test specimens for compressive strength test will be made for each 150 cubic yards or less of pavement that is placed in one day. Two specimens will be tested at 7 days or at number of hours as directed by the Project Manager for high early strength concrete. Test the remaining two specimens at 28 days. Specimens will be made, cured and tested in accordance with ASTM C-39. Minimum compressive strength shall be 3000 pounds per square inch at 7 days and 3500 pounds per square inch at 28 days.

- C. Yield test will be made in accordance with ASTM C138 for cement content per cubic yard of concrete. 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. Minimum of one 4-inch diameter core will be taken at random locations per 1,000 feet per lane or 1000 square yards of pavement to measure in-place depth. Each core may be tested for 28-day compressive strength according to methods of ASTM C42. The 28-day compressive strength of each core tested shall be a minimum of 3500 pounds per square inch.
- E. Contractor may, at his own expense, request three additional cores in vicinity of cores indicating nonconforming in-place depths. In-place depth at these locations shall be average depth of four cores.
- F. Fill cores and density test sections with new concrete paving or non-shrink grout.

#### 3.14 NONCONFORMING PAVEMENT

- A. Remove and replace areas of pavement found deficient in thickness by more than 10 percent, or that fail compressive strength tests, with concrete of thickness shown on Drawings unless accepted by the Owner's Representative.
- B. Remove and replace pavement with unsatisfactory finish as determined by the Owner and Owner's Representative. An unsatisfactory finish includes, but is not limited to, rain event that occurs during or after a concrete pour resulting in a poor finish, poor tooling, finishing or sections shall be replaced at no cost to Owner.

#### 3.15 UNIT PRICE ADJUSTMENT

- A. Unit price adjustments shall be made for in-place depth determined by cores as follows:
  - 1. Adjusted Unit Price shall be ratio of average thickness as determined by cores to thickness bid upon, times unit price bid.
  - 2. Adjustment shall apply to a lower limit of 90 percent of unit price bid.
  - 3. No adjustment will be made for excess thickness.

#### 3.16 PAVEMENT MARKINGS

- A. Restore pavement markings to match those existing in accordance with standard specifications and details and the Owner's Representative's requirements.

#### 3.17 PROTECTION

- A. Barricade pavement section from use until concrete has attained minimum design strength.
- B. On those sections of pavement to be opened to traffic, seal joints, clean pavement and place earth against pavement edges before permitting use by traffic. Such opening of pavement to traffic shall not relieve Contractor from his responsibility for Work.
- C. Maintain concrete paving in good condition until completion of Work.
- D. Repair defects by replacing concrete to full depth.

END OF SECTION

SECTION 02523

CONCRETE JOINTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Joints for concrete paving; concrete sidewalks; and curbs, and curb and gutter.
- B. Saw-cutting existing concrete or asphalt pavements for new joints.

1.02 UNIT PRICES

- A. No separate payment will be made for concrete joints under this Section. Include payment in unit price for Concrete Paving.
- B. No separate payment will be made for formed or sawed street pavement contraction joints and longitudinal weakened plane joints. Include payment in unit price for Concrete Paving.
- C. No separate payment will be made for joints or sawcutting for Curb, Curb and Gutter; Concrete Sidewalks; Wheelchair Ramps; and Concrete Driveways. Include payment in unit price for Curb and Gutter; Concrete Sidewalks; Wheelchair Ramps; and Concrete Driveways.

1.03 SUBMITTALS

- A. Submit product data and samples in accordance with requirements of all sections and provisions of these specifications.
- B. Submit product data for joint sealing compound and proposed sealing equipment for approval.
- C. Submit samples of dowel cup, metal supports, and deformed metal strip for approval.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Board Expansion Joint Material: Filler board of selected stock. Use wood of density and type as follows:
  - 1. Clear, all-heart cypress weighing no more than 40 pounds per cubic foot, after being oven dried to constant weight.

2. Clear, all-heart redwood weighing no more than 30 pounds per cubic foot, after being oven dried to constant weight.
  3. Use wood only when part of a load transmission device assembly.
- B. Joint Sealing Compound:
1. Joint sealing compound shall be self-leveling Low Modulus Silicone sealant single component meeting the requirements of TxDOT Specification 433.2, Class 5.
- C. Load Transmission Devices:
1. Smooth, steel dowel bars conforming to ASTM A615, Grade 60. When indicated on Drawings, encase one end of dowel bar in approved cap having inside diameter 1/16 inch greater than diameter of dowel bar.
  2. Deformed steel tie bars conforming to ASTM A615, Grade 60.
- D. Metal Supports for Reinforcing Steel and Joint Assembly: Employ metal supports of approved shape and size that will secure reinforcing steel and joint assembly in correct position during placing and finishing of concrete. Space supports as directed by the Owner's Representative.

## PART 3 EXECUTION

### 3.01 PLACEMENT

- A. When new work is adjacent to existing concrete, place joints at same location as existing joints in adjacent pavement.
- B. If the limit of removal of existing concrete or asphaltic pavement does not fall on existing joint, saw cut existing pavement minimum of 2 inches deep to provide straight, smooth joint surface without chipping, spalling or cracks.

### 3.02 CONSTRUCTION JOINTS

- A. Place transverse construction joint wherever concrete placement must be stopped for more than 30 minutes. Place longitudinal construction joints at interior edges of pavement lanes using No. 5 deformed tie bars, 30 inches long and spaced 18 inches on centers.

### 3.03 EXPANSION JOINTS

- A. Place 3/4-inch expansion joints at locations shown on drawings. Use no boards shorter than 6 feet. When pavement is 24 feet or narrower, use not more than 2

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lengths of board. Secure pieces to form straight joint. Shape board filler accurately to cross section of concrete slab. Use load transmission devices of type and size shown on Drawings. Seal with joint sealing compound. Maximum spacing shall be 60 feet.

### 3.04 CONTRACTION JOINTS

- A. Place formed groove contraction joints at same locations as in adjacent pavement or at spaces indicated on Drawings. Maximum spacing of contraction/construction joints is 20 feet, or as shown on plans. Polyethylene foam backer rods shall be installed in contraction joints. Seal groove with joint sealing compound.

### 3.05 LONGITUDINAL WEAKENED PLANE JOINTS

- A. Place longitudinal weakened plane joints at spaces indicated on Drawings. Seal groove with joint sealing compound.

### 3.06 SAWED JOINTS

- A. Contractor may use sawed joints as an alternate to formed groove contraction and weakened plane joints. Circular cutter shall be capable of cutting straight line groove 1/4 – 3/8” inch wide. Depth shall be one quarter of pavement thickness plus 1/2 inch. Commence sawing as soon as concrete has hardened sufficiently to permit cutting without chipping, spalling or tearing and prior to initiation of cracks. Once sawing has commenced, it shall be continued until completed. Make saw cut with one pass. Complete sawing between 4 to 24 hours of concrete placement. Saw joints at required spacing consecutively in sequence of concrete placement.
- B. Concrete Saw: Provide sawing equipment adequate in power to complete sawing to required dimensions and within required time. Provide at least one standby saw in good working order. Maintain an ample supply of saw blades at work site at all times during sawing operations. Sawing equipment shall be on job at all times during concrete placement.

### 3.07 JOINTS FOR CURB, CURB AND GUTTER

- A. Place 3/4-inch preformed expansion joints through curb and gutters at locations of expansion and contraction joints in pavement; at end of radius returns at street intersections and driveways; and at curb inlets. Maximum spacing shall be 60-foot centers.

### 3.08 JOINTS FOR CONCRETE SIDEWALKS

- A. Provide 3/4-inch expansion joints conforming to ASTM A1751 along and across sidewalk at back of curbs, at intersections with driveways, steps, and walls; and across walk at intervals not to exceed 36 feet. Provide expansion joint material conforming to ASTM D994 for small radius curves and around fire hydrants and

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utility poles. Extend the expansion joint material full depth of the slab. Reinforcing bars shall extend 10 inches beyond the expansion joint and then shall be wrapped with building paper, or approved sleeves, so that the 10 inches shall not be bonded to the concrete.

### 3.09 JOINTS FOR CONCRETE DRIVEWAYS

- A. Provide 3/4-inch expansion joints conforming to ASTM D1751 across driveway in line with street face of sidewalks, at existing concrete driveways, and along intersections with sidewalks and other structures. Extend expansion joint material full depth of slab. Where dowels are used, wrap or sleeve one end.

### 3.10 JOINT SEALING

- A. Seal joints only when surface and joints are dry, ambient temperature is within manufacturers' recommendations and weather is not foggy or rainy.
- B. Joint sealing equipment shall be in first-class working condition, and be approved by the Owner's Representative. Use concrete grooving machine or power-operated wire brush and other equipment such as plow, brooms, brushes, blowers or hydro or abrasive cleaning as required to produce satisfactory joints.
- C. Clean joints of loose scale, dirt, dust and curing compound. Term joint includes wide joint spaces, expansion joints, dummy groove joints or cracks, either preformed or natural. Remove loose material from concrete surfaces adjacent to joints.
- D. Fill joints neatly with joint sealer to depth shown. Pour sufficient joint sealer into joints so that, upon completion, surface of sealer within joint will be 1/4 inch below level of adjacent surface or at elevation as directed.

### 3.11 PROTECTION

- A. Maintain joints in good condition until completion of Work.
- B. Replace damaged joints material with new material as required by this Section.

END OF SECTION

## SECTION 02525

## CONCRETE PAVEMENT CURING

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Curing of Portland Cement Concrete Paving.

## 1.02 UNIT PRICES

- A. No separate payment will be made for concrete curing under this Section. Include payment in unit price for Concrete Paving; Concrete Sidewalks; Wheelchair Ramps; and Curb, Curb and Gutter.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit manufacturer's product data for cover materials and liquid membrane-forming compounds

## PART 2 PRODUCTS

## 2.01 COVER MATERIALS FOR CURING

- A. Curing materials shall conform to one of following:
  - 1. Polyethylene Film: Opaque pigmented white film conforming to requirements of ASTM C171.

## 2.02 LIQUID MEMBRANE-FORMING COMPOUNDS

- A. Liquid membrane-forming compounds shall conform to ASTM C309. Membrane shall restrict loss of water to not more than 0.55 kg/m<sup>2</sup> of surface in 72 hours.

## PART 3 EXECUTION

## 3.01 GENERAL

- A. Concrete pavement shall be cured by protecting it against loss of moisture for period of not less than 72 hours immediately upon completion of finishing operations. Do not use membrane curing for concrete pavement to be overlaid by asphaltic concrete.

- B. Where curing requires use of water, curing shall have prior right to all water supply or supplies. Failure to provide sufficient cover material shall be cause for immediate suspension of concreting operations.

3.02 POLYETHYLENE FILM CURING

- A. Immediately after finishing surface, and after concrete has taken its initial set, apply water in the form of a fine spray. Cover surface with polyethylene film so film will remain in intimate contact with surface during specified curing period.
- B. Cover entire surface and both edges of pavement slab. Joints in film sheets shall overlap minimum of 12 inches. Immediately repair tears or holes occurring during curing period by placing acceptable moisture-proof patches or by replacing.

3.03 LIQUID MEMBRANE-FORMING COMPOUNDS

- A. Immediately after finishing surface, and after concrete has taken its initial set, apply liquid membrane-forming compound in accordance with manufacturer's instructions.

END OF SECTION

## SECTION 02530

## CONCRETE SIDEWALKS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Reinforced concrete sidewalks.

## 1.02 UNIT PRICES

- A. Measurement for concrete sidewalks is on square foot basis.
- B. Refer to Section 01025 - Measurement and Payment for unit price procedures.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of Section 01300 - Submittals.
- B. Submit proposed mix design and test data for each type and strength of concrete in Work. Include proportions and actual flexural strength obtained from design mixes at required test ages.
- C. Submit manufacturer's certificates giving properties of reinforcing steel. Provide specimens for testing when required by the Owner Representative.

## PART 2 PRODUCTS

## 2.01 MATERIALS

- A. Concrete: Conform to material and proportion requirements for concrete of Section 02521.
- B. Reinforcing Steel: Conform to material requirements for reinforcing steel of Section 02521.
- C. Preformed Expansion Joint Material: Conform to material requirements for preformed expansion joint material of Section 02523.
- D. Joint Sealing Compound: Conform to material requirements of Section 02523.
- E. Sand Bed: Conform to material requirements for bank run sand of Section 02229.

**PART 3 EXECUTION****3.01 REPLACEMENT**

- A. Replace sidewalks which are removed or damaged during construction with sidewalk of thickness and width equivalent to one removed or damaged.
- B. Provide replaced and new sidewalks with wheelchair ramps if sidewalk intersects curb at street or driveway intersection.

**3.02 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 operations in accordance with Section 02100.
- D. Excavate subgrade 6 inches beyond outside lines of sidewalk. Shape to the line, grade and cross section. Compact subgrade, to a minimum of 95 percent maximum dry density at optimum to 3 percent above optimum moisture content, as determined by ASTM D698.

**3.03 PLACEMENT**

- A. Forms: Straight, unwarped wood or metal forms with nominal 4-inch depth. Securely stake forms to line and grade, and maintain in true position during concrete placement.
- B. Reinforcement: Install No. 3 reinforcing steel bars spaced in accordance with Drawing detail. Lay longitudinal bars in walk continuously, through expansion joints in accordance with Section 02523. Support reinforcement in manner to maintain reinforcement in center of slab vertically during placement.
- C. Expansion Joints: Install expansion joints in accordance with Section 02523.
- D. Place concrete in forms to specified depth and tamp thoroughly with "jitterbug" tamp, or other acceptable method. Bring mortar to surface.
- E. Strike off to smooth finish with wood strike board. Finish smoothly with wood hand float. Brush across sidewalk lightly with fine-haired brush.
- F. Unless otherwise indicated on Drawings, mark off joints 1/8 inch deep, at spacing equal to width of walk. Use joint tool equal in width to edging tool.
- G. Finish edges with tool having 1/4-inch radius.
- H. After concrete has set sufficiently, refill space along sides of sidewalk to top of walk with suitable material. Tamp unit firm and solid. Dispose of excess material in accordance with Section 01564.

3.04 CURING

- A. Conform to requirements of Section 02525.

3.05 PROTECTION

- A. Maintain sidewalks in good condition until completion of Work.
- B. Replace damaged sidewalks in accordance with Paragraph 3.01 in this Section.

3.06 ACCESSIBILITY STANDARDS

- A. All sidewalk and wheelchair ramp shall meet criteria of the Texas Accessibility Standards and the Federal Design Guidelines, i.e. slopes, texture and coloring. If applicable, the Texas Department of Licensing and Regulation (TDLR) shall inspect the site and rule on compliance. Any item found out of compliance shall be remedied at the expense of the Contractor.

END OF SECTION

## SECTION 02531

## CONCRETE DRIVEWAYS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Portland cement concrete driveways.

## 1.02 UNIT PRICES

- A. Measurement for concrete driveways is on square yard basis.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit proposed mix design and test data for each type and strength of concrete in Work. Include proportions and actual flexural strength obtained from design mixes at required test ages.

## PART 2 PRODUCTS

## 2.01 MATERIALS

- A. Concrete: Conform to material and proportion requirements for concrete of Section 02521.
- B. Reinforcing Steel: Conform to material requirements of Section 02521.
- C. Preformed Expansion Joint Material: Conform to material requirements for preformed expansion joint material of Section 02523.
- D. Joint Sealing Compound: Conform to material requirements of Section 02523.
- E. Sand Bed: Conform to material requirements for bank run sand of Section 02229.

## PART 3 EXECUTION

## 3.01 PREPARATION

- A. Prepare subgrade in accordance with applicable portions of Sections 02221 through 02227 and 02241.

## 3.02 PLACEMENT



- A. Place and finish concrete in accordance with applicable portions of Section 02521.

3.03 JOINTS

- A. Install joints in concrete driveway in accordance with Section 02523.

3.04 CONCRETE CURING

- A. Cure concrete driveway in accordance with Section 02525.

3.05 PROTECTION

- A. Conform to applicable requirements of Section 02525.

END OF SECTION

## SECTION 02532

## CURB, CURB &amp; GUTTER

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Reinforced concrete curb, reinforced monolithic concrete curb and gutter, and mountable curb.
- B. Paving headers poured monolithically with concrete base or pavement.

## 1.02 UNIT PRICES

- A. Measurement for curbs and for curbs and gutter is on linear foot basis measured along face of curb.
- B. Measurement for headers is on linear foot basis measured between lips of gutters adjacent to concrete base and measured between backs of curbs adjacent to concrete pavement.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit details of proposed formwork for approval.
- C. Submit proposed mix design and test data for each type and strength of concrete in Work. Include proportions and actual flexural strength obtained from design mixes at required test ages.
- D. Submit manufacturer's certifications giving properties of reinforcing steel. Provide specimens for testing when required by the Owner Representative.

## PART 2 PRODUCTS

## 2.01 MATERIALS

- A. Concrete: Conform to material and proportion requirements for concrete of Section 02521.
- B. Reinforcing Steel: Conform to material requirements for reinforcing steel of Section 02521.
- C. Grout: Nonmetallic, nonshrink grout containing no chloride producing agents conforming to the following requirements.

Compressive strength, psi	
at 7 days	3500
at 28 days	8000
Initial set time, minutes	45
Final set time, hours	1.5

- D. Preformed Expansion Joint Material: Conform to material requirements for preformed expansion joint material of Section 02523.
- E. Joint Sealing Compound: Conform to material requirements of Section 02523.
- F. Mortar: Mortar finish composed of one part Portland cement and 1-1/2 parts of fine aggregate. Use only when approved by the Owner's Representative.

### PART 3 EXECUTION

#### 3.01 PREPARATION

- A. Prepare subgrade or base in accordance with applicable portions of Sections 02221 and 02225.

#### 3.02 PLACEMENT

- A. Guideline: Set to follow top line of curb. Attach indicator to provide constant comparison between top of curb and guideline. Insure flow lines for monolithic curb and gutters conform to slopes indicated on Drawings.
- B. Forms: Brace sufficiently to maintain position during pour. Use metal templates cut to section shown on Drawings.
- C. Reinforcement: Secure in proper position so that steel will remain in place throughout placement.
- D. Joints: Place in accordance with Section 02523. Place dummy groove joints at 6-foot centers at right angles to curb lines. Cut dummy grooves 1/4 inch deep using an approved edging tool.
- E. Place concrete in forms to required depth. Consolidate thoroughly. Do not permit rock pockets in form. Entirely cover top surfaces with mortar.

#### 3.03 MANUAL FINISHING

- A. After concrete is in place, remove front curb forms. Form exposed portions of curb, and of curb and gutter, using mule which conforms to curb shape, as shown on Drawings.
- B. Thin coat of mortar may be worked into exposed face of curb using mule and two-handed wooden darby at least 3 feet long.

- C. Before applying final finish move 10-foot straightedge across gutter and up curb to back form of curb. Repeat until curb and gutter are true to grade and section. Lap straightedge every 5 feet.
- D. Steel trowel finish surfaces to smooth, even finish. Make face of finished curb true and straight.
- E. Edge outer edge of gutter with 1/4-inch edger. Finish edges with tool having 1/4-inch radius.
- F. Finish visible surfaces and edges of finished curb and gutter free from blemishes, form marks and tool marks. Finished curb or curb and gutter shall have uniform color, shape and appearance.

#### 3.04 MECHANICAL FINISHING

- A. Mechanical curb forming and finishing machines may be used instead of, or in conjunction with, previously described methods, if approved by the Owner Representative. Use of mechanical methods shall provide specified curb design and finish.

#### 3.05 CURING

- A. Immediately after finishing operations, cure exposed surfaces of curbs and gutters in accordance with Section 02525.

#### 3.06 TOLERANCES

- A. Top surfaces of curb and gutter shall have uniform width and shall be free from humps, sags or other irregularities. Surfaces of curb top, curb face and gutter shall not vary more than 1/8 inch from edge of a 10-foot long straightedge laid along them, except at grade changes.

#### 3.07 PROTECTION

- A. Maintain curbs and gutters in good condition until completion of Work.
- B. Replace damaged curbs and gutters to comply with this Section.

END OF SECTION

## SECTION 02570

## PAVEMENT REPAIR AND RESURFACING

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Repairing and resurfacing streets, highways, driveways, sidewalks and other pavements that have been cut, broken or otherwise damaged during construction.
- B. Repairing areas of failed paving in preparation for resurfacing

## 1.02 UNIT PRICES

- A. Unit Prices:
  - 1. No separate payment shall be made for pavement repair and resurfacing under this Section. Payment shall be in accordance with Measurement and Payment for work as required in appropriate sections.
- B. Stipulated Price (Lump Sum):
  - 1. If contract is a stipulated price contract, payment for work in this Section is included in the total stipulated price.

## PART 2 PRODUCTS

## 2.01 MATERIALS

- A. Subgrade: Provide backfill material as required by Sections 02222 – Borrow, 02221 – Embankment, 02226 – Excavation and Backfill for Structures, 02227 – Excavation and Backfill for Utilities, 02228 – Extra Unit Price Work for Excavation and Backfill, and 02225 – Roadway and Backfill for Roadways.
- B. Base: Provide base material as required by applicable portions of Section 02233 Cement Stabilized Base Course, 02231 – Crushed Stone Flexible Base Course, 02234 – Recycled Crushed Concrete Base, and 02238 – Hot Mix Asphaltic Base Course.
- C. Pavement: Provide paving materials as required by applicable portions of Section 02510 - Asphaltic Concrete Pavement, Section 02521 – Concrete Paving, Section 02530 – Concrete Sidewalks, Section 02531 – Concrete Driveways, Section 02532 – Curb, Curb and Gutter, and Headers.

## PART 3 EXECUTION

## 3.01 PREPARATION

- A. Notify the Owner Representative prior to commencement of excavation in pavement for which an excavation in public right of way permit has been obtained. Follow directions contained in the permit.
- B. Conform to requirement of Section 02076 – Remove Existing Pavements and Structures, for removals.
- C. When removing pavement to existing deformed metal strip, saw cut pavement a minimum of two inches deep on opposite side of deformed metal strip. Place saw joint far enough behind deformed metal strip to obtain continuously straight joint. Remove damaged portion of deformed metal strip as required to provide proper joint. Saw cut and remove metal strip before placement of new concrete pavement.
- D. Protect edges of existing pavement to prevent damage during removals, utility placement, backfill and paving operations. For concrete pavement, protect undisturbed subgrade that is to remain to support replacement slab.
- E. Dowel in to existing pavement where no reinforcement is found or is broken due to construction activities. Unless otherwise directed by the Owner Representative, provide No. 6 reinforcing bars twenty four inches long, drilled and embedded twelve inches into center of existing slab with “PO-ROC” epoxy grout or approved equal. Space dowels to match new pavement reinforcement spacing.
- F. Provide transitional paving, additional base depth and undercutting of existing pavement as required to tie proposed pavement to existing pavement when unable to dowel new pavement into existing pavement.
- G. Temporarily fill hole with base material or bridge with three-quarter inch steel plates until ready to place concrete.

### 3.02 INSTALLATION

- A. Parking Areas, Service Drives, Driveways and Sidewalks: Replace with material equal to or better than existing or as indicated on the Drawings. Conform to applicable requirements of sections referenced in Paragraph 2.01 Materials.
- B. Street Pavements and Curbs, Curbs and Gutters: Replace subgrade, base and surface course with like materials or as indicated on the drawings and the City of Galveston Standard Details and Technical Specifications. Curbs and curbs and gutters shall match existing. Conform to requirements of sections referenced in Paragraph 2.01 Materials.
- C. For concrete pavement, install size and length of reinforcing steel and pavement thickness indicated on the Drawings and the City of Galveston Standard Details and Technical Specifications. Place types and spacing of joints to match existing joints or as indicated on the Drawings.
- D. Where existing pavement consists of concrete pavement with asphaltic surfacing, match existing thickness of the concrete pavement and asphalt surfacing.

- E. Repair TxDOT highway and county crossings in accordance with TxDOT permit or county requirements as appropriate, and within one week after pavement removal.

3.03 WASTE MATERIAL DISPOSAL

- A. Dispose of waste material in accordance with requirements of Section 01564 – Waste Material Disposal.

3.04 PROTECTION

- A. Maintain pavement in good condition until completion of the Work.
- B. Replace pavement damaged by the Contractor's operations at not cost to the Owner.

END OF SECTION

## SECTION 02571

## PAVEMENT REPAIR FOR UTILITIES

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Repairing and resurfacing streets, highways, driveways, sidewalks, curbs and gutters, and other pavements that have been cut, broken, or damaged during construction.
  - 1. Parking areas, service drives, driveways, and sidewalks: Replace with material equal to or better than existing or as indicated on Drawings.
  - 2. Street pavements and curbs, curbs and gutters: Match general pavement type and provide subgrade, base, and surface materials as indicated on the Drawings and as specified in this Section.
- B. Repair State highway crossings in accordance with the highway department permit and within 1 week after utility work is installed.
- C. Conform to Section 02076 - Removing Existing Pavement and Structures, for removal of existing pavements.

## 1.02 UNIT PRICES

- A. Payment for pavement repair for utilities is on a unit price basis as listed in the Proposal Form.
- B. Limits for measurement will be as shown on plans.
- C. Total compensation for required Unit Price Work shall be included in Unit Price bid.
- D. Quantity and measurement estimates stated in the Agreement are for contract purposes only. Quantities and measurements supplied or placed in the Work and verified by Owner's Representative shall determine payment as stated in Article 6 of the General Conditions.
- E. The Contractor will verify all measurements and compute quantities accordingly. The Owner's Representative will verify these quantities.
- F. Contractor shall assist by providing necessary equipment, workers, and survey personnel as required by Owner Representative.

## 1.03 NONCONFORMING PAVEMENT



- A. Remove and replace areas of non-conforming Portland cement concrete or asphaltic concrete pavement found deficient in thickness by more than 10 percent, or that fail specified tests, unless accepted by Owner Representative.

#### 1.04 UNIT PRICE ADJUSTMENT

- A. For non-conforming pavement, accepted by the Owner Representative, unit price adjustments shall be made for actual in-place depth determined by cores as follows:
  - 1. Adjusted Unit Price shall be ratio of average thickness as determined by cores to thickness bid upon, times unit price bid.
  - 2. Adjustment shall apply to lower limit of 90 percent of unit price. No adjustments in price will be made for excess thickness.

#### 1.05 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit test results or other data confirming that materials meet the specified requirements for:
  - 1. Fill, backfill and subgrade materials
  - 2. Base course materials
  - 3. Asphalt materials and mix designs
  - 4. Concrete materials and mix design
  - 5. Joint material

### PART 2 PRODUCTS

#### 2.01 SUBGRADE

- A. Provide backfill material as required by Sections 02222 – Borrow, 02221 – Embankment, 02226 – Excavation and Backfill for Structures, 02227 – Excavation and Backfill for Utilities, 02228 – Extra Unit Price Work for Excavation and Backfill, and 02225 – Roadway and Backfill for Roadways.

#### 2.02 BASE COURSE MATERIALS

- A. Provide base material as required by applicable portions of Section 02233 Cement Stabilized Base Course, 02231 – Crushed Stone Flexible Base Course, 02234 – Recycled Crushed Concrete Base, and 02238 – Hot Mix Asphaltic Base Course.

## 2.03 PAVEMENT

- A. Provide paving materials as required by applicable portions of Section 02510 - Asphaltic Concrete Pavement, Section 02521 – Concrete Paving, Section 02530 – Concrete Sidewalks, Section 02531 – Concrete Driveways, Section 02532 – Curb, Curb and Gutter, and Headers.

## PART 3 EXECUTION

### 3.01 EQUIPMENT

- A. Alternate equipment and methods, other than those required by this section, may be used provided the Contractor demonstrates that equal or better results will be obtained. Maintain equipment for preparing subgrade and for finishing and compacting pavement in good working order.

### 3.02 PREPARATION

- A. Subgrade: Prepare as required by Sections 02222 – Borrow, 02221 – Embankment, 02226 – Excavation and Backfill for Structures, 02227 – Excavation and Backfill for Utilities, 02228 – Extra Unit Price Work for Excavation and Backfill, and 02225 – Roadway and Backfill for Roadways.
- B. Base: Prepare base material as required by applicable portions of Section 02233 Cement Stabilized Base Course, 02231 – Crushed Stone Flexible Base Course, 02234 – Recycled Crushed Concrete Base, and 02238 – Hot Mix Asphaltic Base Course.
- C. Pavement: Provide paving materials as required by applicable portions of Section 02510 - Asphaltic Concrete Pavement, Section 02521 – Concrete Paving, Section 02530 – Concrete Sidewalks, Section 02531 – Concrete Driveways, Section 02532 – Curb, Curb and Gutter, and Headers.
- D. Notify the Owner Representative prior to commencement of excavation in pavement for which an excavation in public right of way permit has been obtained. Follow directions contained in the permit.
- E. Conform to requirement of Section 02076 – Remove Existing Pavements and Structures, for removals.
- F. When removing pavement to existing deformed metal strip, saw cut pavement a minimum of two inches deep on opposite side of deformed metal strip. Place saw joint far enough behind deformed metal strip to obtain continuously straight joint. Remove

damaged portion of deformed metal strip as required to provide proper joint. Saw cut and remove metal strip before placement of new concrete pavement.

- G. Protect edges of existing pavement to prevent damage during removals, utility placement, backfill and paving operations. For concrete pavement, protect undisturbed subgrade that is to remain to support replacement slab.
- H. Dowel in to existing pavement where no reinforcement is found or is broken due to construction activities. Unless otherwise directed by the Owner Representative, provide No. 6 reinforcing bars twenty four inches long, drilled and embedded twelve inches into center of existing slab with "PO-ROC" epoxy grout or approved equal. Space dowels to match new pavement reinforcement spacing.
- I. Provide transitional paving, additional base depth and undercutting of existing pavement as required to tie proposed pavement to existing pavement when unable to dowel new pavement into existing pavement.
- J. Temporarily fill hole with base material or bridge with three-quarter inch steel plates until ready to place concrete.

### 3.03 INSTALLATION

- A. Parking Areas, Service Drives, Driveways and Sidewalks: Replace with material equal to or better than existing or as indicated on the Drawings. Conform to applicable requirements of sections referenced in Paragraph 2.01 Materials.
- B. Street Pavements and Curbs, Curbs and Gutters: Replace subgrade, base and surface course with like materials or as indicated on the drawings and the City of Galveston Standard Details and Technical Specifications. Curbs and curbs and gutters shall match existing. Conform to requirements of sections referenced in Paragraph 2.01 Materials.
- C. For concrete pavement, install size and length of reinforcing steel and pavement thickness indicated on the Drawings and the City of Galveston Standard Details and Technical Specifications. Place types and spacing of joints to match existing joints or as indicated on the Drawings.
- D. Where existing pavement consists of concrete pavement with asphaltic surfacing, match existing thickness of the concrete pavement and asphalt surfacing.
- E. Repair TxDOT highway and county crossings in accordance with TxDOT permit or county requirements as appropriate, and within one week after pavement removal.

### 3.04 WASTE MATERIAL DISPOSAL

- A. Dispose of waste material in accordance with requirements of Section 01564 – Waste Material Disposal.

3.05 PROTECTION

- A. Maintain pavement in good condition until completion of the Work.
- B. Replace pavement damaged by the Contractor's operations at not cost to the Owner.

END OF SECTION

SECTION 02581

BLAST CLEANING OF PAVEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal of existing pavement markings.
- B. Preparation of pavement surfaces for new pavement markings.

1.02 UNIT PRICES

- A. No separate payment will be made for work performed under this Section. Include payment in unit price for related work.

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all section and provisions of these specifications.
- B. Submit description and characteristics of proposed blasting medium and equipment for approval.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Blasting Media: Quality commercial product capable of producing specified surface cleanliness without deposition of deleterious materials on cleaned pavement surface. Do not use high silica content sand that may result in high levels of free crystalline silica dust particles as a blasting agent.

2.02 EQUIPMENT

- A. Equipment shall be power driven and of sufficient capacity to clean the pavement surface to specified cleanliness. Equipment shall utilize moisture and oil traps of sufficient capacity to remove contaminants from the air and prevent deposition of moisture, oil or other contaminants on the pavement surface.

PART 3 EXECUTION

3.01 REMOVAL OF EXISTING MARKINGS

- A. Remove pavement markings where necessary to prevent driver confusion, or where indicated on drawings. Included are areas where it will be necessary for drivers to cross

existing markings which they would not normally cross. Remove or obliterate markings to the satisfaction of the Owner Representative. Do not damage pavement surface.

3.02 CLEANING FOR PLACEMENT OF MARKERS

- A. Remove old pavement markings, loose material, and other contaminants deleterious to the adhesion of new pavement markings to be placed. On Portland cement concrete pavement, minimize overblasting to prevent damage to pavement surface. Small particles of tightly adhering existing pavement markings may remain if complete removal will result in pavement surface damage.
- B. Follow manufacturer's written instructions for proper cleaning of pavement surfaces to receive pavement marking.

END OF SECTION

SECTION 02582

PREFORMED DURABLE PAVEMENT MARKING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Durable retroreflective preformed pavement markings.

1.02 UNIT PRICES

- A. Measurement for linear pavement markings is on a linear foot basis for each class and width, measured in place.
- B. Measurement for words and symbols is on a lump sum basis for each word or symbol.
- C. Measurement for railroad crossing markings, to include stop line and two transverse lines, is on a lump sum basis for each crossing marked.

1.03 DURABLE PAVEMENT MARKING DEFINITIONS

- A. Class I - Preformed pavement markings suitable for longitudinal and word and symbol markings on roadways with high volume traffic.
- B. Class II - Preformed patterned pavement markings with minimum retained retroreflectivity, suitable for longitudinal and word and symbol markings on roadways with high volume traffic.
- C. Class III - Preformed pavement markings designed for use with liquid contact cement as words, symbols, lane lines, edge lines, channelizing lines, stop bars, and crosswalks on roadways with low to moderate volume traffic and low shear areas.
- D. Class IV - Preformed pavement markings with durable urethane topcoat suitable for word, symbols, crosswalks and stop bars on roadways with high volume traffic and in areas of high shear or abrasion.
- E. Class V - Preformed pavement markings suitable for longitudinal overlay markings on roadways with moderate, well channelized, free rolling traffic.

1.04 SUBMITTALS

- A. Submittals shall conform to requirements of all section and provisions of these specifications.
- B. Submit manufacturer's product data for each proposed class of marking material; primers, solvents, and adhesives; and installation instructions; for approval. Include certificate by

manufacturer that each class of marking conforms to the requirements of this specification.

- C. Submit details of manufacturer’s replacement policy for each class of marking material.

1.05 DELIVERY AND STORAGE

- A. Deliver preformed plastic marking material in rolls or strips. Deliver words and symbols in precut convenient sizes to provide for ease in application. Ship word and symbol markers with easily removable protective liners.
- B. Store material in cool dry conditions until application.

PART 2 PRODUCTS

2.01 PREFORMED MARKINGS

- A. Retroreflective preformed markings: White or yellow polymeric films with pigments conforming to standard highway colors. Glass beads shall be incorporated in film to provide immediate and continuing retroreflection.
- B. Quality performance characteristics shall be as follows:

		CLASS I		CLASS II		CLASS III		CLASS IV		CLASS V		TEST METHOD
		White	Yellow	White	Yellow	White	Yellow	White	Yellow	White	Yellow	
1	Thickness without adhesive, mils, min	60		65 (Peak) 20 (Valley)		60		60		12		Caliper Gauge
2	Refractive index of beads, min	---		1.5 Rubber 1.7 Surface*		1.5		1.5 & 1.9		1.7		Liquid Oil Immersion
3	Init. Retroreflectance (mcd. ft <sup>-2</sup> fc <sup>-1</sup> ), min. **@86.0°, 0.2° **@86.5°, 1.0°	550 300	410 175	1100 700	800 500	550 300	410 175	700 400	500 300	960 650	680 470	ASTM D4061
4	Retained Retroreflectance (mcd. ft <sup>-2</sup> fc <sup>-1</sup> ), min. **@86.5°, 1.0°	---	---	100		---	---	---	---	---	---	ASTM D4061
5	Init. Skid resistance (avg.)-BPN	45		45		45		50		45		ASTM E303
6	Tensile strength (psi), min	150		20		150		100		---	---	ASTM D638***
7	Percent elongation at Break, min	65	36	65	36	65	36	65	36	65	36	ASTM E97

\* Tough Ceramic Beads.  
 \*\* (Entrance Angle, Observation Angle).  
 \*\*\* Crosshead speed of 10-12 inches per minute when tested with a gap of 4” between jaws and 1” X6” sample.



## 2.02 ADHESIVES AND SOLVENTS

- A. Film shall be pre-coated with pressure sensitive adhesive capable of bonding markings to Portland cement concrete and asphaltic concrete pavements.
- B. Manufacturer shall identify suitable solvents or primers necessary for proper preconditioning pavements prior to application.

## 2.03 FABRICATION

- A. Manufacture markings to conform to color, shape, and size requirements of TxDOT "Texas Manual on Uniform Traffic Control Devices for Streets and Highways".

# PART 3 EXECUTION

## 3.01 GENERAL

- A. Prepare pavement surfaces and install markings in accordance with manufacturer's recommendations.
- B. Accurately locate and install approved markings to conform to classes, colors, lengths, widths, and configurations indicated on Drawings.
- C. Apply line markings with a mechanical applicator capable of applying pavement lines in a neat, accurate, and uniform manner. Applicator shall be equipped with a film cut-off device. Apply words and symbols by hand so as to attain neat, accurate, and uniform results.

## 3.02 PREPARATION

- A. Clean and repair surfaces to receive markings. Blast clean surfaces indicated on Drawings or where directed by the Owner Representative in accordance with requirements of Section 02581 – Blast Cleaning of Pavement. Do not clean Portland cement concrete pavements by grinding.

## 3.03 INLAID INSTALLATION ON ASPHALTIC CONCRETE PAVEMENTS

- A. This installation procedure applies to streets with new asphaltic concrete surfacing.
- B. Apply markings on newly placed compacted pavement having a temperature of between 125 to 155°F.
- C. Inlay markings with a mechanical roller of sufficient weight to imbed preformed markers to a minimum depth of 60 percent and a maximum depth of 80 percent of material thickness. Roll while temperature of pavement is in a 125 to 155°F range.

### 3.04 SURFACE INSTALLATION

- A. This installation procedure applies to asphaltic concrete transition sections and streets with Portland cement concrete surfacing.
- B. Test pavement surface for moisture content prior to application of markings. Place an approximate 2 square foot sheet of clear plastic or tar paper on road surface and hold in place for 20 minutes. Immediately inspect the sheet for build up of condensed moisture. If sufficient moisture has condensed to cause water to drip from sheet, do not apply markings. Repeat test as necessary until adequate moisture has evaporated from pavement to allow placement.
- C. Observe manufacturer's recommended pavement and ambient air temperature requirements for application. If manufacturer has no temperature recommendations, do not install markings if pavement temperature is below 60°F or above 120°F.
- D. Prime pavement surface and apply markings as recommended by manufacturer.

### 3.05 FIELD QUALITY CONTROL

- A. Pavement markings shall present a neat, uniform appearance and shall be free of unsightly spread of excess adhesive. Markings shall be free of ragged edges and misshaped lines or contours.
- B. Markings shall adhere to pavement sufficiently to prevent lifting, shifting, smearing, spreading, flowing or tearing by traffic.
- C. Repair or replace improperly installed markers at Contractor's expense.

### 3.06 CLEANING

- A. Keep project site free of unnecessary traffic hazards at all times.
- B. Clean area upon completion of work and remove rubbish from work site.

### 3.07 WARRANTY

- A. Contractor shall warrant material and labor for a period of twelve months from date of installation of markings. Immediately upon notification, replace portions of pavement marking lines or legends that have lifted, shifted or spread, lost daytime color, or nighttime retro-reflectivity.

END OF SECTION

## SECTION 02583

## RAISED REFLECTIVE PAVEMENT MARKERS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Raised reflective pavement markers.

## 1.02 UNIT PRICES

- A. Measurement for Type I raised reflective pavement markers with one reflective face is on a lump sum basis for each marker installed.
- B. Measurement for Type I raised reflective pavement markers with two reflective faces is on a lump sum basis for each marker installed.
- C. Measurement for Type II raised reflective pavement markers with one reflective face is on a lump sum basis for each marker installed.
- D. Measurement for Type II raised reflective pavement markers with two reflective faces is on a lump sum basis for each marker installed.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all section and provisions of these specifications.
- B. Submit manufacturer's product data concerning following materials for approval:
  - 1. Class I and II markers.
  - 2. Primers, solvents, and adhesives.
  - 3. Installation instructions.
- C. Submit certificate by manufacturer that each class of marker and each type of adhesive conforms to the requirements of this specification.
- D. Submit details of manufacturer's replacement policy for each class of marker.

## 1.04 DELIVERY AND STORAGE

- A. Deliver markers is cartons of 100 units, epoxy adhesive in one gallon pails. Ship like materials in like-sized containers to facilitate storage.
- B. Store material in cool dry conditions until application.

PART 2 PRODUCTS

2.01 MARKERS

A. Raised Reflective Pavement Markers: Shallow frustum of pyramid shaped markers with tempered glass prismatic reflective elements. Bodies shall be plastic shells with resin/sand fillings, or single-piece injection-molded bodies of impact resistant polymers. Plastic shells shall be Methyl Methacrylate conforming to Federal Specification L-P-380C, Type I, Class 3 and shall have a minimum wall thickness of 0.65 inches.

B. Marker configuration shall be as follows:

	Normal	Reflectin g	Reflecting Face
	<u>Dimensions</u>	<u>Face Slope</u>	<u>Surface Area</u>
Type I	4"x4"x0.75" high	30°	3.25 sq. in.
	3"x5"x0.70" high	30°	4.00 sq. in.
Type II	2"x4"x0.40" high	30°	1.87 sq. in.
Type III	3"x5"x0.70" high	30°	4.00 sq. in.

C. Optical performance shall be as follows:

1. Type I and II:

	<u>White</u>	<u>Yellow</u>	<u>Red</u>
Specific Intensity, SI, min			
Entrance Angle = 0°	15.0	9.0	3.5
Entrance Angle = 20°	6.0	3.6	1.2

2. Type III:

	<u>White</u>	<u>Yellow</u>	<u>Red</u>
Specific Intensity, SI, min			
Entrance Angle = 0°	15.0	9.0	3.5
Entrance Angle = 20°	6.0	3.6	1.2

3. Testing Procedure: Locate a randomly selected test marker with center of reflecting face 5 feet from uniformly bright light source with effective diameter of 0.2 inches. Use a photocell width of 0.05 inches for Type I markers and a photocell with annular ring of 0.37 inches by 0.46 inches for type II markers; shield to eliminate stray light. Distance from light source to photocell center of 0.21 inches. Modify source receiver dimensions and distance between source and receiver proportionally to test distance change for test distances other than 5 feet. Lots containing more than 4% reflecting face failures shall be rejected according to ASTM E808 and ASTM E809.

D. Physical requirements shall be in accordance with the following test procedures:

1. Type I and Type III Markers: Select 3 random markers per lot. Center marker over open end of a vertically positioned 1-inch long hollow metal cylinder with a

3-inch inside diameter and a 0.25-inch wall thickness. Apply load slowly to top of marker through a 1-inch diameter by 1-inch high metal plug centered on the marker. Breakage or appreciable deformation of a test sample at a load less than 2000 pounds shall be cause for lot rejection.

2. Type II Markers: Select 20 random markers per lot. Condition markers in a convection oven at 130°F for one hour. At elevated temperature, impact reflective face by dropping a 90-gram dart, fitted with a 0.25-inch radius spherical head, 6 inches perpendicularly onto center of reflective surface. Cracks in impact surface area shall be generally concentric in appearance. Small radial cracks less than 0.25 inches in length will be allowed. Lot will be acceptable if 18 test samples meet testing requirements; failure of 4 test samples will cause lot rejection. Retest an additional 20 markers if 3 samples fail; failure of one lens of resample group will cause lot rejection.

- E. Impact Resistance: Test in accordance with ASTM D2444 Type A.

## 2.02 EPOXY ADHESIVE

- A. Obtain two-component epoxy adhesive from reflective pavement marker manufacturer conforming to manufacturer's requirements for marker installation.

## PART 3 EXECUTION

### 3.01 GENERAL

- A. Prepare pavement surfaces and install markers in accordance with marker and adhesive manufacturer's recommendations.
- B. Accurately locate and install approved markers to conform to classes and colors indicated on Drawings.

### 3.02 PREPARATION

- A. Clean and repair surfaces to receive markings. Remove loose material, dust, contaminants such as oil and curing membrane, and polished aggregates.
- B. Blast clean surfaces indicated on Drawings or where directed by the Owner Representative in accordance with requirements of Section 02581 – Blast Cleaning of Pavement. Do not clean Portland cement concrete pavements by grinding. Mechanical wire brushing may be used to remove curing membranes.

### 3.03 INSTALLATION

- A. Test pavement surface for moisture content prior to application of markings. Place an approximate 2 square foot sheet of clear plastic or tar paper on road surface and hold in place for 20 minutes. Immediately inspect the sheet for build up of condensed moisture. If sufficient moisture has condensed to cause water to drip from sheet, do not apply

markings. Repeat test as necessary until adequate moisture has evaporated from pavement to allow placement.

- B. Observe manufacturer's recommended pavement and ambient air temperature requirements for application. If manufacturer has no temperature recommendations, do not install markings if pavement temperature is below 60°F or above 120°F.
- C. Prime pavement surface and apply markings as recommended by manufacturer.

3.04 CLEANING

- A. Keep project site free of unnecessary traffic hazards at all times.
- B. Clean area upon completion of work and remove rubbish from work site.

3.05 WARRANTY

- A. Contractor shall warrant material and labor for a period of twelve months from date of installation of markings.

END OF SECTION

SECTION 02590

TEMPORARY AND REMOVABLE REFLECTORIZED PAVEMENT MARKINGS

PART 1      G E N E R A L

1.01    SECTION INCLUDES

- A.    Temporary retroreflective preformed pavement markings.
- B.    Wet retroreflective markers.

1.02    UNIT PRICES

- A.    Measurement for temporary pavement markings is on a linear foot basis, for each class, measured in place.

1.03    TEMPORARY PAVEMENT MARKING DEFINITIONS

- A.    Class I -        Temporary preformed pavement markings suitable for longitudinal and word and symbol markings where removability will be required.
- B.    Class II -       Temporary non-removable preformed pavement markings suitable for overlay lane lines, edge lines, and channelizing lines where pavement will be resurfaced.
- C.    Class III -      Class I markers with wet reflective markers added every 8 feet.
- D.    Class IV -      Class II markers with wet reflective markers added every 8 feet.

1.04    SUBMITTALS

- A.    Submittals shall conform to requirements of all sections and provisions of these specifications.
- B.    Submit manufacturer's product data for each proposed class of marking material and installation instructions for approval. Include certificate by manufacturer that each class of marking conforms to the requirements of this specification.
- C.    Submit details of manufacturer's replacement policy for each class of marker.

1.05    DELIVERY AND STORAGE

- A.    Deliver preformed plastic marking material in rolls or strips.
- B.    Store material in cool dry conditions until application.

PART 2      P R O D U C T S

**TEMPORARY AND  
REMOVABLE REFLECTORIZED  
PAVEMENT MARKINGS**

2.01 PREFORMED MARKINGS

- A. Retroreflective preformed markings: White or yellow retroreflective tape on conformable backing with pigments conforming to standard highway colors. Glass beads shall be incorporated in film and a reflective layer of beads shall be bonded to the top surface of the film. Bead adhesion shall be such that beads cannot be easily removed by scratching with a thumbnail.
- B. Preformed marking shall be precoated with pressure sensitive adhesive and shall have a demonstrated ability to adhere to roadways under climatic and traffic conditions normally encountered in a construction work zone when properly applied.
- C. Class I markings shall be removable from portland cement and asphaltic concrete pavements intact, or in large pieces, at temperatures above 40 degrees F without use of heat, solvents, grinding, or blast cleaning. Marking film shall be removable after exposure to following minimum traffic exposure when tested on transverse test decks with rolling traffic:

1.	Time in Place (days)	632
2.	ADT per lane (23% trucks, 3.5 axles/unit)	9,000
3.	Minimum Axle Hits	13,000,000

D. Quality performance characteristics:

	<u>CLASS I</u>		<u>CLASS II</u>		<u>TEST METHOD</u>
	<u>White</u>	<u>Yellow</u>	<u>White</u>	<u>Yellow</u>	
Init. Retroreflective (mcd ft <sup>-2</sup> fc <sup>-1</sup> ), min. **@86.0°, 0.2°	1770	1310	1360	820	ASTM D4061
**@86.5°, 1.0°	750	450	500	350	
Daytime Reflectance Factor "Y" %, min.	65	36	65	36	ASTM E97
Init. Skid Resistance, Avg. BPN	50		35		ASTM E303
Refractive Index of Beads, min.	1.9		1.9		LIQUID IMMERSION
Thickness, without adhesive, mils, min.	40		9		Caliper Gauge

\* (Entrance Angle, Observation Angle).

2.02 RAISED WET REFLECTIVE MARKERS



**TEMPORARY AND  
REMOVABLE REFLECTORIZED  
PAVEMENT MARKINGS**

- A. Raised Markers: Expanded rubber extrusions capable of being elastically compressed and deflected when impacted by rotating vehicle tires. Marker body shall have the following properties when tested in accordance with ASTM D1056:
  - 1. Compression deflection - < 16 psi @ 25<sup>0</sup> deflection.
  - 2. Oven aged compression deflection - % change, +18.
  - 3. Compress set low - 10%.
  - 4. Water absorption - < 9%.
  - 5. Density (lbs/ft) -24.
- B. Markers shall be precoated with pressure sensitive adhesive capable of holding markers to top of preformed marking film.
- C. Markers shall have enclosed retroreflective lens sheeting elements attached to marker bodies with pressure sensitive adhesive.

- 1. Retroreflective lenses elements shall have the following initial minimum reflectance when measured in accordance with ASTM E809:

Color:	<u>White</u>	<u>Yellow</u>	<u>White</u>	<u>Yellow</u>	<u>White</u>	<u>Yellow</u>	<u>White</u>	<u>Yellow</u>
Observation angle	0.2°		0.5°		1.0°		1.5°	
Coeff. Of Luminous Intensity , R (cd fc <sup>-1</sup> )	1.00	0.60	0.40	0.24	0.19	0.11	0.14	0.08

- Notes:
- 1. Tests at an entrance angle (Beta 2 horizontal entrance component described In ASTM E808) of -4° measured from an axis perpendicular to top edge of Marker when viewed from above.
  - 2. Angle formed by reflective surface and base of marker shall be between 75° and 90° prior to measurement.

- 2. Marker reflective elements shall be visible at night, to motorists with low beam headlights, under the following conditions:
  - a. Dry conditions - 1500 feet
  - b. Rainfall at a rate of 1" per hour - 1000 feet
  - c. Rainfall at a rate of 8" per hour - 250 feet

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Apply markings to clean dry surfaces in accordance with manufacturer's recommendations at locations indicated on Drawings, or as directed by the Owner Representative.
- B. Place markings on each paving lift that is to be opened to traffic prior to the end of each day's work.
- C. Maintain markings, and replace as needed, until they are covered with subsequent paving courses or replaced by permanent markings on final lifts.

**3.02 REMOVAL**

- A. Remove and obliterate markings on existing and final lifts used for redirecting traffic during construction. If blast cleaning is required, comply with requirements of Section 02581 – Blast Cleaning of Pavement.

**END OF SECTION**

## SECTION 02600

## CAST-IN-PLACE CONCRETE MANHOLES

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Cast-in-place sanitary and storm sewer manholes.

## 1.02 UNIT PRICES

- A. Measurement for payment for cast-in-place manholes is on a unit price basis per manhole. Payment will be made for each manhole installed, complete in place, including manhole, drop pipe, excavation, foundation, connection to sewer pipe, and backfill.

## 1.03 SUBMITTALS

- A. Conform to requirements of all sections and provisions of these specifications.
- B. Submit proposed design mix and test data for each type and strength of concrete.
- C. Submit manufacturer's data and details of following items for approval:
  - 1. Frames, grates, rings, and covers.
  - 2. Materials to be used in fabricating drop connections.
  - 3. Materials to be used for pipe connections at manhole walls.
  - 4. Materials to be used for stubs and stub plugs.
  - 5. Plugs to be used for sanitary sewer hydrostatic testing.

## PART 2 PRODUCTS

## 2.01 CONCRETE

- A. Conform to requirements of Section 03305 - Concrete for Utility Construction.
- B. Manholes - Class A concrete with minimum compressive strength of 4000 psi unless otherwise indicated on Drawings or approved by the Owner Representative for use on extra depth units.

## 2.02 REINFORCING STEEL

- A. Conform to requirements of Section 03305 - Concrete for Utility Construction.

**2.03 MORTAR**

- A. Conform to requirements of ASTM C 270, Type S using Portland cement.

**2.04 MISCELLANEOUS METALS**

- A. Provide cast-iron frames, grates, rings, and covers conforming to requirements of Section 02603 - Frames, Grates, Rings and Covers.

**2.05 DROP CONNECTIONS AND STUBS**

- A. Drop connections and stubs shall conform to the same pipe material requirements used in the main pipe, unless otherwise indicated on the Drawings.

**2.06 PIPE CONNECTIONS**

- A. Use resilient connectors conforming to requirements of ASTM C 923. Metallic mechanical devices as defined in ASTM C 923 shall be made of the following materials:
1. External clamps: Type 304 stainless steel
  2. Internal, expandable clamps on standard manholes: Type 304 stainless steel, 11 gage minimum.
  3. Internal, expandable clamps on corrosion-resistant manholes:
    - a. Type 316 stainless steel, 11 gage minimum , or
    - b. Type 304 stainless steel, 11 gage minimum, coated with minimum 16 mil fusion-bonded epoxy conforming to AWWA C 213.
- B. Where rigid joints between pipe and a cast-in-place manhole base are specified or shown on the Drawings, use polyethylene-isoprene waterstop meeting the physical property requirements of ASTM C 923, Press-Seal WS Series, or equal.
- C. Storm sewer pipe connections:
1. Connections acceptable for sanitary sewers.
  2. Line pipe grouted in place with mortar.

**2.07 SEALANT MATERIALS**

- A. Sealing materials between precast concrete adjustment ring and manhole cover frame shall be Adeka Ultraseal P201, or approved equal.

**2.08 CORROSION RESISTANT MANHOLE MATERIALS**

- A. Manholes shall be corrosion. The materials shall be applied by an approved certified applicator. Acceptable material shall be a corrosion resistant barrier spray applied as per

the manufacturer's recommendation and shall have a minimum finished dry film thickness of 125 mils.

- B. Spray application shall be applied by an applicator trained by manufacturer and certified for the application of the specified product with documented exceptional reference and experience of at least 5 years in manhole spray applications.
- C. Sanitary sewer acceptance testing Section 02732 shall be completed prior to applying coating application for manholes.
- D. Acceptable products include the following (alternates must be approved by the City):
  - 1. Sprayroq protective liner system (SprayWall)
  - 2. Carboline Plasite 4500
  - 3. Spectra Shield
- E. The Contractor shall have manufacturer's representative present on site at all times during the installation of corrosion resistant barrier
- F. The Contractor shall make provisions in their unit price bid for each structure to maintain dry conditions for the corrosion resistant liner application and subsequent curing as per manufacturer's recommendations.

## 2.09 BACKFILL MATERIALS

- A. Backfill materials shall conform to the requirements of Section 02227 - Excavation and Backfill for Utilities.

## 2.10 NON-SHRINK GROUT

- A. For non-shrink grout, use prepackaged, inorganic, flowable, non-gas-liberating, non-metallic, cement-based grout requiring only the addition of water. It shall meet the requirements of ASTM C 1107 and shall have a minimum 28-day compressive strength of 7000 psi.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify lines and grades are correct.
- B. Determine if the subgrade, when scarified and recompacted, can be compacted to 95 percent of maximum Standard Proctor Density according to ASTM D 698 prior to placement of foundation material and base section. If it cannot be compacted to that density, the subgrade shall be moisture conditioned until that density can be reached or shall be treated as an unstable subgrade.

- C. Do not build sanitary sewer manholes in ditches, swales, or drainage paths unless approved by the Owner Representative.

### 3.02 MANHOLES

- A. Construct manholes to dimensions shown on Drawings. Commence construction as soon as possible after pipes are laid. On monolithic sewers, construct manholes at same time sewer is being constructed.
- B. Unstable Subgrade Treatment: When unstable subgrade is encountered the subgrade will be examined by the Owner Representative to determine if the subgrade has heaved upwards after being excavated. If heaving has not occurred, the subgrade shall be over-excavated to allow for a 24-inch thick layer of crushed stone wrapped in filter fabric as the foundation material under the manhole base. If there is evidence of heaving, a pile-supported concrete foundation, as detailed on the Drawings, shall be provided under the manhole base, when indicated by the Owner Representative.
- C. Cast manhole foundations and walls monolithically. A cold joint with approved water stop will be allowed when the manhole flow line depth exceeds 12 feet. No other joints will be allowed unless shown on Drawings or approved by the Owner Representative.
- D. Place, finish and cure concrete for manholes following the procedures given in Section 03305 - Concrete for Utility Construction, for concrete containing microsilica admixtures.

### 3.03 PIPE CONNECTIONS AT MANHOLE

- A. Install approved resilient connectors at each pipe entering and exiting sanitary sewer manholes in accordance with manufacturer's instructions.
- B. Ensure that no concrete, cement stabilized sand, fill, or other rigid material is allowed to enter the space between the pipe and the edge of the wall opening at and around the resilient connector on either the interior or exterior of the manhole. If necessary, fill the space with a compressible material to guarantee the full flexibility provided by the resilient connector.
- C. Where a new manhole is to be constructed on an existing sewer, install a waterstop gasket around the existing pipe at the center of the cast-in-place wall. Join ends of split waterstop material at the pipe springline using an adhesive recommended and supplied by the waterstop manufacturer.
- D. Do not construct joints on sanitary sewer pipe within wall sections of manholes. Use approved connection material.
- E. Construct pipe stubs with resilient connectors for future connections at locations and with material indicated on Drawings. Install approved stub plugs at interior of manhole. Test connection for watertight seal before backfilling.

### 3.04 INVERTS FOR SANITARY SEWERS

- A. Construct invert channels to provide a smooth flow transition waterway with no disruption of flow at pipe-manhole connections. Conform to following criteria:
  - 1. Slope of invert bench: 1 inch per foot minimum; 1-1/2 inch per foot maximum.
  - 2. Depth of bench to invert:
    - a. Pipes smaller than 15-inches: one-half largest pipe diameter
    - b. Pipes 15 to 24-inches: three-fourths the largest pipe diameter
    - c. Pipes larger than 24-inches: equal to the largest pipe diameter
  - 3. Invert slope through manhole: 0.10-foot drop across manhole with smooth transition of invert through manhole, unless otherwise indicated on Drawings.
- B. Form invert channels with class A concrete if not integral with manhole base. For direction changes of mains, construct channels tangent to mains with maximum possible radius of curvature. Provide curves for side inlets and smooth invert fillets for flow transition between pipe inverts.

### 3.05 DROP CONNECTIONS FOR SANITARY SEWERS

- A. Construct drop connections with same materials used in main pipe unless otherwise indicated on Drawings or approved by the Owner Representative. Install a drop connection with a sewer line enters a manhole higher than 30-inches above the invert of the manhole.
- B. Encase drop assembly with class A concrete to form a solid mass. Extend concrete outside of bells a minimum of 4 inches. Cast base of encasement monolithically with manhole base and ensure concrete bonds to exterior manhole wall.
- C. Terminate encasement of blind drops a minimum of 5 inches below top of bell and not less than 12 inches above top of next lower bell. Install approved plug at bell.

### 3.06 MANHOLE FRAME AND ADJUSTMENT RINGS

- A. Combine precast concrete adjustment rings so that the elevation of the installed casting cover is 3/8 inch below the pavement surface. Seal between adjustment ring and the manhole top with non-shrink grout; do not use mortar between adjustment rings. Apply a latex-based bonding agent to concrete surfaces to be joined with non-shrink grout. Set the cast iron frame on the adjustment ring in a bed of approved sealant. The sealant bed shall consist of two beads of sealant, each bead having minimum dimensions of 1/2-inch and 3/4-inch wide.
- B. For manholes in unpaved areas, top of frame shall be set a minimum of 6 inches above existing ground line unless otherwise indicated on Drawings. In unpaved areas, encase

the manhole frame in mortar or non-shrink grout placed flush with the face of the manhole ring and the top edge of the frame. Provide a rounded corner around the perimeter

### 3.07 BACKFILL

- A. Place and compact backfill materials in the area of excavation surrounding manholes in accordance with requirements of Section 02227 - Excavation and Backfill for Utilities. Use embedment zone backfill material, as specified for the adjacent utilities, from manhole foundation up to an elevation 12 inches over each pipe connected to the manhole. Provide trench zone backfill, as specified for the adjacent utilities, above the embedment zone backfill.
- B. Where rigid joints are used for connecting existing sewers to the manhole, backfill under the existing sewer up to the springline of the pipe with Class B concrete or flowable fill.
- C. In unpaved areas, provide positive drainage away from manhole frame to natural grade. Provide a minimum of 4 inches of topsoil conforming to requirements of Section 02920 - Topsoil. Seed in accordance with Section 02932 - Hydromulch Seeding. If shown on Drawings, sod disturbed areas in accordance with Section 02935 - Sodding.

### 3.08 ACCEPTANCE TESTING OF WASTEWATER MANHOLES

Manholes shall be tested separately and independently of the wastewater lines.

- A. Test by the Vacuum Method

A vacuum test shall be performed by the Contractor prior to backfilling those manholes that fall within the right-of-way that require detouring of vehicular traffic. A second vacuum test will not be required after backfilling and compaction is complete unless there is evidence that the manhole has been damaged or disturbed subsequent to the initial vacuum test.

For manhole installations which do not require detouring of vehicular traffic, the vacuum method is recommended and may be used by the Contractor prior to backfilling the manhole to insure proper installation so that defects may be located and repaired; however, a vacuum test shall be performed after backfilling, and compaction are complete. Testing after backfill and compaction are complete will be the basis for acceptance of the manhole.

Equipment:

- a) The manhole vacuum tester shall be a device approved for use by the Engineer or designated representative.
- b) Pipe sealing plugs shall have a load resisting capacity equal to or greater than that required for the size of the connected pipe to be sealed.



Procedures:

- a) Manhole section interiors shall be carefully inspected; units found to have through-wall lift holes, or any penetration of the interior surface by inserts provided to facilitate handling, will not be accepted. Coating shall be applied after the testing unless coating is applied before installation or unless it is applied at the factory. All lift holes and exterior joints shall be plugged with an acceptable non-shrink grout. No grout shall be placed in horizontal joints.
- b) After cleaning the interior surfaces of the manhole, the Contractor shall place and inflate pneumatic plugs in all of the connecting pipes to isolate the manhole; sealing pressure within the plugs shall be as recommended by the plug manufacturer. Plugs and the ends of pipes connected by flexible boots shall be blocked to prevent their movement during the vacuum test.
- c) The vacuum test head shall be placed on the top of the cone section or, inside of the top of the manhole cone section, and the compression seal band inflated to the pressure recommended by its manufacturer. The vacuum pump shall be connected to the outlet port with the valve open. When a vacuum of 10 inches of mercury [(-5 psig) has been attained, the valve shall be closed and the time noted. Tampering with the test equipment will not be allowed.
- d) The manhole shall have passed the test if the vacuum does not drop below 9 inches of mercury [(-4.5 psig) within three (3) minutes of the time the valve was closed. The actual vacuum shall be recorded at the end of the three (3) minutes during which the valve was closed.
- e) When the standard vacuum test cannot be performed because of design or material constraints (examples: T-Type manholes, T-Lock Liners, or other reasons acceptable to the Engineer or designated representative), testing of individual joints shall be performed as directed by the Engineer or designated representative.

B. Test by the Exfiltration Method

At the discretion of the Engineer or designated representative, the Contractor may substitute the Exfiltration Method of testing for the Vacuum test described in Section 506.5. A above. This method may only be used when ground water is not present. If ground water is present a Vacuum Test shall be used unless otherwise directed by the Engineer or designated representative. All backfilling and compaction shall be completed prior to the commencement of testing.

The procedures for the test shall include the following:

- a) Manhole section interiors shall be carefully inspected; units found to have through-wall lift holes, or any penetration of the interior surface by inserts provided to facilitate handling, will not be accepted. Coating shall be applied after the testing unless coating is applied before field assembly, or at the factory. All lift holes and exterior joints shall

be plugged with an acceptable non-shrink grout. No grout shall be placed in horizontal joints.

b) After cleaning the interior surface of the manhole, the Contractor shall place and inflate pneumatic plugs in all of the connecting pipes to isolate the manhole; sealing pressure within the plugs shall be as recommended by the plug manufacturer.

c) Concrete manholes shall be filled with water or otherwise thoroughly wetted for a period of 24 hours prior to testing.

d) At the start of the test, the manhole shall be filled to the top with water. The test time shall be 1 hour (60 minutes). The Construction Inspector must be present for observation during the entire time of the test. Permissible loss of water in the 1 hour test time is 0.025 gallons per diameter foot, per foot of manhole depth. For example, for a 4 foot diameter manhole, this quantity converts to a maximum permissible drop in the water level (from the top of the manhole cone) of 0.05 inches per foot of manhole depth or 0.5 inches for a 10 foot deep manhole.

C. Holiday Testing

After the coating product(s) have set in accordance with manufacturer instructions, all surfaces shall be inspected for holidays with high-voltage holiday detection equipment. Reference NACE RPO 188-99 for performing holiday detection. All detected holidays shall be marked and repaired by abrading the coating surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional coating can be hand applied to the repair area. All touch-up/repair procedures shall follow the coating manufacturer's recommendations. Documentation on areas tested, results and repairs made shall be provided to Owner by Contractor.

D. Visual inspection shall be made by the Owner's Representative. Any deficiencies in the finished coating shall be marked and repaired according to the procedures set forth herein by Contractor.

E. Failure to Pass the Test - Records of Tests.

If the manhole fails to pass the initial test method as described in (A) Test by the Vacuum Method and, if allowed, (B) Test by the Exfiltration Method, or if visible groundwater leakage into the manhole is observed, the Contractor shall locate the leak, if necessary by disassembly of the manhole. The Contractor shall check the gaskets and replace them if necessary. The Contractor may re-lubricate the joints and re-assemble the manhole, or the Contractor may install an acceptable exterior joint sealing product on all joints and then retest the manhole. If any manhole fails the vacuum and/or exfiltration test twice, or unable to pass the Holiday test, the Contractor shall consider replacing that manhole. If the Contractor chooses to attempt to repair that manhole, the manhole must be retested until it passes. In no case shall cold applied preformed plastic gaskets be used for repair. Records of all manhole testing shall be made available to the Engineer or designated representative at the close of each working day, or as otherwise directed by the Engineer or designated representative. Any damaged or visually

defective products, or any products out of acceptable tolerance shall be removed from the site.

F. Inspection

The Engineer or designated representative shall make a visual inspection of each manhole after it has passed the testing requirements and is considered to be in its final condition. The inspection shall determine the completeness of the manhole; any defects shall be corrected to the satisfaction of Engineer or designated representative.

3.09 PROTECTION

- A. Protect manholes from damage until subsequent work has been accepted. Repair or replace damaged elements of manholes at no additional cost to the Owner.

END OF SECTION

SECTION 02601

PRECAST CONCRETE MANHOLES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Precast concrete sanitary sewer manholes.
- B. Precast concrete sanitary sewer manholes with spray-in liner where corrosion-resistant manholes are specifically indicated in the Drawings.

1.2 UNIT PRICES

- A. Measurement and payment for normal depth manholes, up to 8 feet deep, is on a unit price basis for each manhole installed. Depth is measured from top of cover to sewer invert.
- B. Measurement and payment for shallow depth manholes is on a unit price basis for each manhole installed. Shallow manholes have a depth of 4 feet or less measured from the top of cover to sewer invert.
- C. Measurement and payment for extra depth manholes is on a unit price basis per vertical foot for each foot of depth greater than 8 feet. Depth is measured from top of cover to sewer invert.
- D. Measurement and payment for normal depth corrosion resistant manholes, up to 8 feet deep, is on a unit price basis for each manhole installed. Depth is measured from top of cover to sewer invert.
- E. Measurement and payment for extra depth corrosion resistant manholes is on a unit price basis per vertical foot for each foot of depth greater than 8 feet. Depth is measured from top of cover to sewer invert.
- F. Measurement and payment for normal depth standard manhole drops up to 3 feet deep is on a unit price basis for each drop installed. Depth is measured from the invert of the T- fitting to the sewer invert. Standard manhole drops include both internal and external drops.
- G. Measurement and payment for extra depth manhole drops is on a unit price basis per vertical foot for each foot of depth greater than 3 feet. Depth is measured from the invert of the T-fitting to the sewer invert. Standard manhole drops include both internal and external drops.

### 1.3 SUBMITTALS

- A. Conform to requirements of all sections and provisions of these specifications.
- B. Submit manufacturer's data and details of following items for approval:
  - 1. Shop drawings of manhole sections and base units and construction details, including reinforcement, jointing methods, materials and dimensions.
  - 2. Certification from manufacturer that precast manhole design is in full accordance with ASTM C 478 and design criteria as established in paragraph 2.01 E of this specification.
  - 3. Frames, grates, rings, and covers.
  - 4. Materials to be used in fabricating drop connections.
  - 5. Materials to be used for pipe connections at manhole walls.
  - 6. Materials to be used for stubs and stub plugs, if required.
  - 7. Materials and procedures for corrosion-resistant liner and coatings, if required.
  - 8. Plugs to be used for sanitary sewer hydrostatic testing.
  - 9. Manufacturer's data for pre-mix (bag) concrete, if used for channel inverts and benches.

## PART 2 PRODUCTS

### 2.1 PRECAST CONCRETE MANHOLES

- A. Use manhole sections and base sections conforming to ASTM C 478. Use base riser section with integral floors, unless shown otherwise. Provide adjustment rings which are standard components of the manufacturer of the manhole sections meeting material requirements of ASTM C 478. Mark date of manufacture and name or trademark of manufacturer on inside of barrel.
- B. Construct barrels for precast manholes from 48-inch diameter standard reinforced concrete manhole sections unless otherwise indicated on Drawings. Use various lengths of manhole sections in combination to provide the correct height with the fewest joints. Wall sections shall be designed for depth as shown and loading conditions as described in paragraph 2.01E, but shall not be less than 5 inches thick. Base section shall have a minimum thickness of 12 inches under the invert.

- C. Provide cone tops to receive cast iron frames and covers, unless indicated otherwise. Use tops designed to support an H-20 loading.
- D. Where the Drawings indicate that manholes larger than 48-inch diameter are required, precast base sections of the required diameter shall be provided with flat slab top precast sections used to transition to 48-inch diameter manhole access riser sections. Transition can be concentric or eccentric. The transition shall be located to provide a minimum of 7-foot head clearance from the top of bench to underside of transition.
- E. Design Loading Criteria: The manhole walls, transition slabs, cone tops, and manhole base slab shall be designed by the manufacturer to the requirements of ASTM C 478 for the depth as shown on Drawings and the following design criteria:
  - 1. AASHTO H-20 loading applied to the manhole cover and transmitted down to the transition and base slabs.
  - 2. Unit soil weight of 120 pcf located above all portions of the manhole, including base slab projections.
  - 3. Lateral soil pressure based on saturated soil conditions producing an at-rest equivalent fluid pressure of 100 pcf, with soil pressure acting on empty manhole.
  - 4. Internal liquid pressure based on a unit weight of 63 pcf, with manhole filled with liquid from invert to cover, with no balancing external soil pressure.
  - 5. Dead load of manhole sections fully supported by the transition and base slabs.
  - 6. Design additional reinforcing steel to transfer stresses at openings.
  - 7. The minimum clear distance between any two wall penetrations shall be 12 inches or half the diameter of the smaller penetration, whichever is greater.
- F. Form joints between sections with O-ring gaskets conforming to ASTM C 443.
- G. Do not incorporate manhole steps in manhole sections.
- H. Do not use brick masonry in construction of sanitary sewer manholes.

## 2.2 CONCRETE

- A. Conform to requirements of Section 03305 - Concrete for Utility Construction.
- B. Channel Inverts: Concrete for inverts not integrally formed with manhole base shall be either 5 sack premix (bag) concrete or Class A concrete, with a minimum compressive strength of 4000 psi.

- C. Cement Stabilized Sand Foundation: Provide cement stabilized sand foundation under base section in lieu of foundation slab, where allowed, conforming to requirements of Section 02252 - Cement Stabilized Sand.
- D. Concrete Foundation: Use Class A concrete with minimum compressive strength of 4000 psi for concrete foundation slab under manhole base section where indicated on Drawings.

### 2.3 REINFORCING STEEL

- A. Reinforcing steel shall conform to requirements of Section 03305 - Concrete for Utility Construction.

### 2.4 MORTAR

- A. Conform to requirements of ASTM C 270, Type S using Portland cement.

### 2.5 MISCELLANEOUS METALS

- A. Provide cast-iron frames, rings, and covers conforming to requirements of Section 02603 - Frames, Grates, Rings and Covers.

### 2.6 DROP CONNECTIONS AND STUBS

- A. Drop connections and stubs shall conform to the same pipe material requirements used in the main pipe, unless otherwise indicated on the Drawings.

### 2.7 PIPE CONNECTIONS FOR SANITARY SEWERS

- A. Use resilient connectors conforming to requirements of ASTM C 923. Metallic mechanical devices as defined in ASTM C 923 shall be made of the following materials:
  - 1. External clamps: Type 304 stainless steel
  - 2. Internal, expandable clamps on standard manholes: Type 304 stainless steel, 11 gage minimum.
  - 3. Internal, expandable clamps on corrosion-resistant manholes:
    - a. Type 316 stainless steel, 11 gage minimum, or
    - b. Type 304 stainless steel, 11 gauge minimum, coated with minimum 16 mil fusion-bonded epoxy conforming to AWWA C 213.
- B. Where rigid joints between pipe and a cast-in-place manhole base are specified or shown on the Drawings, use polyethylene-isoprene waterstop meeting the physical property requirements of ASTM C 923, Press-Seal WS Series, or equal.

## 2.8 SEALANT MATERIALS

- A. Sealing materials between precast concrete adjustment ring and manhole cover frame shall be Adeka Ultraseal P201, or approved equal.

## 2.9 CORROSION RESISTANT MANHOLE MATERIALS

- A. Spray application shall be applied by an applicator trained by manufacturer and certified for the application of the specified product with documented exceptional reference and experience of at least 5 years in manhole spray applications.
- B. Sanitary sewer acceptance testing Section 02732 shall be completed prior to applying coating application for manholes.
- C. Acceptable products include the following (alternates must be approved by the City):
  - 1. Sprayroq protective liner system (SprayWall)
  - 2. Carboline Plasite 4500
  - 3. Spectra Shield
- D. The Contractor shall make provisions in their unit price bid for each structure to maintain dry conditions for the corrosion resistant liner application and subsequent curing as per manufacturer's recommendations.

## 2.10 BACKFILL MATERIALS

- A. Backfill materials shall conform to the requirements of Section 02227 - Excavation and Backfill for Utilities.

## 2.11 NON-SHRINK GROUT

- A. For non-shrink grout, use prepackaged, inorganic, flowable, non-gas-liberating, non-metallic, cement-based grout requiring only the addition of water. It shall meet the requirements of ASTM C 1107 and shall have a minimum 28-day compressive strength of 7000 psi.

## 2.12 PROHIBITED MATERIALS

- A. Do not use brick masonry for construction of sanitary sewer manholes, including adjustment of manholes to grade. Use only specified materials listed above.

## PART 3 EXECUTION



### 3.1 EXAMINATION

- A. Verify lines and grades are correct.
- B. Determine if the subgrade, when scarified and recompacted, can be compacted to 95 percent of maximum Standard Proctor Density according to ASTM D 698 prior to placement of foundation material and base section. If it cannot be compacted to that density, the subgrade shall be moisture conditioned until that density can be reached or shall be treated as an unstable subgrade.

Do not build sanitary sewer manholes in ditches, swales, or drainage paths unless directed by the Owner Representative.

### 3.2 PLACEMENT

- A. Install precast manholes to conform to locations and dimensions shown on Drawings.
- B. Place manholes at points of change of alignment, grade, size, pipe intersections, and end of sewer.

### 3.3 MANHOLE BASE SECTIONS AND FOUNDATIONS

- A. Place precast base on 12-inch-thick (minimum) foundation of cement stabilized sand or a concrete foundation slab. Compact cement-sand in accordance with requirements of Section 02252 - Cement Stabilized Sand.
- B. Unstable Subgrade Treatment: When unstable subgrade is encountered, the subgrade will be examined by the Owner Representative to determine if the subgrade has heaved upwards after being excavated. If heaving has not occurred, the subgrade shall be over-excavated to allow for a 24-inch thick layer of crushed stone wrapped in filter fabric as the foundation material under the manhole base. If there is evidence of heaving, a pile-supported concrete foundation, as detailed on the Drawings, shall be provided under the manhole base, when indicated by the Owner Representative.

### 3.4 PRECAST MANHOLE SECTIONS

- A. Install sections, joints, and gaskets in accordance with manufacturer's printed recommendations.
- B. Install precast adjustment rings above tops of cones or flattop sections as required to adjust the finished elevation and to support manhole frame.
- C. Seal any lifting holes with non-shrink grout.
- D. Where corrosion resistant lining is required, seal joints between sections in accordance with manufacturers recommendations.

### 3.5 PIPE CONNECTIONS AT MANHOLES

- A. Install approved resilient connectors at each pipe entering and exiting sanitary sewer manholes in accordance with manufacturer's instructions.
- B. Ensure that no concrete, cement stabilized sand, fill, or other rigid material is allowed to enter the space between the pipe and the edge of the wall opening at and around the resilient connector on either the interior or exterior of the manhole. If necessary, fill the space with a compressible material to guarantee the full flexibility provided by the resilient connector.
- C. Test connection for watertight seal before backfilling.

### 3.6 INVERTS FOR SANITARY SEWERS

- A. Construct invert channels to provide a smooth flow transition waterway with no disruption of flow at pipe-manhole connections. Conform to following criteria:
  - 1. Slope of invert bench: 1 inch per foot minimum; 1-1/2 inch per foot maximum
  - 2. Depth of bench to invert:
    - a. Pipes smaller than 15-inches: one-half largest pipe diameter
    - b. Pipes 15 to 24-inches: three-fourths the largest pipe diameter.
    - c. Pipes larger than 24-inches: equal to the largest pipe diameter
  - 3. Invert slope through manhole: 0.10-foot drop across manhole with smooth transition of invert through manhole, unless otherwise indicated on Drawings.
- B. Form invert channels with concrete if not integral with manhole base section. For direction changes of mains, construct channels tangent to mains with maximum possible radius of curvature. Provide curves for side inlets and smooth invert fillets for flow transition between pipe inverts.

### 3.7 DROP CONNECTIONS FOR SANITARY SEWERS

- A. Backfill drop assembly with cement stabilized sand or Class A concrete to form a solid mass. Extend cement stabilized sand or concrete encasement a minimum of 4 inches outside of bells.
- B. Install a drop connection when a sewer line enters a manhole higher than 30-inches above the invert of a manhole.

### 3.8 STUBS FOR FUTURE CONNECTIONS

- A. In manholes, where future connections are indicated on the Drawings, install resilient connectors and pipe stubs with approved watertight plugs.

### 3.9 MANHOLE FRAME AND ADJUSTMENT RINGS

- A. Combine precast concrete adjustment rings so that the elevation of the installed casting cover is 3/8 inch below the pavement surface. Seal between adjustment ring and the precast top section with non-shrink grout; do not use mortar between adjustment rings. Apply a latex-based bonding agent to precast concrete surfaces to be joined with non-shrink grout. Set the cast iron frame on the adjustment ring in a bed of approved sealant. The sealant bed shall consist of two beads of sealant, each bead having minimum dimensions of 1/2-inch and 3/4-inch wide.
- B. For manholes in unpaved areas, top of frame shall be set a minimum of 6 inches above existing ground line unless otherwise indicated on Drawings. In unpaved areas, encase the manhole frame in mortar or non-shrink grout placed flush with the face of the manhole ring and the top edge of the frame. Provide a rounded corner around the perimeter.

### 3.10 BACKFILL

- A. Place and compact backfill materials in the area of excavation surrounding manholes in accordance with requirements of Section 02227 - Excavation and Backfill for Utilities. Use embedment zone backfill material, as specified for the adjacent utilities, from manhole foundation up to an elevation 12 inches over each pipe connected to the manhole. Provide trench zone backfill, as specified for the adjacent utilities, above the embedment zone backfill.
- B. Where rigid joints are used for connecting existing sewers to the manhole, backfill under the existing sewer up to the springline of the pipe with Class B concrete or flowable fill.
- C. In unpaved areas, provide positive drainage away from manhole frame to natural grade. Provide a minimum of 4 inches of topsoil conforming to requirements of Section 02920 - Topsoil. Seed in accordance with Section 02932 - Hydromulch Seeding. If shown on Drawings, sod disturbed areas in accordance with Section 02935 - Sodding.

### 3.11 ACCEPTANCE TESTING OF WASTEWATER MANHOLES

Manholes shall be tested separately and independently of the wastewater lines.

- B. Test by the Vacuum Method  
Vacuum Test shall be performed per ASTM C1244-05 "Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill". Manholes will be tested after installation with all connections in place. The structural soundness of the manhole for the vacuum testing shall be certified and sealed in writing by

the Engineer of Record and manufacturer to the City Engineer in advance of the testing. Successful Vacuum Testing (approved by Engineer of Record or the City) after backfill and compaction are complete will be the basis for acceptance of the manhole.

Equipment:

- a) The manhole vacuum tester shall be a device approved for use by the Engineer or designated representative.
- b) Pipe sealing plugs shall have a load resisting capacity equal to or greater than that required for the size of the connected pipe to be sealed.

Procedures:

- a) Manhole section interiors shall be carefully inspected; units found to have through-wall lift holes, or any penetration of the interior surface by inserts provided to facilitate handling, will not be accepted. Coating shall be applied after the testing unless it is applied at the factory. All lift holes and exterior joints shall be plugged with an acceptable non-shrink grout. No grout shall be placed in horizontal joints.
- b) After cleaning the interior surfaces of the manhole, the Contractor shall place and inflate pneumatic plugs in all of the connecting pipes to isolate the manhole; sealing pressure within the plugs shall be as recommended by the plug manufacturer. Plugs and the ends of pipes connected by flexible boots shall be blocked to prevent their movement during the vacuum test.
- c) The vacuum test head shall be placed on the top of the cone section or, inside of the top of the manhole cone section, and the compression seal band inflated to the pressure recommended by its manufacturer. The vacuum pump shall be connected to the outlet port with the valve open. When a vacuum of 10 inches of mercury [(-5 psig) has been attained, the valve shall be closed and the time noted. Tampering with the test equipment will not be allowed.
- d) The manhole shall have passed the test if the vacuum does not drop below 9 inches of mercury [(-4.5 psig) within three (3) minutes of the time the valve was closed. The actual vacuum shall be recorded at the end of the three (3) minutes during which the valve was closed.
- e) When the standard vacuum test cannot be performed because of design or material constraints (examples: T-Type manholes, T-Lock Liners, or other reasons acceptable to the Engineer or designated representative), testing of individual joints shall be performed as directed by the Engineer or designated representative.

B. Test by the Exfiltration Method

At the discretion of the Engineer or designated representative, the Contractor may substitute the Exfiltration Method of testing for the Vacuum test described in Section A above. This method may only be used when ground water is not present. If ground water is present a Vacuum Test shall be used unless otherwise directed by the Engineer or designated representative. All backfilling and compaction shall be completed prior to the commencement of testing.

The procedures for the test shall include the following:

a) Manhole section interiors shall be carefully inspected; units found to have through-wall lift holes, or any penetration of the interior surface by inserts provided to facilitate handling, will not be accepted. Coating shall be applied after the testing unless coating is applied before field assembly, or at the factory. All lift holes and exterior joints shall be plugged with an acceptable non-shrink grout. No grout shall be placed in horizontal joints.

b) After cleaning the interior surface of the manhole, the Contractor shall place and inflate pneumatic plugs in all of the connecting pipes to isolate the manhole; sealing pressure within the plugs shall be as recommended by the plug manufacturer.

c) Concrete manholes shall be filled with water or otherwise thoroughly wetted for a period of 24 hours prior to testing.

d) At the start of the test, the manhole shall be filled to the top with water. The test time shall be 1 hour (60 minutes). The Construction Inspector must be present for observation during the entire time of the test. Permissible loss of water in the 1 hour test time is 0.025 gallons per diameter foot, per foot of manhole depth. For example, for a 4 foot diameter manhole, this quantity converts to a maximum permissible drop in the water level (from the top of the manhole cone) of 0.05 inches per foot of manhole depth or 0.5 inches for a 10 foot deep manhole.

#### C. Holiday Testing

After the coating product(s) have set in accordance with manufacturer instructions, all surfaces shall be inspected for holidays with high-voltage holiday detection equipment. Reference NACE RPO 188-99 for performing holiday detection. All detected holidays shall be marked and repaired by abrading the coating surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional coating can be hand applied to the repair area. All touch-up/repair procedures shall follow the coating manufacturer's recommendations. Documentation on areas tested, results and repairs made shall be provided to Owner by Contractor.

#### D. Inspection

The Engineer or designated representative shall make a visual inspection of each manhole after it has passed the testing requirements and is considered to be in its final condition. The

inspection shall determine the completeness of the manhole; any defects shall be corrected to the satisfaction of Engineer or designated representative.

Visual inspection will include but not be limited to the following:

1. Observation for identification for leakage into the manhole as well as general workmanship.
2. Verification that there are no infiltration, cracks, or loose material.
3. Observation of the Installed liner system to make sure it is completely free of pinholes and hollow spots/voids and other defects that will reduce the life expectancy of the applied system.
4. Observation of the Liner to ensure it is free of severe wrinkles, areas deficient of resin, delamination of the fabric layers, infiltration, large hollow areas behind the liner and any other defects that will affect the life expectancy.
5. Observation of the Liner to ensure it is free of severe wrinkles, areas deficient of resin, delamination of the fabric layers, infiltration, large hollow areas behind the liner and any other defects that will affect the life expectancy of the Composite Liner.
6. Observation to verify that there are no loose panels, peeling, bubbles, or other areas that may hinder the performance of the liner.
7. Observation to insure bonding, resin saturation, complete cure and a smooth surface free from cracks or hollow spots.

E. Failure to Pass the Test - Records of Tests.

If the manhole fails to pass the initial test method as described in (A) Test by the Vacuum Method and, if allowed, (B) Test by the Exfiltration Method, or if visible groundwater leakage into the manhole is observed, the Contractor shall locate the leak, if necessary by disassembly of the manhole. The Contractor shall check the gaskets and replace them if necessary. The Contractor may re-lubricate the joints and re-assemble the manhole, or the Contractor may install an acceptable exterior joint sealing product on all joints and then retest the manhole. If any manhole fails the vacuum and/or exfiltration test twice, or unable to pass the Holiday test, the Contractor shall consider replacing that manhole. If the Contractor chooses to attempt to repair that manhole, the manhole must be retested until it passes. In no case shall cold applied preformed plastic gaskets be used for repair. Records of all manhole testing shall be made available to the Engineer or designated representative at the close of each working day, or as otherwise directed by the Engineer or designated representative. Any damaged or visually defective products, or any products out of acceptable tolerance shall be removed from the site.

### 3.12 PROTECTION

- A. Protect manholes from damage until work has been finally accepted. Repair damage to manholes at no additional cost to Owner.

END OF SECTION

## SECTION 02603

## FRAMES, GRATES, RINGS, AND COVERS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Iron castings for manhole frames and covers, inlet frames and grates, catch basin frames and grates, meter vault frames and covers, adjustment rings and extensions.
- B. Ring grates.

## 1.02 UNIT PRICES

- A. No payment will be made for frames, grates, rings, covers, and seals under this Section. Include payment in unit price for related item.

## 1.03 SUBMITTALS

- A. Submit product data in accordance with all sections and provisions of these specifications.
- B. Provide copies of manufacturer's specifications, load tables, dimension diagrams, anchor details, and installation instructions.
- C. Provide shop drawings for fabrication and erection of casting assemblies. Include plans, elevations, sections and connection details. Show anchorage and accessory items. Include setting drawings for location and installation of castings and anchorage devices.

## PART 2 PRODUCTS

## 2.01 CASTINGS

- A. Castings for frames, grates, rings and covers shall conform to ASTM A48, Class 30. Provide locking covers if indicated on Drawings.
- B. Castings shall be capable of withstanding the application of an AASHTO H-20 loading without permanent deformation.
- C. Fabricate castings to conform to the shapes, dimensions, and with wording or logos shown on the Drawings.
- D. Castings shall be clean, free from blowholes and other surface imperfections. Cast holes in covers shall be clean and symmetrical, free of plugs.
- E. Castings shall be made in U.S.A.

- F. Manhole cover and frame shall be called PAMREX or approved equal. Cover and frame shall be manufactured from ductile iron.

Covers shall be dually hinged and incorporate a 90 degree blocking system to prevent accidental closure. Covers shall be one man operable using standard tools and shall be capable of withstanding a test load of 80,000 lbs.

Frames shall be circular, incorporate a seating ring and a fitted plug in each hinge housing, and be available in a 32-inch clear opening. The frame depth shall not exceed 5-inches, and the flange shall incorporate bedding slots, bolt holes, and lifting eyes.

All components shall be black coated.

Frame weight: 107 lbs.

Cover weight: 162 lbs.

Total weight: 269 lbs.

DIMENSIONS (INCHES)			WEIGHT (lbs)		REFERENCE
A	O	H	COVER AND FRAME	COVER ONLY	
39 4/10	32	5	269	162	RE 32 R8 FD



2.02 BEARING SURFACES

- A. Machine bearing surfaces between covers or grates and their respective frames so that even bearing is provided for any position in which the casting may be seated in the frame.

2.03 FABRICATED RING GRATES

- A. Ring grates shall be fabricated from reinforcing steel conforming to ASTM A615.
- B. Welds connecting the bars shall conform to AWS D12.1.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install castings according to approved shop drawings, instructions given in related specifications, and applicable directions from the manufacturer's printed materials.
- B. Set castings accurately at required locations to proper alignment and elevation. Keep castings plumb, level, true and free of rack. Measure location accurately from established lines and grades. Brace or anchor frames temporarily in formwork until permanently set.
- C. Ring grates shall be fabricated in accordance with drawings and shall be set in mortar in the mouth of the pipe bell.

END OF SECTION

SECTION 02604

VALVE BOXES, METER BOXES, AND METER VAULTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Valve boxes for water service.
- B. Meter boxes for water service.
- C. Meter vaults for water service.

1.02 UNIT PRICES

- A. No separate payment will be made for valve boxes under this section. Include payment in unit price for Section 02640 - Gate Valves.
- B. Measurement for meter vaults is on a lump sum basis or installation of each meter vault type and size. Payment will be made for each vault installed regardless of depth.

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all section and provisions of these specifications.
- B. Submit manufacturer's product data for following items for approval:
  - 1. Each type of valve box and lid.
  - 2. Each type of meter box and cover.
  - 3. Each type of meter vault frame and cover.
- C. Submit shop drawings for cast-in-place meter vaults for approval if proposed construction varies from Drawings.
- D. Submit manufacturer's certification that plastic meter boxes purchased for Work meet the requirements of paragraph of this Section on Plastic Meter Boxes.

PART 2 PRODUCTS

2.01 VALVE BOXES

- A. Provide Type "A", cast-iron, slide-type, valve boxes. Design of valve box shall minimize stresses on valve imposed by loads on box lid.

- B. Cast a letter "W" into lid, 1/2 inch in height and raised 3/32 inch, for valves serving potable water lines.
- C. Coat boxes, bases, and lids by dipping in hot bituminous varnish.
- D. Provide 6-inch PVC, Class 150, DR 18, riser pipes.
- E. Concrete for valve box placement:
  - 1. For locations in new concrete pavement, use strength and mix design of new pavement.
  - 2. For other locations, use class "A" concrete, with minimum compressive strength of 3000 psi, conforming to requirements of Section 03305.

## 2.02 METER BOXES GENERAL

- A. The Owner will furnish all meter boxes for meters 1 1/2-inch and smaller.

## 2.03 METER VAULTS

- A. Meter vaults may be constructed of precast concrete, cast-in-place concrete, or solid masonry unless a specific type of construction is required by Drawings.
- B. Concrete for meter vaults: Class A concrete, conforming to requirements of Section 03305, with minimum compressive strength of 4000 psi at 28 days.
- C. Reinforcing steel for meter vaults: Conform to requirements of Section 03305.
- D. Grates and Covers: Conform to requirements of Section 02603.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Obtain approval from the Owner Representative for location of meter vault.
- B. Verify lines and grade are correct.
- C. Verify compacted subgrade will support loads imposed by vaults.

### 3.02 VALVE BOXES

- A. Provide riser pipe with suitable length for depth of cover indicated on Drawings or to accommodate actual finish grade. Install with bell on top of valve.
- B. Install valve box and riser piping plumbed in a vertical position. Provide 6-inches telescoping freeboard space between riser pipe top butt end, and interior contact flange of

valve box, for vertical movement damping. Riser may rest on valve flange, or provide suitable footpiece to support riser pipe.

- C. After valve box has been set, aligned, and adjusted so that lid is level with final grade, pour a 24-inch by 24-inch by 8-inch thick concrete block around valve box. Center valve box horizontally within concrete block.
- D. Paint covers of new valve boxes in Blue (color approved by owner) when installed. This work is incidental and no separate payment will be made.

### 3.03 METER BOXES

- A. Install plastic boxes in accordance with manufacturer's instructions.
- B. Construct concrete meter boxes to dimensions shown on Drawings.
- C. Adjust top of meter boxes to conform to cover elevations specified in paragraph of this section for Frame and Cover for Meter Vaults.
- D. Do not locate under paved areas unless approved by Owner Representative. Use approved traffic-type box with cast iron lid when meter must be located in paved areas.

### 3.04 METER VAULTS

- A. Construct concrete meter vaults to dimensions and requirements shown on drawings. Do not cast in presence of water. Make bottom uniform.
- B. Precast Meter Vaults:
  - 1. Install precast vaults in accordance with manufacturer's recommendations. Set level on a minimum 3-inch thick bed of sand conforming to the requirements of Section 02229.
  - 2. Seal lifting holes cement-sand mortar or non-shrink grout.
- C. Meter Vault Floor Slab:
  - 1. Construct floor slabs of 6-inch-thick reinforced concrete. Slope floor 1/4 inch per foot toward sump. Make sump 12 inches in diameter, or 12 inches square, and 4 inches deep, unless other dimensions are required by Drawings. Install dowels at maximum of 18 inches, center-to-center, or install mortar trench for keying walls to floor slab.
  - 2. Precast floor slab elements may be used for precast vault construction
- D. Cast-in-Place Meter Vault Walls:
  - 1. Key walls to floor slab and form to dimensions shown on Drawings. Minimum wall thickness shall be 4 inches.

2. Cast walls monolithically. One cold joint will be allowed when vault depth exceeds 12 Feet.
3. Set frame for cover while concrete is still green.

### 3.05 FRAME AND COVER FOR METER VAULTS

- A. Set cast iron frame in a mortar bed and adjust elevation of cover as follows:
  1. In unpaved areas, set top of meter box or meter vault cover 1 to 2 inches above natural grade.
  2. In sidewalk areas, set top of meter box or meter vault cover level with adjacent concrete.

### 3.06 BACKFILL

- A. Provide bank run sand in accordance with Section 02229, and backfill and compact in accordance with Section 02227.
- B. In unpaved areas, slope backfill around meter boxes and vaults to provide a uniform slope 1 to 5 from top to natural grade.
- C. In sidewalk areas slope concrete down from meter boxes to meet adjacent concrete.

END OF SECTION

SECTION 02605

CAST-IN-PLACE INLETS, HEADWALLS, AND WINGWALLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cast-in-place inlets for storm sewers, including cast iron frame and plate or grate.
- B. Cast-in-place headwalls and wingwalls for storm sewers.

1.02 UNIT PRICES

- A. Measurement for normal depth inlets is on a lump sum basis for each inlet installed.
- B. Measurement for extra depth inlets is on a vertical foot basis for each foot in excess of normal depth.
- C. Measurement for headwalls and wingwalls is on a lump sum basis for each headwall and wingwall installed.
- D. Payment for inlets and for culvert headwalls and wingwalls includes connection of lines and furnishing and installing frames, grates, rings and covers.

1.03 DEFINITIONS

- A. Normal Depth Type BB Inlet: Depth of 2.55 feet (2'-6 5/8") plus pipe inside diameter when measured from curb beam to flow line of inlet lead.
- B. Extra Depth Inlet: Specified depth exceeding normal depth for the type inlet used.

1.04 SUBMITTALS

- A. Submittals shall conform to requirements of all section and provisions of these specifications.
- B. Submit shop drawings for approval of design and construction details for cast-in-place units which differ from units shown on Drawings.
- C. Submit manufacturers' data and details for frames, grates, rings, and covers.

PART 2 PRODUCTS

2.01 MATERIALS

02605-1

- A. Concrete: Class A concrete with minimum compressive strength of 4000 psi conforming to requirements of Section 03305, unless otherwise indicated on Drawings or approved by the Owner's Representative.
- B. Reinforcing steel: Conform to requirements of Section 03305.
- C. Mortar: Conform to requirements of ASTM C270, Type S using Portland cement.
- D. Miscellaneous metals: Cast-iron frames, grates, rings, and covers conforming to requirements of Section 02603.
- E. Steel beams for Type BB inlets shall conform to ASTM A36.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify lines and grades are correct.
- B. Verify compacted subgrade will support loads imposed by inlets.

#### 3.02 INSTALLATION

- A. Construct inlets, headwalls, and wingwalls complete in place to the dimensions, lines and grades as shown on Drawings.
- B. Excavate in accordance with requirements of Section 02227.
- C. The box section of inlet shall be constructed of Class A concrete.
- D. Forms will be required for both the outside and inside faces of concrete inlet walls; however, if the nature of the material excavated for the inlet is such that it can be hand trimmed to a smooth vertical face, the outside forms may be omitted with approval of the Owner's Representative.
- E. Place reinforcing steel to conform to details shown on the Drawings. Provide a positive means for holding steel cages in place during concrete placement. Welding of reinforcing steel is not permitted unless noted on the Drawings. The maximum variation in reinforcement position is plus or minus 10 percent of wall thickness or plus or minus 1/2 inch whichever is less. Regardless of variation, the minimum cover of concrete over reinforcement as shown on the Drawings shall be maintained.
- F. Chamfer exposed edges unless otherwise indicated on Drawings.

#### 3.03 FINISHES

- A. Cut off inlet leads neatly at the inside face of inlet wall. Point up with mortar.
- B. When the box section of the inlet has been completed, shape the floor of the inlet with mortar to conform to the detailed Drawings.
- C. Finish concrete surfaces in accordance with requirements of Section 03305.

3.04 INLET WATERTIGHTNESS

- A. Test each inlet for leaks with static water test. Verify that inlets are free of visible leaks. Repair leaks in an approved manner.

3.05 BACKFILL

- A. Backfill the area of excavation surrounding each completed inlet according to the requirements of Section 02227.

END OF SECTION



SECTION 02606

PRECAST CONCRETE INLETS, HEADWALLS, AND WINGWALLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Precast concrete inlets for storm sewers, including cast iron frame and plate or grate.
- B. Precast concrete headwalls and wingwalls for storm sewers.

1.02 UNIT PRICES

- A. Measurement for normal depth inlets is on a lump sum basis for each inlet installed.
- B. Measurement for extra depth inlets is on a vertical foot basis for each foot in excess of normal depth and paid only when extra depth is specified.
- C. Measurement for headwalls and wingwalls is on a lump sum basis for each headwall and wingwall installed.
- D. Payment for inlets and for culvert headwalls and wingwalls includes connection of lines and furnishing and installing frames, grates, rings and covers.

1.03 DEFINITIONS

- A. Normal Depth Type BB Inlet: Depth of 2.55 feet (2'-6 5/8") plus pipe inside diameter when measured from curb beam to flow line of inlet lead.
- B. Extra Depth Inlet: Specified depth exceeding normal depth for the type inlet used.

1.04 SUBMITTALS

- A. Submittal shall conform to requirements of all sections and provisions of these specifications.
- B. Submit shop drawings for approval of design and construction details for precast concrete inlets, headwalls and wingwalls. Precast units differing from the standard designs shown on the Drawings will be rejected unless submittals are made and approved. Submittals must clearly show that the proposed substitution is equal or superior in every respect to the standard designs.
- C. Submit manufacturers' data and details for frames, grates, rings, and covers.

1.05 STORAGE AND SHIPMENT

- A. Store precast units on level blocking. Do not place loads on them until design strength is reached. Shipment of acceptable units may be made when the 28-day strength requirements have been met.

## PART 2 PRODUCTS

### 2.01 MATERIALS

- A. Concrete: Concrete for precast machine-made units meeting requirements of ASTM C76 regarding reinforced concrete, cement, aggregate, mixture, and concrete test. Minimum 28-day compressive strength shall be 4,000 psi.
- B. Reinforcing steel: Conform to requirements of Section 03210. Place reinforcing steel to conform to details shown on Drawings and as follows:
  - 1. Provide a positive means for holding steel cages in place throughout production of concrete units. The maximum variation in reinforcement position is plus or minus 10 percent of wall thickness or plus or minus 1/2 inch whichever is less. Regardless of variation, the minimum cover of concrete over reinforcement as shown on the Drawings shall be maintained.
  - 2. Welding of reinforcing steel is not permitted unless noted on the Drawings.
- C. Mortar: Conform to requirements of ASTM C 270, Type S using Portland cement.
- D. Miscellaneous metal: Cast-iron frames and plates conforming to requirements of Section 02603.
- E. Steel beams for inlets shall conform to ASTM Section A36.

### 2.02 SOURCE QUALITY CONTROL

- A. Tolerances: Allowable casting tolerances for concrete units are plus or minus 1/4 inch from dimensions shown on the Drawings. Concrete thickness in excess of that required will not constitute cause for rejection provided that such excess thickness does not interfere with proper jointing operations.
- B. Precast Unit Identification: Mark date of manufacture and name or trademark of manufacturer clearly on the inside of inlet, headwall or wingwall.
- C. Rejection: Precast units may be rejected for non-conformity with these specifications and for any of the following reasons:
  - 1. Fractures or cracks passing through the shell, except for a single end crack that does not exceed the depth of the joint.
  - 2. Surface defects indicating honeycombed or open texture.

- D. Damaged or misshaped ends, where such damage would prevent making a satisfactory joint.
- E. Replacement: Immediately remove rejected units from the work site and replace with acceptable units.
- F. Repairs: Occasional imperfections resulting from manufacture or accidental damage may be repaired if, in the opinion of the Owner Representative, repaired units conform to requirements of these specifications.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify lines and grades are correct.
- B. Verify compacted subgrade will support loads imposed by inlets.

#### 3.02 INSTALLATION

- A. Install inlets, headwalls, and wingwalls complete in place to the dimensions, lines and grades as shown on the Drawings.
- B. Excavate in accordance with requirements of Section 02227.
- C. Bed precast concrete units on foundations of firm, stable material accurately shaped to conform to the shape of unit bases.
- D. Provide adequate means to lift and place concrete units.

#### 3.03 FINISHES

- A. Use a cement-sand mortar mix to seal joints, fill lifting holes, and as otherwise required.
- B. When the box section of the inlet has been completed, shape the floor of the inlet with mortar to conform to Drawings details.
- C. Accurately adjust cast iron inlet plate frames to line, grade, and slope. Grout frame in place with mortar.

#### 3.04 INLET WATERTIGHTNESS

- A. Test each inlet for leaks. Verify that inlets are free of visible leaks. Repair leaks in an approved manner.

#### 3.05 CONNECTIONS

- A. Connect inlet leads to the inlets as shown on the Drawings. Use jointing material as shown on the Drawing or as approved. Make connections watertight.

3.06 BACKFILL

- A. Backfill the area of excavation surrounding each completed inlet, headwall or wingwall according to the requirements of Section 02227.

END OF SECTION

SECTION 02607

ADJUSTING MANHOLES, INLETS, AND VALVE BOXES TO GRADES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Adjusting elevation of existing manholes, inlets, and valve boxes to new grades.

1.02 UNIT PRICES

- A. Measurement for adjusting utility structures to grade is on a lump sum basis for:
  - 1. Adjusting manholes.
  - 2. Adjusting inlets.
  - 3. Adjusting valve boxes.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

- A. For cast in place concrete, refer to Section 03305 - Concrete for Utility Construction.
- B. For precast concrete manhole sections and adjustment rings, refer to Section 02601 - Precast Concrete Manholes.
- C. For mortar mix, conform to requirements of ASTM C 270, Type S using Portland cement.

2.02 CAST IRON ADJUSTING RINGS

- A. For cast iron adjusting rings, refer to Section 02603 - Frames, Grates, Rings and Covers.

2.03 PIPING MATERIALS

- A. For riser pipes and fittings, refer to applicable piping materials specifications in Sections 02610 through 02620.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine existing structure, valve box, frame and cover or inlet box, frame and cover or inlet, and piping and connections for damage or defects that would affect adjustment to grade. Report such damage or defects to the Owner Representative.

3.02 ESTABLISHING GRADE

- A. Coordinate grade related items with existing grade and finished grade or paving, and relate to established bench mark or reference line.

3.03 ADJUSTING MANHOLES AND INLETS

- A. Elevation of manhole or inlet can be raised using precast concrete rings or metal adjusting rings. Use of brick for adjustment of sanitary sewer manholes to grade is prohibited. Elevation of manhole or inlet can be lowered by removing existing masonry, adjusting rings or the top section of the barrel below the new elevation and then rebuilding or raising the elevation to the proper height.
- B. Grout inside and outside adjusting ring joints.
- C. Salvage and reuse cast iron frame and cover or grate.
- D. Protect or block off manhole or inlet bottom using wood forms shaped to fit so that no debris or soil falls to the bottom during adjustment.
- E. Set the cast iron frame for the manhole cover or grate in a full mortar bed and adjust to the established elevation. In streets, adjust covers to pavement elevation.
- F. Verify that manholes and inlets are free of visible leaks as a result of reconstruction. Repair leaks in a manner subject to the Owner Representative's approval.

3.04 ADJUSTING VALVE BOXES

- A. Salvage and reuse valve box and surrounding concrete block.
- B. Remove and replace 6-inch riser pipe in accordance with City's standard details with suitable length for depth of cover required to establish the adjusted elevation to accommodate actual finish grade.
- C. Reinstall valve box and riser piping plumbed in vertical position. Provide minimum 6 inches telescoping freeboard space between riser pipe top butt end and interior contact flange of valve box for vertical movement damping.
- D. After valve box has been set, aligned, and adjusted so that top lid is level with final grade, pour a 24-inch by 24-inch by 8-inch thick concrete pad around valve box. Center valve box horizontally within concrete slab.

3.05 BACKFILL AND GRADING

- A. Backfill the area of excavation surrounding each adjusted manhole, inlet, and valve box and compact according to requirements of Section 02227 - Excavation and Backfill for Utilities.

- B. Grade the ground surface to drain away from each manhole and valve box. Place earth fill around manholes to the level of the upper rim of the manhole frame. Place earth fill around the valve box concrete block.
  
- C. In unpaved areas, grade surface at a uniform slope of 1 to 5 from the manhole frame to natural grade.

END OF SECTION

## SECTION 02610

## DUCTILE IRON PIPE AND FITTINGS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Ductile iron pipe and fittings for water mains, wastewater force mains, and gravity sanitary sewers.

## 1.02 UNIT PRICES

- A. No separate payment will be made for ductile iron pipe and fittings under this Section. Include cost in unit price for water mains, force mains, gravity sanitary sewers, and storm sewers.

## 1.03 SUBMITTALS

- A. Conform to requirements of all sections and provisions of these specifications.
- B. Submit shop drawings showing design of new pipe and fittings indicating alignment and grade, laying dimensions, fabrication, fitting, flange, and special details. Show station numbers for pipe and fittings corresponding to Drawings. Production of pipe and fittings prior to review by the Owner's Representative is at Contractor's risk.

## 1.04 QUALITY CONTROL

- A. Provide manufacturer's certifications that all ductile iron pipe and fittings meet provisions of this Section and have been hydrostatically tested at factory and meet requirements of ANSI A21.51.
- B. Provide certifications that all pipe joints have been tested and meet requirements of ANSI A21.11.

## PART 2 PRODUCTS

## 2.01 DUCTILE IRON PIPE

- A. Ductile iron pipe barrels: ANSI A21.15, ANSI A21.50 or ANSI A21.51; bear mark of Underwriters' Laboratories approval; pressure classes as shown on the Drawings and/or Bid Proposal.
- B. Provide pipe sections in standard lengths, not less than 18 feet long, except for special fittings and closure sections as indicated on shop drawings and/or Bid Proposal.



2.02 JOINTS

- A. Joint types: ANSI A21.11 push-on; ANSI A21.11 mechanical joint; or ANSI A21.15 flanged end. Provide push-on joints unless otherwise indicated on the Drawings or required by these specifications. For bolted joints, bolts shall conform to requirements of AWWA C111.
- B. Where restrained joints for buried service are required by Drawings, provide Series 1100 (MEGALUG) by EBAA Iron Inc., or equal.
- C. Threaded or grooved type joints which reduce pipe wall thickness below minimum required are not acceptable.
- D. Provide for restrained joints designed to meet test pressures required under Section 02676- Hydrostatic Testing of Pipelines or Section 02731 - Sanitary Sewage Force Mains, as applicable.
- E. Where ductile iron water main is cathodically protected from corrosion, bond rubber gasketed joints as shown on Drawings to provide electrical continuity along entire pipeline, except where insulating flanges are required by Drawings.

2.03 GASKETS:

- A. Furnish, when no contaminant is identified, plain rubber (SBR) gasket material; for flanged joints 1/8-inch thick gasket in accordance with ANSI A21.15.
- B. Pipes to be installed in potentially contaminated areas, especially where free product is found near the elevation of the proposed pipeline, shall have the following gasket materials for the noted contaminants:

Contaminant	Gasket Material Required
Petroleum (diesel, gasoline)	Nitrile Rubber
Other contaminants	As recommended by the pipe manufacturer

2.04 FITTINGS

- A. Use fittings of same size as pipe. Reducers are not permitted to facilitate an off-size fitting. Reducing bushings are also prohibited. Make reductions in piping size by reducing fittings. Line and coat fittings as specified for pipe they serve.
- B. Push-on Fittings will not be allowed.
- C. Flanged Fittings: ANSI A21.10; ANSI B16.1 cast or ductile iron. Flanges: ANSI B16.1, Class 125; pressure rated at 250 psig.
- D. Mechanical Joint Fittings: ANSI A21.10 (AWWA C110); pressure rated at 250 psi.

- E. Ductile Iron Compact Fittings for Water Mains: ANSI A21.53 (AWWA C153); 4-inch through 12-inch diameter; fusion bonded epoxy-lined or cement-mortar lining; conform to requirements of Section 02630 - Polyethylene Wrap.

## 2.05 COATINGS AND LININGS

- A. Water Main Interiors: ANSI A21.4, cement lined with seal coat.
- B. Sanitary Sewer and Force Main Interiors:
  - 1. Preparation: Commercial blast cleaning conforming to SSPC-SP6.
  - 2. Liner thickness: Nominal 40 mils, minimum 35 mils, for pipe barrel interior; minimum 6 - 10 mils at gasket groove and outside spigot end to 6-inches back from end.
  - 3. Testing: ASTM G62, Method B for voids and holidays; provide written certification.
  - 4. Acceptable Lining Materials:
    - a. Virgin polyethylene conforming to ASTM D1248, with inert fillers and carbon black to resist ultraviolet degradation during storage heat bonded to interior surface of pipe and fittings; APolyline® by American Cast Iron Pipe Company; or equal.
    - b. Polyurethane: Corro-pipe II by Madison Chemicals.
    - c. Ceramic Epoxy: Protecto-401 by Enduron Protective Coatings.
- C. Sanitary Sewer Point Repair Pipe: For pipes which will be lined with high density polyethylene liner pipe or cured-in-place liner, provide cement-lined with seal coat in accordance with ANSI A21.4. For pipes which will not be provided with named liner, provide pipe as specified in Paragraph 2.05B.
- D. Exterior:
  - 1. Water Lines
    - a. Auger Holes: Conform to requirements of Section 02629 - Polyurethane Coatings on Steel or Ductile Iron Pipe.
    - b. Above Ground (or Exposed): Conform to the following:

Provide a 3-coat epoxy/polyurethane coating system as designated below.

Surface Preparation	SSPC SP10 Near White Blast Clean 2.0 to 3.0 mils surface profile
Prime Coat 2.0 to 4.0 mils DFT	ACRO 4422 Inhibitive Epoxy Primer, or approved equal
Intermediate Coat 4.0 to 6.0 mils DFT	ACRO 4460 Chemical Resistant Epoxy, or approved equal
Finish Coat 1.5 to 2.0 mils DFT	ACRO 4428 Polyurethane, Or approved equal

- c. Total minimum allowable dry film thickness for system: 10 mils.
  - d. All materials shall be from same manufacturer.
  - e. Color of paint shall be in accordance with the City's standard.
2. Sanitary Sewers: Prime coat and outside asphaltic coating conforming to ANSI A21.10, ANSI A21.15, or ANSI A21.51 for pipe and fittings in open cut excavation and in casings.
- E. Polyethylene Wrap: For buried water lines and sanitary sewers, including point repairs, provide polyethylene wrap unless otherwise specified or shown. Provide Polyethylene Wrap for all buried ductile iron pipe, including polyurethane coated pipe. Conform to requirements of Section 02630 - Polyethylene Wrap.
  - F. For flanged joints in buried service, provide petrolatum wrapping system, Denso, or equal, for the complete joint and all alloy steel fasteners. Alternatively, provide bolts made of Type 304 Stainless Steel
  - G. Pipe to be installed in potentially contaminated areas shall have coatings and linings recommended by the manufacturer as resistant to the contaminants.

## 2.06 MANUFACTURERS

- A. Pre-approved manufacturers of ductile iron are American Cast Iron Pipe Co., McWane Cast Iron Pipe Co., and U. S. Pipe and Foundry Co.

## PART 3 EXECUTION

## 3.01 INSTALLATION

- A. Conform to installation requirements of Sections 02664 - Water Mains, 02730 - Gravity Sanitary Sewers, and 02731 - Sanitary Sewage Force Mains, except as modified in this Section.
- B. Install in accordance with AWWA C600 and manufacturer's recommendations.
- C. Install all ductile iron pipe in polyethylene wrap, unless cathodic protection is provided. Do not use polyethylene wrap with a cathodic protection system.
- D. Holiday Testing
  - 1. Polyurethane: Conform to requirements of Section 02629 - Polyurethane Coatings for Steel or Ductile Iron Pipe.
  - 2. Fusion Bonded Epoxy: Conform to requirements for new fittings in ANSI A21.16.

## 3.02 GRADE

- A. Unless otherwise specified on Drawings, install ductile iron pipe for water service to clear utility lines with following minimum cover:

Diameter (Inches)	Depth of Cover (Feet)
16 and 24	5
12 and smaller	3.5

## 3.03 FIELD REPAIR OF COATINGS

- A. Polyurethane: Conform to requirements of Section 02629 - Polyurethane Coatings for Steel or Ductile Iron Pipe.
- B. Fusion Bonded Epoxy: Conform to requirements for new fittings in ANSI A21.16.

END OF SECTION

## SECTION 02615

## REINFORCED CONCRETE PIPE

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Reinforced concrete pipe for storm sewers.

## 1.02 UNIT PRICES

- A. No separate payment will be made for reinforced concrete pipe under this Section. Include payment in unit price for Sections 02720 - Storm Sewers.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit complete product data for pipe, fittings and gaskets for approval. Indicate conformance to appropriate reference standards.
- C. Submit certificates by a testing laboratory, hired and paid by the manufacturer, that concrete pipes meet applicable standards when tested in accordance with ASTM C497.

## PART 2 PRODUCTS

## 2.01 REINFORCED CONCRETE PIPE

- A. Circular reinforced concrete pipe shall conform to requirements of ASTM C76, for Class III wall thickness. Joints shall be rubber gasketed conforming to ASTM C443.
- B. Reinforced concrete arch pipe shall conform to the requirements of ASTM C506 for Class A-III. Joints shall conform to ASTM C877.
- C. Reinforced concrete elliptical pipe, either vertical or horizontal, shall conform to the requirements of ASTM C507 for Class VE-III for vertical or Class HE-III for horizontal. Joints shall be rubber gaskets conforming to ASTM C877.
- D. Reinforced concrete D-load pipe shall conform to the requirements of ASTM C655.

## PART 3 EXECUTION

## 3.01 INSTALLATION

- A. Conform to requirements of Sections 02720 - Storm Sewers.

- B. Install reinforced concrete pipe in accordance with manufacturer's recommendations.

END OF SECTION

SECTION 02617

PRECAST REINFORCED CONCRETE BOX SEWERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Precast reinforced concrete box sewers.

1.02 UNIT PRICES

- A. No separate payment will be made for precast reinforced concrete box sewer under this Section. Include payment in unit price for Section 02720 – Storm Sewers.

1.03 REFERENCES

- A. ASTM C 1433 – Standard Specifications for Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers.

1.04 SUBMITTALS

- A. Conform to requirements of all sections and provisions of these specifications.
- B. Submit shop drawings and data on box sections, fittings, and appurtenances for approval. Indicate conformance to reference standards.

PART 2 PRODUCTS

2.01 PRECAST REINFORCED CONCRETE BOX SEWERS

- A. All box sewer sections shall conform to ASTM C 1433, as indicated on the Drawings.
- B. All pipe and boxes shall be machine-made or cast by a process, which will provide for uniform placement of concrete in the forms and compaction by mechanical devices which will assure a dense, structurally sound concrete.
- C. Joint Wrap
  1. Box joints shall be wrapped with 4-ounce geotextile with 36-inch width wrapped around the pipe perimeter with 18-inch overlap at end.
  2. Geotextile should be applied per manufacturer's instructions.
  3. Approved manufacturers include Mirafi 140NC or equal.

2.02 CONCRETE

- A. Conform to requirements of Section 03305.
- B. Concrete shall be mixed in a central batch plant or other batching facility from which the quality and uniformity of the concrete can be assured. Transit-mixed concrete is not acceptable.

2.03 SOURCE QUALITY CONTROL

- A. Owner Representative will inspect manufacturer's plant and casting operations as deemed necessary.
- B. The Contractor shall provide bi-weekly reports certified by the box manufacturer's representative that the installation is being performed by the Contractor per the manufacturer's recommendations and guidelines.

PART 3 EXECUTION

3.01 BEDDING

- A. Box sections shall be bedded on a foundation of firm and stable material accurately shaped to conform to their bases. When required by the Drawings, special bedding material shall be provided. When single-cell box sections are placed in parallel for multi-cell installation they shall be placed in conformance with the details shown on the Drawings.

3.02 PLACEMENT

- A. All box sections shall be carefully lowered to the bottom of the trench and shall be laid accurately in line and grade, with the spigot end downstream entering the bell or groove end to full depth and in such manner as not to drag foreign material into the annular space.

3.03 JOINTING

- A. Box sections shall be joined together and matched so that they will form a continuous smooth and uniform invert. The joint opening at any point where two box sections are fitted together shall not exceed two (2) inches. This opening is not considered an average.
- B. Joint repair shall be performed on sections of the joint that exceed 2". If more than half the joint exceed 2" then this whole joint shall be repaired.



3.04 BACKFILLING

- A. After the box has been properly jointed and bedded, backfilling shall commence.
- B. Backfilling shall be in accordance with Section 02227.

END OF SECTION

SECTION 02619

HIGH DENSITY POLYETHYLENE (HDPE)  
SOLID WALL PIPE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. High Density Polyethylene (HDPE) pipe for gravity sewers and drains, including fittings.
- B. HDPE pipe for sanitary sewer force mains, including fittings.

1.02 UNIT PRICES

- A. No separate payment will be made for HDPE pipe under this Section. Include cost in unit prices for gravity sanitary sewers and storm sewers.

1.03 SUBMITTALS

- A. Conform to requirements of all sections and provisions of these specifications.
- B. Submit shop drawings showing design of pipe and fittings indicating alignment and grade, laying dimensions, fabrication, fittings, flanges, and special details.

1.04 QUALITY CONTROL

- A. Provide the manufacturer's certificate of conformance to the Specifications.

1.05 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with documented experience of minimum 5 years of pipe installations that have been in successful, continuous service for same type of service as proposed Work.

PART 2 PRODUCTS

2.01 APPROVED AND PREAPPROVED PRODUCTS

- A. For pipe bursting/crushing existing sanitary sewers refer to Section 02768 – Pipe Bursting/Crushing Sanitary Sewers
- B. Solid wall pipe shall be produced with plain end construction for heat-joining (butt fusion) conforming to ASTM D2657. Utilize controlled temperatures and pressures for joining to produce a fused leak-free joint.

- B. Furnish solid wall pipe for sanitary sewer force mains with minimum working pressure rating of 150 psi, and with inside diameter equal to or greater than nominal pipe size indicated on Drawings.

2.02 MATERIALS

- A. Pipe and Fittings: High density, high molecular weight polyethylene pipe material meeting the requirements of Type III, Class C, Category 5, Grade P34, as defined in ASTM D1248. Material meeting the requirements of cell classification in accordance with ASTM D3350 is also suitable for making pipe products under these specifications.

- B. Gaskets

1. Use gaskets meeting requirement of ASTM F477. Use gasket molded into a circular form or extruded to the proper section and then spliced into circular form. When no contaminant is identified, use gaskets of a properly cured, high-grade elastomeric compound. The basic polymer shall be natural rubber, synthetic elastomer, or a blend of both.
2. Pipes to be installed in potentially contaminated areas as shown on the plans or indentified in the filed by the owner representative, especially where free product is found near the elevation of the proposed sewer, shall have the following gasket materials for the noted contaminants:

CONTAMINANT	GASKET MATERIAL REQUIRED
Petroleum (diesel, gasoline)	Nitrile Rubber
Other Contaminants	As recommended by the pipe manufacturer

- C. Lubricant. Use a lubricant for assembly of gasketed joints which has no detrimental effect on the gasket or on the pipe, in accordance with manufacturer's recommendations.

2.03 WORKMANSHIP

- A. Furnish pipe and fittings that are homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. Provide pipe as uniform as commercially practical in color, opacity, density, and other physical properties.

2.04 INSPECTIONS

- A. The Owner Representative reserves the right to inspect pipes or witness pipe manufacturing. Such inspection shall in no way relieve the manufacturer of the responsibilities to provide products that comply with the applicable standards and these Specifications.
- B. Manufacturer's Notification to Customer. Should the Owner Representative wish to witness the manufacture of specific pipes, the manufacturer shall provide the Owner's Representative with adequate advance notice of when and where the production of those specific pipes will take place.

- C. Failure to Inspect. Approval of the products or tests is not implied by the Owner Representative's decision not to inspect the manufacturing, testing, or finished pipes.

## 2.05 TEST METHODS

- A. Conditioning. Conditioning of samples prior to and during tests is subject to approval by the Owner Representative. When referee tests are required, condition the specimens in accordance with Procedure A in ASTM D618 at 73.4 degrees F plus or minus 3.6 degrees F (23 degrees C plus or minus 2 degrees C) and 50 percent relative humidity plus or minus 5 percent relative humidity for not less than 40 hours prior to test. Conduct tests under the same conditions of temperature and humidity unless otherwise specified.
- B. Flattening. Flatten three specimens of pipe, prepared in accordance with Paragraph 2.05A, in a suitable press until the internal diameter has been reduced to 40 percent of the original inside diameter of the pipe. The rate of loading shall be uniform and at 2-inches per minute. The test specimens, when examined under normal light and with the unaided eye, shall show no evidence of splitting, cracking, breaking, or separation of the pipe walls or bracing profiles.
- C. Joint Tightness. Test for joint tightness in accordance with ASTM D3212, except replace the shear load transfer bars and supports with 6-inch-wide support blocks that can be either flat or contoured to conform to the pipe's outer contour.
- D. Purpose of Tests. The flattening and the joint tightness tests are not intended to be routine quality control tests, but rather to qualify pipe to a specified level of performance.

## 2.06 MARKING

- A. Mark each standard and random length of pipe in compliance with these Specifications with the following information:
  - 1. Pipe size
  - 2. Pipe class
  - 3. Production code
  - 4. Material designation

## PART 2 EXECUTION

### 2.01 INSTALLATION

- A. Conform to requirements of the following Sections:
  - 1. Section 02730 - Gravity Sanitary Sewers
  - 2. Section 02761 - Sliplining Sanitary Sewers

- B. Install pipe in accordance with the manufacturer's recommended installation procedures.

END OF SECTION

## SECTION 02620

## PVC PIPE

## PART 1 - GENERAL

## 1.01 SECTION INCLUDES

- A. Polyvinyl chloride pressure pipe for water distribution in nominal diameters 4 inches through 16 inches.
- B. Polyvinyl chloride sewer pipe for gravity sanitary sewers in nominal diameters 4 inches through 48 inches.
- C. Polyvinyl chloride pressure pipe for gravity sanitary sewers and force mains in nominal diameters 4 inches through 36 inches.

## 1.02 UNIT PRICES

- A. No separate payment will be made for PVC pipe under this section. Include cost in unit price for water mains, gravity sanitary sewer, and force mains.

## 1.03 SUBMITTALS

- A. Conform to requirements of all provisions and sections of these specifications.
- B. Submit shop drawings showing design of new pipe and fittings indicating alignment and grade, laying dimensions, fabrication, fittings, flanges, and special details.

## 1.04 QUALITY CONTROL

- A. Submit manufacturer's certifications that PVC pipe and fittings meet requirements of this Section and AWWA C 900 or AWWA C 905 for pressure pipe applications, or the appropriate ASTM standard specified for gravity sewer pipe.
- B. Submit manufacturer's certification that PVC pressure pipe has been hydrostatically tested at the factory in accordance with AWWA C 900 or AWWA C 905 and this Section.

## PART 2 - PRODUCTS

## 2.01 MATERIAL

- A. Use PVC compounds in the manufacture of pipe that contain no ingredient in an amount that has been demonstrated to migrate into water in quantities considered to be toxic.
- B. Furnish PVC pressure pipe manufactured from Class 12454-A or Class 12454-B virgin PVC compounds as defined in ASTM D 1784. Use compounds qualifying for a rating of 4000 psi for water at 73.4 degrees F per requirements of PPI TR3. Provide pipe which is homogeneous throughout, free of voids, cracks, inclusions, and other defects, uniform as commercially practical in color, density, and other physical properties. Deliver pipe with surfaces free from nicks and scratches with joining surfaces of spigots and joints free from gouges and imperfections which could cause leakage.
- C. For PVC pressure pipe used for water mains, provide self-extinguishing PVC pipe that bears Underwriters' Laboratories mark of approval and is acceptable without penalty to Texas State Fire Insurance Committee for use in fire protection lines.
- D. Gaskets:
  - 1. Gaskets shall meet the requirements of ASTM F 477. Use elastomeric factory-installed gaskets to make joints flexible and watertight.
  - 2. Pipes to be installed in potentially contaminated areas, especially where free product is found near the elevation of the proposed sewer, shall have the following gasket materials for the noted contaminants.

CONTAMINANT	GASKET MATERIAL REQUIRED
Petroleum (diesel, gasoline)	Nitrile Rubber
Other Contaminants	As recommended by the pipe manufacturer

- E. Lubricant for rubber-gasketed joints: Water soluble, non-toxic, non-objectionable in taste and odor imparted to fluid, non-supporting of bacteria growth, having no deteriorating effect on PVC or rubber gaskets.

2.02 WATER SERVICE PIPE

- A. Pipe 4-inch through 12-inch: AWWA C 900, Class 150, DR 18; nominal 20-foot lengths; cast iron equivalent outside diameters.

- B. Pipe 16-inch: AWWA C 905; Class 235; DR 18; nominal 20-foot lengths; cast iron equivalent outside diameter.
- C. Joints: ASTM D 3139; push-on type joints in integral bell or separate sleeve couplings. Do not use socket type or solvent weld type joints.
- D. Make curves and bends by deflecting the joints. Do not exceed maximum deflection recommended by the pipe manufacturer. Submit details of other methods of providing curves and bends for review by the Owner Representative.
- E. Hydrostatic Test: AWWA C 900, AWWA C 905, ANSI A21.10 (AWWA C110); at point of manufacture; submit manufacturer's written certification.

### 2.03 BENDS AND FITTINGS FOR PVC PRESSURE PIPE

- A. Bends and Fittings: ANSI A21.10, ductile iron; ANSI A21.11 single rubber gasket push-on type joint; minimum 150 psi pressure rating.
- B. Coatings and Linings: Conform to requirements of Section 02610 - Ductile-Iron Pipe and Fittings.
- C. Restraints for large diameter PVC pipe (AWWA C905) at the bell shall be consist of the following:
  - 1. The restraint shall be manufactured of ductile iron conforming to ASTM A536.
  - 2. A backup ring shall be utilized behind the PVC bell.
  - 3. A restraint ring, incorporating a plurality or individually actuating gripping surfaces, shall used to connect the bell ring and gripping ring.
  - 4. The restraint shall be the Series 2800 as manufactured by EBAA Iron, Inc., or approved equal.

### 2.04 GRAVITY SANITARY SEWER PIPE

- A. PVC gravity sanitary sewer pipe shall be in accordance with the provisions in the following table:



WALL CONSTRUCTION	MANUFACTURER	PRODUCT OPTIONS	ASTM DESIGNATION	SDR (Max.)/ STIFFNESS	DIAMETER SIZE RANGE
Solid	J-M Manufacturing Co, Inc.	Approved	D3034	SDR 26 / PS 115	6" to 15"
	CertainTeed	Approved	F679 (T-1)	SDR 26 / PS 115	18" to 24"
	Can-Tex				
	Carlton Company	Approved	F679 (T-1)	SDR 35 / PS 46	27" to 36"
	Diamond Plastics Corp				
	North American Pipe Corporation (NAPCO)	Approved	AWWA C900	DR 18 / N/A	4" to 12"
		Approved	AWWA C905	DR 18 / N/A	14" to 36"

- B. When solid wall PVC pipe 18 inches to 27 inches in diameter is required in SDR 26, provide pipe conforming to ASTM F679, except provide wall thickness as required for SDR 26 and pipe strength of 115 psi.
- C. For sewers up to 12-inch-diameter crossing over waterlines, or crossing under waterlines with less than 2 feet separation, provide minimum 150 psi pressure-rated pipe conforming to ASTM D 2241 with suitable PVC adapter couplings.
- D. Joints: Spigot and integral wall section bell with solid cross section elastomeric or rubber ring gasket conforming to requirements of ASTM D 3212 and ASTM F 477, or ASTM D 3139 and ASTM F 477, shall be provided. Gaskets shall be factory-assembled and securely bonded in place to prevent displacement. The manufacturer shall test a sample from each batch conforming to requirements ASTM D2444.
- E. Fittings: Provide PVC gravity sewer sanitary bends, tee, or wye fittings for new sanitary sewer construction. PVC pipe fittings shall be full-bodied, either injection molded or factory fabricated. Saddle-type tee or wye fittings are not acceptable.

2.05 SANITARY SEWER FORCE MAIN PIPE

- A. Provide PVC pressure pipe conforming to the requirements for water service pipe, and conforming to the minimum working pressure rating specified in Section 02731 - Sanitary Sewage Force Mains.

- B. Acceptable pipe joints are integral bell-and-spigot, containing a bonded-in elastomeric sealing ring meeting the requirements of ASTM F 477. In designated areas requiring restrained joint pipe and fittings, use EBAA Iron Series 2000PV, Uniflange Series 1350 restrainer, or equal joint restraint device conforming to UNI-B-13, for PVC pipe 12-inch diameter and less.
- C. Fittings: Provide ductile iron fittings as per Paragraph 2.03, except furnish all fittings with one of the following internal linings:
  - 1. Nominal 40 mils (35 mils minimum) virgin polyethylene complying with ASTM D 1248, heat fused to the interior surface of the fitting, as manufactured by American Cast Iron Pipe "Polybond", or U.S. Pipe "Polyline".
  - 2. Nominal 40 mils (35 mils minimum) polyurethane, Corro-pipe II by Madison Chemicals, Inc.
  - 3. Nominal 40 mils (35 mils minimum) ceramic epoxy, Protecto 401 by Enduron Protective Coatings.
- D. Exterior Protection: Provide polyethylene wrapping of ductile iron fittings as required by Section 02630 - Polyethylene Wrap.
- E. Hydrostatic Tests: Hydrostatically test pressure rated pipe in accordance with Paragraph 2.02 E.

## PART 3 - EXECUTION

### 3.01 PROTECTION

- A. Store pipe under cover out of direct sunlight and protect from excessive heat or harmful chemicals in accordance with the manufacturer's recommendations.
- B. Contractor is responsible for proper storage and protection of stored pipe.

### 3.02 INSTALLATION

- A. Conform to requirements of Section 02664 - Water Mains, Section 02730 - Gravity Sanitary Sewers, Section 02731 - Sanitary Sewage Force Mains, and Section 02763 - Point Repairs to Sanitary Sewers, as applicable.
- B. Install PVC pipe in accordance with Section 02227 - Excavation and Backfill for Utilities, ASTM D 2321, and manufacturer's recommendations.

- C. Water service pipe 12 inches in diameter and smaller: Installed to clear utility lines and have minimum 4 feet of cover below finished grade above the pipe, unless otherwise required by Drawings.
- D. Avoid imposing strains that will overstress or buckle the pipe when lowering pipe into trench.
- E. Hand shovel pipe bedding under the pipe haunches and along the sides of the pipe barrel and compact to eliminate voids and ensure side support.

END OF SECTION

## SECTION 02626

## TAPPING SLEEVES AND VALVES

## PART 1 GENERAL

## 1.1 SECTION INCLUDES

- A. Tapping sleeves and valves for connections to existing water system.

## 1.2 UNIT PRICES

- A. Measurement is on a lump sum basis for each tap.

## 1.3 SUBMITTALS

- A. Submit product data in accordance with requirements of all sections and provisions of these specifications.

## 1.4 QUALITY CONTROL

- A. Provide manufacturer's affidavit that all valves purchased for tapping of existing waterlines conform to Section 02640 - Gate Valves and to applicable requirements of AWWA C500 and that they have been satisfactorily tested in accordance with AWWA C500.

## PART 2 - PRODUCTS

## 2.1 MATERIALS

- A. Tapping Sleeves:
  - 1. Tapping Sleeve Bodies: AWWA C110 cast or ductile iron; AWWA C200 carbon steel; in two sections to be bolted together with high-strength, corrosion-resistant, low-alloy, steel bolts; mechanical joint ends.
  - 2. Branch Outlet of Tapping Sleeve: Flanged; machined recess; AWWA C207, Class D, ANSI 150 lb drilling. Gasket: Affixed around recess of tap opening to preclude rolling or binding during installation.
  - 3. Where fire service from 6-inch main is approved, use cast iron split sleeve.

- B. Welded-steel tapping-sleeve bodies may be used in lieu of cast or ductile iron bodies for following sizes and with following restrictions.
1. Flange: AWWA C207, Class D, ANSI 150 lb drilling. Gasket: Affixed around recess of tap opening to preclude rolling or binding during installation.
  2. Steel sleeves are restricted to use on pipe sizes 6-inch and larger.
  3. Body: Heavy, welded-steel construction; top half grooved to retain neoprene O-ring seal permanently against O.D. of pipe.
  4. Bolts: AWWA C500 Section 3.5; coated with 100 percent vinyl resin or corrosive resistant material.
  5. Steel Sleeves: Fusion-bonded epoxy coated to minimum 12-mil thickness. Finished epoxy coat: Free of laminations and blister; not peel; and remain pliant and resistant to impact. Ship steel sleeves in wooden crates that provide protection from damage to epoxy coating during transport and storage.
  6. Steel tapping sleeves shall be Smith Blair No. 622, JCM No. 412, or equal.
  7. Tapping Sleeves: Provide with 3/4-inch NPT test opening for testing prior to tapping. Provide 3/4-inch bronze plug for opening.
  8. Do not use steel sleeves for taps greater than 75 percent of pipe diameter.
- C. Tapping Valves: Meet all requirements of Section 02640 with following exceptions:
1. Inlet Flanges:
    - a. AWWA C110; Class 125.
    - b. AWWA C110; Class 150 and higher: Minimum eight hole flange.
  2. Outlet: Standard mechanical or push-on joint; to fit any standard tapping machine.
  3. Valve Seat Opening: Accommodate full-size shell cutter for nominal size tap without any contact with valve body; double disc.
- D. Valve Boxes: Furnish and install according to Section 02604.

**PART 3 - EXECUTION****3.1 GENERAL**

- A. Install tapping sleeves and valves at locations and of sizes as shown on Drawings.
- B. Thoroughly clean tapping sleeve, tapping valve and pipe prior to installation and in accordance with manufacturer's instructions.
- C. Hydrostatically test installed tapping sleeve to 150 psig for a minimum of 15 minutes. Inspect sleeve for leaks, and remedy leaks prior to tapping operation.
- D. When tapping concrete pressure pipe, size on size, use shell cutter one standard size smaller than waterline being tapped.
- E. Do not use Large End Bell (LEB) increasers with a next size tap unless existing pipe is asbestos-cement.

**3.2 INSTALLATION**

- A. Tighten bolts in proper sequence so that undue stress is not placed on pipe.
- B. Align tapping valve properly and attach it to tapping sleeve.
- C. Make tap with sharp, shell cutter:
  - 1. For 12-inch and smaller tap, use minimum cutter diameter one-half inch less than nominal tap size.
  - 2. For 16-inch and larger tap, use manufacturer's recommended cutter diameter.
- D. Withdraw coupon and flush all cuttings from newly made tap.
- E. Wrap completed tapping sleeve and valve in accordance with Section 02630.
- F. Place concrete thrust block behind tapping sleeve (NOT over tapping sleeve and valve).
- G. Request inspection of installation prior to backfilling.
- H. Backfill in accordance with Section 02227.

END OF SECTION

## SECTION 02627

## WATER METERS

## PART 1 - GENERAL

## 1.1 SECTION INCLUDES

- A. Water meters for customer service, including submeters (i.e., cooling tower meters, sewer credit meters, etc.), for fire service in sizes 5/8 inch through 10 inches.

## 1.2 UNIT PRICES

- A. Measurement for water meters is on a lump sum basis for installation of each meter type and size. Owner will furnish all water meters.

## PART 2 - PRODUCTS

## 2.1 GENERAL

- A. Owner furnishes all water meters up to 2". Water meters are to be Orion meters from Badger Meter, Inc., Milwaukee, WI.

## B. CONNECTIONS AND FITTINGS

1. Connections: Provide pipe in accordance with Section 02610 and Section 02620; restrained joints only.
2. Fittings: Restrained ductile iron; push-on bell joints or mechanical joint fittings outside of meter vault installations; Class 125 flanged inside meter vaults; cement mortar lined and sealed.

## 2.2 LAYING LENGTHS

- A. The minimum length (with 1 inch tolerance) for meter and standard strainer shall be shown as indicated on the detail drawing for water meters.

## PART 3 - EXECUTION

## 3.1 TAPPING AND SERVICE LINE INSTALLATION

- A. Refer to Section 02626 for tapping requirements.
- B. Service Line:

1. Use pipe and fittings which conform to the requirements of Section 02610 - Ductile-Iron Pipe and Fittings, or Section 02620 - PVC Pipe.
2. Only pull or deflect joints to limits recommended by manufacturer.
3. Make vertical adjustments with offset bends where room will permit. Minimize number of bends.
4. Ten pipe diameters minimum of straight pipe length upstream and downstream of meter vault.

### 3.2 METER FITTING HOOKUP

- A. Support meter piping; level and plumb meter during and after installation. Meters 3 inches and larger: support at minimum two locations with concrete.
- B. Use round flanged fittings inside meter box or vault except for mechanical joint to flange adapter. Provide full-face 1/8-inch black neoprene or red rubber gasket material on flanged joints. Provide bolts and nuts made from approved corrosion-resistant material.
- C. Tighten all bolts in proper sequence and to correct torque.
- D. Visually check for leaks under normal operating pressure following installation. Repair or replace any leaking components.

END OF SECTION



SECTION 02629

POLYURETHANE COATINGS ON STEEL OR DUCTILE IRON PIPE

PART 1 - G E N E R A L

1.1 SECTION INCLUDES

- A. Two-component polyurethane coating system for use as an internal or external coating for steel or ductile iron pipe.

1.2 UNIT PRICES

- A. No separate payment will be made for work performed under this section. Include cost of polyurethane coatings in contract unit prices for steel pipe or ductile iron pipe.

1.3 SAFETY

- A. Secure, from manufacturer, Material Safety Data Sheet (MSDS) for polyurethane coatings and repair materials listed in this section.
- B. Safety requirements stated in this specification and in related sections apply in addition to applicable federal, state and local rules and regulations. Comply with instructions of coating manufacturer and requirements of insurance underwriters.
- C. Adhere to handling and application practices of SSPC-PA Guide 3; SSPC-PS Guide 17.00; Coating Manufacturer's Material Safety Data Sheet.

1.4 SUBMITTALS

- A. Submittals shall conform to requirements of all provisions and sections of these specifications.
- B. Submit coating manufacturer's catalog sheets and technical information for approval, prior to delivery of pipe.
- C. Obtain from coating manufacturer and furnish to Owner's Representative, a coating "affidavit of compliance" to requirements of this section stating that coatings were applied in factory and in accordance with manufacturer's minimum requirements.

PART 2 - PRODUCTS

2.1 COATING MATERIAL

- A. Coating Standard: ASTM D16.
- B. Coating System: Use a Coating Standard ASTM D16 Type, V system which is a 2-package polyisocyanate, polyol-cured urethane coating. The components are mixed in 1:1 ratio at time of application. The components are balanced viscosities in their liquid state and do not require agitation during use.
- C. Exterior Coating Material: CORROPIPE II-TX and Joint Coating Material CORROPIPE II-PW, as manufactured by Madison Chemical Industries, Inc., or approved equal.
- D. Internal Coating Material: Exterior Coating Material, CORROPIPE II-TX and Joint Coating Material CORROPIPE II-PW, as manufactured by Madison Chemical Industries, Inc., or approved equal.
- E. Cured Coating Properties:
  - 1. Conversion to Solids by Volume: 97 percent plus or minus 3 percent.
  - 2. Temperature Resistance: Minus 40 degrees F and plus 130 degrees F.
  - 3. Minimum Adhesion: 500 psi, when applied without primer to ductile iron pipe which has been blasted to comply with SSPC-SP10.
  - 4. Cure Time: For handling in 1 minute at 120 degrees F, and full cure within 7 days at 70 degrees F.
  - 5. Maximum Specific Gravities: Polyisocyanate resin, 1.20. Polyol resin, 1.15.
  - 6. Minimum Impact Resistance: 80 inch-pounds using 1-inch diameter steel ball where coating is applied at 30 mils to ductile iron pipe surface which has been blasted to SSPC No. 10 finish.
  - 7. Minimum Tensile Strength: 2000 psi.
  - 8. Hardness: 55 plus or minus 5 Shore D at 70 degrees F.

9. Flexibility Resistance: ASTM D1737 using 1-inch mandrel. Allow coating to cure for 7 days. Perform testing on test coupons held for 15 minutes at temperature extremes specified in Paragraph 2.01E.

## 2.2 REPAIR AND/OR TOUCHUP MATERIAL

- A. CORROPIPE II PW - TOUCHUP (two-component, brush applied); mix in accordance with coating manufacturer's recommendations.

## 2.3 PACKAGING AND LABELING

- A. Containers: Standard containers to prevent gelling, thickening deleteriously or forming of gas in closed containers within period of one year from date of manufacture.
- B. Labeling: Label each container of separately packaged component clearly and durably to indicate date of manufacture, manufacturer's batch number, quantity, color, component identification and designated name or formula specification number of coating together with special instructions. Do not use coating components older than one year.

## 2.4 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver coating materials to pipe manufacturer in sealed containers showing designated name, batch number, color, date of manufacture and name of coating manufacturer.
- B. Storage: Store material on site in enclosures, out of direct sunlight in warm, ventilated and dry area.
- C. Protection: Prevent puncture, inappropriate opening or other action which may lead to product contamination.

## PART 3 - EXECUTION

### 3.1 SURFACE PREPARATION

1. Remove deposits of oil, grease or other organic contaminants before blast cleaning by using solvent wash as specified in SSPC-SP1. Clean and dry surfaces making them completely dry, free of moisture, dust, grit, oil, grease or any other deleterious substances prior to application of coating.

2. Exterior and Interior Surfaces: SSPC-SP10; near-white metal blast cleaning. The blasting shall be done with clean, hard, sharp cutting abrasives with no steel or cast iron shot in the mix.
3. Ductile Iron Pipe: Prior to the start of production blasting, the Contractor shall prepare specimens for a white metal blast and a near-white metal blast using the equipment and abrasives proposed for the work. During preparation of the specimens, the blasting intensity and abrasive shall be changed as necessary to provide the degree of cleaning required by SSPC-SP10, except that the color of the blasted substrate is not expected to match the color of blasted steel. After examination and concurrence by the Owner's Representative, the production blasting may begin. The production blasting shall be monitored and controlled by the Contractor so that production pipe surfaces match the surface of the approved blasting specimens.

### 3.2 THICKNESS

- A. External Coatings: Minimum DFT of 25 mils (0.025 inch).
- B. Internal Coatings: Minimum DFT of 35 mils.
- C. Thickness Determinations: Use Type 1 magnetic thickness gage as described in SSPC-PA2 specification. Individual readings below 90 percent of specified minimum are not acceptable. Average individual spot readings (consisting of three point measurements within 3 inches of each other) less than 95 percent of minimum are not acceptable. Average of all spot readings less than minimum thickness specified are not acceptable.

### 3.3 FACTORY APPLICATION OF POLYURETHANE COATING

- A. Equipment: Two-component, 1:1 mix ratio, heated airless spray unit.
- B. Temperature: Minimum 5 degrees F above dew point temperature. The temperature of the surface shall not be less than 60 degrees F during application.
- C. Humidity: Heating of pipe surfaces may be required to meet requirements of 2.01E if relative humidity exceeds 80 percent.
- D. Do not thin or mix resins; use as received. Store resins at a temperature above 55 degrees F at all times.

- E. Application: Conform to coating manufacturer's recommendations. Apply directly to substrate to achieve specified thickness. Multiple-pass, one-coat application process is permitted provided maximum allowable recoat time specified by coating manufacturer is not exceeded.
- F. Recoating: Recoat only when coating has cured less than maximum time specified by coating manufacturer. When coating has cured for more than recoat time, brush-blast or thoroughly sand coating surface. Blow-off cleaning using clean, dry, high-pressure compressed air.
- G. Curing: At ambient temperature above 0 degrees F. Do not handle pipe until coating has been allowed to cure as follows:

<u>Ambient Temperature</u>	<u>Minimum Full Cure Time</u>
Over 70°F	7 days
50 to 70°F	9 days
0 to 50°F	12 days

3.4 JOINTS

- A. Apply coating to unlined pipe surfaces including inside of bell socket and outside of spigot.
- B. Joint Coating Materials: CORROPIPE II PW (instant-set, two-component material, plural component spray applied), or CORROPIPE II PW -TOUCHUP (two-component, brush applied).
- C. Coating thickness on sealing areas of spigot end of pipe exterior: Minimum 8 mils (0.008 inch), maximum of 10 mils (0.010 inch). Maximum 10 mils may be exceeded in spigot end provided maximum spigot diameter as specified by pipe manufacturer is not exceeded.

3.5 INSPECTION

- A. Owner's Representative may inspect coatings at coating applicator's facilities.
- B. Holiday Inspection: AWWA C210, Section 5.3.3.1. Follow coating manufacturer's recommendation. Conduct inspection any time after coating has reached initial cure. Repair in accordance with paragraph 3.07, Repair and Field Touchup.

### 3.6 PIPE INSTALLATION

- A. For wastewater projects, provide services of manufacturer's representative for period of not less than 2 weeks at beginning of actual pipe laying operations to advise Contractor regarding installation including but not limited to handling and storing, cleaning and inspecting, coatings repairs, and general construction methods as to how they may affect pipe coatings.
- B. Handling, Shipment, and Storage: Nylon straps, padded lifts and padded storage skids are required. Field cuts should be kept to minimum. Repair damage to coating due to handling or construction practices at no additional cost to. See Section 02610 - Ductile Iron Pipe and Fittings and Section 02611 - Steel Pipe and Fittings for additional requirements.
- C. Just before each section of pipe is to be placed into the trench, conduct a visual and holiday inspection. Defects in the coating system shall be repaired before the pipe is installed.

### 3.7 REPAIR AND FIELD TOUCHUP

- A. Apply repair/touchup materials in conformance with factory application of polyurethane coating requirements specified in this section, excluding equipment requirements.
- B. Repair Procedure - Holidays:
  - 1. Remove all traces of oil, grease, dust, dirt, etc.
  - 2. Roughen area to be patched by sanding with rough grade sandpaper (40 grit).
  - 3. Apply one coat of repair material described above. Work repair material into scratched surface by brushing.
- C. Repair Procedure - Field Cuts or Large Damage:
  - 1. Remove burrs from field cut ends or handling damage and smooth out edge of polyurethane coating.
  - 2. Remove all traces of oil, grease, dust, dirt, etc.

3. Roughen area to be patched with rough grade sandpaper (40 grit). Feather edges and include overlap of 1 inch to 2 inches of roughened polyurethane in area to be patched.
  4. Apply thick coat of repair material described above. Work repair material into scratched surface by brushing. Feather edges of repair material into prepared surface. Cover at least 1 inch of roughened area surrounding damage, or adjacent to field cut.
- D. For Wastewater Projects; Repair Procedure - Thermite Brazed Connection Bonds:
1. Remove polyurethane coating from area on metal surface which is to receive thermite brazed connection with power wire brush.
  2. Grind metal surface to shiny metal with power grinder and coarse grit grinding wheel.
  3. Apply thermite brazed connection using equipment, charge and procedure recommended by manufacturer of thermite equipment.
  4. After welded surface has cooled to temperature below 130 F, apply protective coating repair material to weld, exposed pipe surface and damaged areas of polyurethane coating.
  5. Do not cover or backfill freshly repaired areas of coating at thermite brazed connection until repair material has completely cured. Allow material to cure in conformance with manufacturer's recommendations.

END OF SECTION

## SECTION 02630

## POLYETHYLENE WRAP

## PART 1 - GENERAL

## 1.01 SECTION INCLUDES

- A. Polyethylene wrap for cast and ductile iron pipe to be used only in open-cut construction when cathodic protection system is not required by Drawings.

## 1.02 UNIT PRICES

- A. No separate payment will be made for polyethylene wrap. Include cost of polyethylene wrap in unit price for items wrapped.

## 1.03 SUBMITTALS

- A. Submit product data in accordance with all provisions and sections of these specifications.
- B. Submit product data for proposed film and tape for approval.

## PART 2 - PRODUCTS

## 2.01 MATERIALS

- A. Polyethylene Film: Tubular or sheet form without tears, breaks, holidays or defects: conforming to requirements of AWWA C 105, 2.5 to 3 percent carbon black content, either low- or high-density:
  - 1. Low-density polyethylene film. Low-density polyethylene film shall be manufactured of virgin polyethylene material conforming to the following requirements of ASTM D 1248.
    - a. Raw material.
      - 1) Type : I
      - 2) Class: C (black)
      - 3) Grade: E-5

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- 4) Flow rate (formerly melt index): 0.4 g/10 minute, maximum
  - 5) Dielectric strength: Volume resistivity,  $10^{15}$  ohm-cm, minimum
- b. Physical properties.
- 1) Tensile strength: 1200 psi, minimum
  - 2) Elongation: 300 percent, minimum
  - 3) Dielectric strength: 800 V/mil thickness, minimum
- c. Thickness: Low-density polyethylene film shall have a normal thickness of 0.008 inch. The minus tolerance on thickness is 10 percent of the nominal thickness.
2. High-density, cross-laminated polyethylene film. High-density, cross laminated polyethylene film shall be manufactured of virgin polyethylene material conforming to the following requirements of ASTM D 1248
- a. Raw material.
- 1) Type: III
  - 2) Class: C (black)
  - 3) Grade: P33
  - 4) Flow rate (formerly melt index): 0.4 to 0.5g/10 minute, maximum
  - 5) Dielectric strength: Volume resistivity,  $10^{15}$  ohm-cm, minimum
- b. Physical properties.
- 1) Tensile strength: 5000 psi, minimum
  - 2) Elongation: 100 percent, minimum
  - 3) Dielectric strength: 800 V/mil thickness, minimum
- c. Thickness: Film shall have a nominal thickness of 0.004 inch. The minus tolerance of thickness is 10 percent of the nominal thickness.

3. Polyethylene Tape: Provide 3-inch wide, plastic-backed, adhesive tape; Polyken No. 900, Scotchwrap No. 50, or equal.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

#### A. Preparation:

1. Remove all lumps of clay, mud, cinders, etc., on pipe surface prior to installation of polyethylene encasement. Prevent soil or embedment material from becoming trapped between pipe and polyethylene.
2. Fit polyethylene film to contour of pipe to effect a snug, but not tight; encase with minimum space between polyethylene and pipe. Provide sufficient slack in contouring to prevent stretching polyethylene where it bridges irregular surfaces, such as bell-spigot interfaces, bolted joints, or fittings, and to prevent damage to polyethylene due to backfilling operations. Secure overlaps and ends with adhesive tape to hold polyethylene encasement in place until backfilling operations are complete.
3. For installations below water table and/or in areas subject to tidal actions, seal both ends of polyethylene tube with adhesive tape at joint overlap.

#### B. Tubular Type (Method A):

1. Cut polyethylene tube to length approximately 2 feet longer than pipe section. Slip tube around pipe, centering it to provide 1-foot overlap on each adjacent pipe section, and bunching it accordion-fashion lengthwise until it clears pipe ends.
2. Lower pipe into trench and make up pipe joint with preceding section of pipe. Make shallow bell hole at joints to facilitate installation of polyethylene tube.
3. After assembling pipe joint, make overlap of polyethylene tube. Pull bunched polyethylene from preceding length of pipe, slip it over end of new length of pipe, and secure in place. Then slip end of polyethylene from new pipe section over end of first wrap until it overlaps joint at end of preceding length of pipe. Secure overlap in place. Take up slack width at top of pipe to make a snug, but not tight, fit along barrel of pipe, securing fold at quarter points.

4. Repair cuts, tears, punctures, or other damage to polyethylene. Proceed with installation of next section of pipe in same manner.
- C. Tubular Type (Method B):
1. Cut polyethylene tube to length approximately 1 foot shorter than pipe section. Slip tube around pipe, centering it to provide 6 inches of bare pipe at each end. Take up slack width at top of pipe to make a snug, but not tight, fit along barrel of pipe, securing fold at quarter points; secure ends.
  2. Before making up joint, slip 3-foot length of polyethylene tube over end of preceding pipe section, bunching it accordion-fashion lengthwise. After completing joint, pull 3-foot length of polyethylene over joint, overlapping polyethylene previously installed on each adjacent section of pipe by at least 1 foot; make each end snug and secure.
  3. Repair cuts, tears, punctures, or other damage to polyethylene. Proceed with installation of next section of pipe in same manner.
- D. Sheet Type:
1. Cut polyethylene sheet to a length approximately 2 feet longer than pipe section. Center length to provide 1-foot overlap on each adjacent pipe section, bunching it until it clears pipe ends. Wrap polyethylene around pipe so that it circumferentially overlaps top quadrant of pipe. Secure cut edge of polyethylene sheet at intervals of approximately 3 feet.
  2. Lower wrapped pipe into trench and make up pipe joint with preceding section of pipe. Make shallow bell hole at joints to facilitate installation of polyethylene. After completing joint, make overlap and secure ends.
  3. Repair cuts, tears, punctures, or other damage to polyethylene. Proceed with installation of next section of pipe in same manner.
- E. Pipe-shaped Appurtenances: Cover bends, reducers, offsets, and other pipe-shaped appurtenances with polyethylene in same manner as pipe.
- F. Odd-shaped Appurtenances: When it is not practical to wrap valves, tees, crosses, and other odd-shaped pieces in tube, wrap with flat sheet or split length of polyethylene tube by passing sheet under appurtenance and bringing it up around body. Make seams by bringing edges together, folding over twice, and taping down. Tape polyethylene securely in place at valve stem and other penetrations.

- G. Repairs: Repair any cuts, tears, punctures, or damage to polyethylene with adhesive tape or with short length of polyethylene sheet or cut open tube, wrapped around pipe to cover damaged area, and secured in place.
- H. Openings in Encasement: Provide openings for branches, service taps, blow offs, air valves, and similar appurtenances by making an X-shaped cut in polyethylene and temporarily folding back film. After appurtenance is installed, tape slack securely to appurtenance and repair cut, as well as other damaged area in polyethylene, with tape. Service taps may also be made directly through polyethylene, with any resulting damaged areas being repaired as described above.
- I. Junctions between Wrapped and Unwrapped Pipe: Where polyethylene-wrapped pipe joins an adjacent pipe that is not wrapped, extend polyethylene wrap to cover adjacent pipe for distance of at least 3 feet. Secure end with circumferential turns of tape. Wrap service lines of dissimilar metals with polyethylene or suitable dielectric tape for minimum clear distance of 3 feet away from cast or ductile iron pipe.

END OF SECTION

## SECTION 02640

## GATE VALVES

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Furnishing and installing gate valves for underground/buried use. See section 15101 for above ground service.

## 1.02 UNIT PRICES

- A. No separate payment will be made for work performed under this Section. Include payment in unit price for relate work.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of Section 01300 - Submittals.
- B. Submit manufacturer's product data for proposed valves for approval.

## 1.04 QUALITY CONTROL

- A. Provide manufacturer's affidavit that all gate valves have been satisfactorily tested in the United States in accordance with AWWA C500 and C509.

## PART 2 PRODUCTS

## 2.01 MATERIALS

- A. Gate Valves: AWWA C500, C509 and additional requirements of this Section; direct bury and in subsurface vaults open counterclockwise.
- B. If type of valve is not indicated on Drawings, gate valves shall be used as line valves for sizes less than 16-inches. If type of valve is specified, no substitute will be allowed.
- C. Gate Valves 1-1/2 Inches in Diameter and Smaller: 125 psig; bronze; rising-stem; single-wedge; disc type; screwed ends; Crane No. 428, or equal.
- D. Coatings for Gate Valves 2 Inches and Larger: AWWA C550; Indurall 3300 or approved equal; non-toxic; not impart taste to water; function as physical, chemical, and electrical barrier between base metal and surroundings; minimum 8-mil-thick; fusion-bonded epoxy; prior to assembly of valve, apply protective coating to interior and exterior surfaces of body.
- E. Gate Valves 2 Inches in Diameter: Iron body; double gate; non-rising stem; 150-pound test; 2-inch square nut operating clockwise to open.

- F. Gate Valves 4 Inches to 12 Inches in Diameter: Non-directional; resilient seated (AWWA C509) or parallel seat double disc (AWWA C500); 200 psig; bronze mounting; push-on bell ends with rubber joint rings and nut operated unless otherwise specified; resilient seated provide American Darling 2500-1, US Pipe Metroseal 200 or approved equal; double disc provide American Darling 52, Clow F-6110 or approved equal; and comply with following:
1. Design: Fully encapsulated rubber wedge or rubber seat ring mechanically attached with minimum 304 stainless steel fasteners or screws; threaded connection isolated from water by compressed rubber around opening.
  2. Body: Cast or ductile iron; flange bonnet and stuffing box together with ASTM A307 Grade B bolts. Cast in body manufacturer's initials, pressure rating, and year manufactured.
  3. Bronze: Valve components in waterway to contain not more than 15 percent zinc and not more than 2 percent aluminum.
  4. Stems: ASTM B763 bronze, alloy number 995 minimum yield strength of 40,000 psi; minimum elongation in 2-inches of 12%; non-rising.
  5. "O" Rings: AWWA C509, sections 2.2.6 and 4.8.2.
  6. Stem Seals: Consist of three "O" rings, two above and one below thrust collar with anti-friction washer located above thrust collar.
  7. Stem Nut: Independent or integrally cast of ASTM B62 bronze.
  8. Resilient Wedge: Molded; synthetic rubber; vulcanized and bonded to cast or ductile iron wedge or attached with 304 stainless steel screws tested to meet or exceed ASTM D429 Method B; seat against epoxy-coated surface in valve body.
  9. Bolts: AWWA C509 Section 2.2.5; stainless steel; cadmium plated, or zinc coated.
- G. Gate Valves 14 Inches to 24 Inches in Diameter: AWWA C500; push-on bell ends with rubber rings and nut operated unless otherwise specified; double disc; 150 psi; and comply with following:
1. Body: Cast or ductile iron; flange together bonnet and stuffing box with ASTM A307 Grade B bolts. Cast in body manufacturer's initials, pressure rating, and year manufactured. Equipped with rollers, tracks and scrapers.
  2. Stems: Machined from ASTM B62 bronze rod with integral forged thrust collar machined to size; non-rising.
  3. Stem Seals: Consist of one "O" ring above and one "O" ring below thrust collar with anti-friction washer located above thrust collar for operating torque.

4. Stem Nut: Independent or integrally cast of ASTM B62 bronze.
  5. Discs: Cast iron with bronze disc rings securely peened into machined dovetailed grooves.
  6. Wedging Device: Solid bronze or cast-iron, bronze-mounted wedges. Thin plates or shapes integrally cast into cast-iron surfaces are acceptable. Other moving surfaces integral to wedging action shall be bronze monel or nickel alloy-to-iron.
  7. Bronze Mounting: Built as integral unit mounted over, or supported on, cast-iron base and of sufficient dimensions to be structurally sound and adequate for forces which will be imposed on it.
  8. Gear Cases: Cast iron; furnished on all 18-inch and larger valves and of extended type with steel side plates; lubricated; gear case enclosed with oil seal or O-rings at all shaft openings.
  9. Stuffing Boxes: Located on top of bonnet and outside gear case.
- H. Gate Valves 20 Inches and Larger: Furnish and equip with bypass valves.
1. Sizes: Provide 3-inch bypass valves for 16-inch through 20-inch gate valves. Provide 4-inch bypass valves for 24-inch gate valves.
- I. Valves 4 Inches through 12 Inches for Installation in Vertical Pipe Lines: Double disc, square bottom.
- J. Valves 14 Inches and Larger for Installation in Horizontal Pipe Lines: Equipped with bronze shoes and slides.
- K. Gate Valves Installed at Greater than 4-foot Depth: Provide non-rising, extension stem having coupling sufficient to attach securely to operating nut of valve. Upper end of extension stem shall terminate in square wrench nut no deeper than 4 feet from finished grade.
- L. Gate Valves in Factory Mutual (Fire Service) Type Meter Installations: Conform to provisions of this specification; outside screw and yoke valves; carry label of Underwriters' Laboratories, Inc.; flanged, Class 125; clockwise to close.
- M. Provide flanged joints when valve is connected to steel.

## PART 3 EXECUTION

### 3.01 EARTHWORK

- A. Conform to applicable provisions of Section 02227 - Excavation and Backfilling for Utilities.

### 3.02 SETTING VALVES AND VALVE BOXES

- A. Remove foreign matter from within valves prior to installation. Inspect valves in open and closed positions to verify that all parts are in satisfactory working condition.
- B. Install valves and valve boxes where shown on Drawings or as located by the Owner's Representative. Set valves plumb and as detailed. Center valve boxes on valves. Carefully tamp earth around each valve box for minimum radius of 4 feet, or to undisturbed trench face if less than 4 feet. Install valves completely closed when placed in water line.
- C. Regardless of type of pipe used in water line construction, pipe section of each valve box must be of cast iron, ductile iron, or DR18 PVC pipe cut to proper length. Size to allow proper future operation of valve. Assemble and brace box in vertical position as indicated on drawings.

### 3.03 DISINFECTION AND TESTING

- A. Disinfect valves and appurtenances as required by Section 02675.

### 3.04 PAINTING OF VALVES

- A. Paint valves in vaults, stations and aboveground using ACRO Paint No. 2215, "Galveston Blue" or approved equal, unless otherwise directed by the Owners Representative.

END OF SECTION



SECTION 02645

FIRE HYDRANT ASSEMBLY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire hydrants.

1.02 UNIT PRICES

- A. Measurement is on a lump sum basis for each fire hydrant assembly installed. Fire hydrant assembly includes the fire hydrant and gate valve and box as shown on the standard details.
- B. Measurement for fire hydrant branches (leads) is on a linear foot basis for each branch installed measured from the main to the gate valve. Separate payment will be made for open cut and augered branches.
- C. Measurement for removing and salvaging of fire hydrants is on a lump sum basis for each fire hydrant removed. This includes removing hydrant and valve if available, plugging branch line and removing materials from site. Return salvage fire hydrants to Owner.

1.03 SUBMITTALS

- A. Submit product data in accordance with all provisions and sections of these specifications.
  - 1. Control drawing(s) for proposed hydrant: Include model number, parts list, and material specifications, unique drawing number and descriptive legend identifying hydrant. Such drawing(s) should be same as approval drawing(s) on file with the Owner.
  - 2. Material safety data sheets for lubricants.
  - 3. Affidavit of compliance for coating materials.
  - 4. Certified hydraulic performance test report for proposed hydrant.

PART 2 PRODUCTS

2.01 HYDRANT MATERIALS

- 
- A. Hydrants: AWWA C502; dry barrel design; tamper resistant; same manufacturer throughout project.
1. "O" Ring Seal Packing: Prevent water leakage between barrel and lubrication chamber. Provide dynamic seals of Buna "N" or other oil resistant material and static seals of Buna "N" or other approved synthetic rubber.
  2. Bronze: Hydrant components in waterway to contain not more than 15 percent zinc and not more than 8 percent lead.
  3. Acceptable Manufacturer: Mueller Super Centurian 250, American Darling B84B or approved equal.
- B. Operating Stems: Everdur, or other high-quality non-corrodible metal where threads are located in barrel or waterway. Bronze-to-bronze working parts in waterway; genuine wrought iron or steel where threads are not located in barrel or waterway, bronze bushed at penetration of stuffing box; seal threads against contact with water regardless of open or closed position of main valve. Connect operating stems with breakable coupling.
- C. Main Valve (shut-off valve): Circular; compression-type; closes with line pressure; minimum opening of 5-1/4 inches in diameter. Seal bottom end of stem threads from contact with water with cap nut.
- D. Valve Mechanism: Bronze valve seat ring threaded into bronze drain ring; seat ring and main valve assembly removable from above ground through upper barrel with lightweight seat removal wrench; breakable stem coupling opposite barrel breakaway; bronze or corrosion-resistant pins and locking devices; bronze valve stem sleeve, O-ring seals and travel stop; sealed lubricating reservoir at top and bottom which fully lubricates threads and bearing surfaces when opening or closing main valve; thrust bearing or lubricated thrust collar for operating assembly. Lubricants: Food Grade. Valve Seat: Molded "Natural" rubber; scale durometer rating of  $90\pm 5$ ; minimum thickness of 1/2 inch. Natural Rubbers: Resistant to microbiological attack.
- E. Lower Hydrant Barrel: Single piece coupled to upper barrel to allow 360-degree rotation of upper barrel. Bury Length: Distance from bottom of inlet to ground line as specified. Ground Line: Clearly marked on barrel. Indicate inside diameter and wall thickness (with tolerances) for upper barrel, lower barrel, and bonnet sections. Show dimensions at minimum sections to demonstrate compliance with Paragraph 3.2.6 of AWWA C502.
- F. Extensions: Permit use of one or more standard extensions available from manufacturer in lengths from 6 inches to 60 inches in 6-inch increments.

- G. Provide hydrants with automatic, positively operating, non-corrodible drain or drip valve to drain hydrant completely when main valve is shut. Bronze or corrosion resistant drain line. Tapping of drain holes is not required.
- H. Inlet Connection: Elbow with AWWA Standard bell designed for 6-inch mechanical joint, or push-on. Joints: ANSI A21.11; AWWA C111.
- I. Operating Nut and Hold-down Nuts: Stainless steel or cast or ductile iron with bronze inserts or, as an alternative, provide security device with bronze operating nut. Any such security devices shall not require special tools for normal off/on operation of hydrant. Fabricate hold-down assemblies of suitable metallic materials for service intended.
- J. Field-Replaceable Nozzles: NFPA No. 194, ANSI B26-1925; mechanically attached to hydrant body counterclockwise; sealed with "O" rings and mechanically located into place; provide two hose nozzles with 2-1/2 inch nominal inside diameter and one pumper nozzle with 4-inch nominal inside diameter; with integral Storz connections.
- K. Pumper Nozzle: Allow a minimum unobstructed radius of 10 inches from threaded surface of nozzle throughout path of travel of wrench or other device used to fasten hose to nozzle.
- L. Nozzle Caps: Security chains to hydrant barrel, minimum 1/8-inch diameter; "Natural" rubber or neoprene gasket seals.
- M. Hydrant shoe with 6-inch cast or ductile iron pipe diameter inlet, flanged, swivel or slip joint with harnessing lugs for restrained joints. Underground flanging shall incorporate minimum of six full 3/4-inch diameter electro-galvanized or cadmium coated steel bolts or four 5/8-inch diameter stainless or cadmium coated steel bolts.
- N. Provide traffic model hydrants equipped with safety flange on hydrant barrel and stem. Equip body of hydrant with breakable flange, or breakable bolts, above finish grade.
- O. Lubricate hydrants with food grade oil or with grease meeting requirements of FDA 21 CFR 178.3570 and manufactured with FDA approved oxidation inhibitors.
- P. Accomplish replenishment of lubricant for hydrant working parts without removing hydrant bonnet. Store lubricant system in reservoir. Lubricate bearing surfaces and working parts during normal operation of fire hydrant.
- Q. Hydrant Painting: Shop coated as follows:
  - 1. Exterior Above Traffic Flange (including bolts and nuts)

- a. Surface Preparation: SSPC-SP10 (NACE 2); near white blast cleaned surface.
- b. Coat upper barrel with an E-Coat primer and a two-part polyurethane top coat:

(1) Finish coating shall be field applied and color coded when installed in accordance with the following values that can be obtained from the City's Fire Marshalls office:

Flow rate greater than 1500 gpm: Light Blue

Flow rate from 1000-1499 gpm: Green

Flow rate from 500-999 gpm: Orange

Flow rate less than 500 gpm: Red

(2) Colors: Primer: Manufacturers standard color. Finish coat of hydrant body: Red (Acro 555 crystal blue or equivalent).

2. Exterior Below Traffic Flange:

- a. Surface Preparation: SSPC-SP10 (NACE 2); near white blast cleaned surface.
- b. Coat with a three (3) coat system as follows:

(1). Primer and Intermediate Coat: Cal tar epoxy, Acro Products No. 4467, or approved equal; SSPC Paint Specification No. 16. Apply two (2) coats with a dry film thickness (DFT) of 8 - 10 mils each for a total dry film thickness (DFT) of 16 - 20 mils.

(2). Finish Coat: Water based vinyl acrylic mastic, Acro Products No. 7782, or approved equal. Apply one (1) coat with a dry film thickness (DFT) of 6 - 8 mils. Finish coat color: Same as finish coat for exterior above traffic flange, i.e. red (Acro 555 crystal blue or equivalent).

3. Interior Surfaces Above and Below Main Valve:

- a. All materials used for internal coating of hydrant interior ferrous surfaces must conform to ANSI/NSF Standard 61 as suitable for contact with potable water as required by Chapter 290, Rules and

Regulations for Public Water Systems, Texas Commission on Environmental Quality (TCEQ).

- b. Surface Preparation: SSPC-SP10 (NACE 2); near white blast cleaned surfaces.
  - c. Coating: Liquid or powder epoxy system; AWWA Standard C550, latest revision. Coating may be applied in two (2) or three (3) coats, according to manufacturer's recommendations, for a total dry film thickness (DFT) of 12 - 18 mils.
4. General Coating Requirements:
- a. Coatings: Applied in strict accordance with manufacturer's recommendations. No requirements of this specification shall cancel or supersede written directions and recommendations of specific manufacturer so as to jeopardize integrity of applied system.
  - b. Hydrant supplier shall furnish an affidavit of compliance that all materials and work furnished complies with requirements of this specification and applicable standards referenced herein.

## 2.02 HYDRANT PERFORMANCE STANDARDS

### A. Hydraulic Performance Standards:

1. Provide hydrants capable of a free discharge of 1500 gpm or greater from single pumper nozzle at a hydrant inlet static pressure not exceeding 20 PSIG as measured at or corrected to hydrant inlet at its centerline elevation.
2. Provide hydrants capable of a discharge of 1500 gpm or greater from single pumper nozzle at a maximum permissible head loss of 8.0 psig (when corrected for inlet and outlet velocity head) for an inlet operating pressure not exceeding 37 psig as measured at or corrected to hydrant inlet at its centerline elevation.

### B. Hydraulic Performance Testing: AWWA C502; conduct certified pressure loss and quantity of flow test by qualified testing laboratory on production model (5-foot bury length) of hydrant (same catalog number) proposed for certification. Submit certified test report containing following information:

1. Date of test, no more than five years prior to date of proposed use, on fire hydrant with similar hydraulic characteristics.

2. Name, catalog number, place of manufacture, and date of production of hydrant(s) tested.
  3. Schematic drawing of testing apparatus, containing dimensions of piping elements including:
    - a. Inside diameter and length of inlet piping.
    - b. Distance from flow measuring points to pressure measurement point.
    - c. Distance from flow and pressure monitoring points to hydrant inlet.
    - d. Distance from pressure monitoring point to nozzles.
    - e. Inside diameter and length of discharge tubing.
  4. Elevation of points of measurement, inlet, and
  5. Reports or certificates documenting accuracy of measuring devices used in test.
  6. Conduct test on at least three separate hydrants of same fabrication design. Inlet water temperature: 70 degrees F  $\pm$  5 degrees F.
- C. Provide hydrants equipped with breakable barrel feature and breakable valve stem coupling such that vehicular impact will result in clean and complete break of barrel and valve stem at breakable feature. Provide hydrant shutoff valve which remains closed and tight against leakage upon impact.

## 2.03 LEADS

- A. Branches (Leads): Conform to requirements of Section 02610 - Ductile-Iron Pipe and Fittings, Section 02611 - Steel Pipe and Fittings, and Section 02620 - PVC Pipe.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. Set fire hydrant plumb and brace at locations and grades as shown on Drawings. When barrel of hydrant passes through concrete slab, place a piece of standard sidewalk expansion joint material, 3/4 inch thick, around section of barrel passing through concrete.
- B. Locate nozzle centerline minimum 18 inches and a maximum of 24" above finish grade.

- C. Place 12-inch x 12-inch yellow indicators (plastic, sheet metal, plywood, or other material approved by Owner's Representative) on pumper nozzles of new or relocated fire hydrants installed on new mains not in service. Remove indicators after new main is tested and approved by Owner's Representative.
- D. Do not cover drain ports when placing concrete thrust block.
- E. All changes in profile from approved plans due to obstructions not shown on plans which require a change in depth of bury of fire hydrant shall be approved in writing by Owner's Representative for design prior to installation of hydrant. Any adjustment required in flow line of water main or to barrel length of fire hydrant shall be incidental to unit price of fire hydrant and no separate payment shall be made for such adjustments.
- F. Remove and dispose of fire hydrants shown on Drawings as per paragraph 1.02 C.
- G. Owner may, at any time prior to or during installation of hydrants for a specific project, randomly select a furnished hydrant for disassembly and laboratory inspection, at Owner's expense, to verify compliance with Owner's requirements. If such hydrant is found to be non-compliant, replace at Contractor's expense, all or a portion of furnished hydrants with hydrants that comply with Owner's requirements.
- H. Install branches (leads) in accordance with Section 02664 - Water Mains.

END OF SECTION

SECTION 02664

WATER MAINS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Installation of water mains.

1.02 UNIT PRICES

- A. Measurement for water mains open cut or augered with or without casing is on a linear foot basis for each size of pipe installed.
  - 1. Mains: Measure along axis of pipe and include fittings and valves.
  - 2. Branch Pipe: Measure from axis of main to end of branch.

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all provisions and sections of these specifications.
- B. Conform to submittal requirements of applicable specification section for type of pipe used.
- C. Submit preconstruction and post construction photographs if required.

PART 2 PRODUCTS

2.01 PIPE MATERIALS

- A. Install pipe materials (as per this section) which conform to following:
  - 1. Section 02610 - Ductile Iron Pipe (DIP) and Fittings.
  - 2. Section 02611 - Steel Pipe and Fittings.
  - 3. Section 02620 - Polyvinyl Chloride (PVC) Pipe.
- B. Types of pipe materials used are identified on Drawings.

PART 3 EXECUTION



### 3.01 GENERAL

- A. Conform to applicable specification sections for types of pipe used.
- B. Employ workmen who are skilled and experienced in laying pipe of type and joint configuration being furnished. Provide watertight pipe and pipe joints. Lay pipe with bell ends facing in direction of laying.
- C. Lay pipe to lines and grades shown on drawings. Use adequate surveying methods and equipment and employ personnel competent in use of this equipment. Horizontal and vertical deviations from alignment as indicated on Drawings shall not exceed 0.10 feet. Measure and record "as-built" horizontal alignment and vertical grade for on-site record drawings.
- D. Confirm that separation from gravity sanitary sewers and manholes or force mains have minimum clearance of nine feet in all directions unless a special design is provided for on the drawings.
- E. Where above clearance cannot be attained, and a special design has not been provided on Drawings, obtain direction from Owner's Representative before proceeding with construction.
- F. Inform Owner's Representative if any unmetered sprinkler or fire line connections exist which are not shown on Drawings to be transferred to new main. Make transfer only after approval by Owner's Representative.
- G. Keep pipe trenches free of water which might impair pipe laying operations. Prevent pipe bells from coming in contact with subgrade. Grade pipe trenches to provide uniform support along bottom of pipe. Excavate for bell holes for proper sealing of pipe joints after bottom has been graded and in advance of placing pipe. Lay not more than 100 feet of pipe in trench ahead of backfilling operations. Cover or backfill laid pipe if pipe laying operations are interrupted and during non-working hours. Place all backfill carefully and simultaneously on each side of pipe to avoid lateral displacement of pipe and damage to joints. If adjustment of pipe is required after it has been laid, remove and re-lay as new pipe.
- H. Owner will handle, at no cost to Contractor, all operations involving opening and closing valves for wet connections and for chlorination. Contractor is responsible for handling all necessary installations and removal of all chlorination and testing taps and risers.

### 3.02 HANDLING, CLEANING AND INSPECTION

- A. Handling:

1. Place pipe along project site where storm water or other water will not enter or pass through pipe.
  2. Pipe and Fittings: Loaded, transported, unloaded and otherwise handled in manner and by methods which will prevent damage of any kind thereto. Handle and transport pipe with equipment designed, constructed and arranged to prevent damage to pipe, lining and coating. Do not permit bare chains, hooks, metal bars, or narrow skids or cradles to come in contact with coatings. Where required, provide pipe fittings with sufficient interior strutting or cross bracing to prevent deflection under their own weight.
  3. Hoist pipe from trench side into trench by means of sling of smooth steel cable, canvas, leather, nylon or similar material.
  4. Use every precaution to prevent injury to pipe, protective linings and coatings.
    - a. Package stacked pipe on timbers. Place protective pads under banding straps at time of packaging.
    - b. Pad fork trucks using carpet or some other suitable type of material. Use nylon straps around pipe for lift when relocating pipe with crane or backhoe.
    - c. Do not lift pipe using hooks at each end of pipe.
  5. Repair damage to pipe or protective lining and coating before final acceptance by Owner at no additional cost to Owner.
  6. Reject pipe with visible cracks and remove from project site.
- B. Cleaning: Thoroughly clean and dry interior of pipe and fittings of foreign matter before installation, and keep interior clean until Work has been accepted. Keep joint contact surfaces clean until jointing is completed. Do not place debris, tools, clothing or other materials in pipe. After all pipe laying and joining operations are completed, clean inside of pipe and remove all debris.
- C. Inspection: Before installation, inspect each pipe and fitting for defects. Reject defective, damaged or unsound pipe and fittings and remove them from site.

### 3.03 EARTHWORK

- A. Conform to applicable provisions of Section 02227 - Excavation and Backfilling for Utilities and Section 02317 - Augering Pipe for Water Lines.

- B. Bedding: Use bedding materials in conformance with Section 02229 - Utility Backfill Materials and detail in Drawings.
- C. Backfill: Use bank run sand or earth or native soil as specified in Section 02229 - Utility Backfill Materials and in accordance with detail in Drawings.
- D. Place material in uniform layers of prescribed maximum loose thickness and wet or dry material to approximately optimum moisture content. Compact to prescribed density. Take laboratory field density tests at Owner's Representative's discretion.
- E. Pipe Zone: Including 6-inch pipe bedding and backfill to 12 inches above top of pipe.

### 3.04 PIPE CUTTING

- A. Cut pipe 12-inch and smaller with standard wheel pipe cutters. Cut pipe larger than 12-inch in manner approved by Owner's Representative. Make all cuts smooth and at right angles to axis of pipe. Bevel plain end with heavy file or grinder to remove sharp edges.

### 3.05 PIPING INSTALLATION

- A. Do not lay pipe unless subgrade is free of water. Do not lay pipe when it is raining or when trench is muddy or soft. Make adjustments of pipe to line and grade by scraping away subgrade or filling in with granular material. Wedging or blocking up bell will not be acceptable.
- B. Do not install pipe at greater depth than its design allows.
- C. Protection of Pipeline: Securely place stoppers or bulkheads in all openings and in end of line when construction is stopped temporarily and at end of each day's work.
- D. For nonmetallic pipe, install magnetic locator tape continuously along the top of the pipe.

### 3.06 JOINTS AND JOINTING

- A. Rubber Gasketed Bell-and-Spigot Joints (PVC and DIP):
  - 1. Lubricate gaskets with nontoxic water-soluble lubricant before pipe units are joined.
  - 2. Fit pipe units together in manner to avoid twisting or otherwise displacing or damaging rubber gasket.

3. After the pipe sections are joined, check gaskets to ensure that no displacement of gasket has occurred. If displacement has occurred, remove pipe section and remake joint as for new pipe. Remove old gasket, inspect for damage and replace if necessary before remaking joint.
  4. Where preventing movement of 12" diameter or greater pipe due to thrust is necessary, provide the following restrained joints, or equal:
    - a. Ductile-Iron Pipe:
      - (1). Super-Lock Joint by Clow Corporation.
      - (2). Flex-Ring or Lok-Ring by American Cast Iron Pipe Company.
      - (3). TR-Flex or Field-Lok Joint by U.S. Pipe and Foundry Company.
    - b. PVC Pipe:
      - (1). Fittings: Series 2000 PV Fitting Restrainer by Ebba Iron, Inc.(MEGALUG), or approved equal.
      - (2). Bell and Spigot: Series 1600 Joint Restrainer by Ebba Iron, Inc., or approved equal.
    - c. Steel Pipe: Welded joints (see Part 3.05C)
- B. Flanged Joints (DIP, Steel):
1. AWWA C207. Prior to installation of bolts, accurately center and align flanged joints to prevent mechanical prestressing of flanges, pipe and equipment. Align bolt holes to straddle vertical, horizontal or north-south centerline. Do not exceed 3/64 inch per foot inclination of flange face from true alignment.
  2. Use full-face gaskets for all flanged joints. Provide 1/8-inch thick cloth inserted rubber gasket material. Cut gaskets at the factory to proper dimensions.
  3. Use galvanized or black nuts and bolts to match flange material. Use cadmium-plated steel nuts and bolts underground. Tighten bolts progressively to prevent unbalanced stress. Draw bolts tight to ensure proper seating of gaskets.
- C. Welded Joints (Steel):

1. Joints: AWWA C206. Full-fillet, single lap-welded slip type either inside or outside, or double butt-welded type; use automatic or hand welders; provide complete penetration of deposited metal with base metal; provide filler metal suitable for use with base metal; keep inside of fittings and joints free from globules of weld metal which would restrict flow or become loose. Do not use mitered joints. For interior welded joints, complete backfilling before welding. For exterior field-welded joints, provide adequate working room under and beside pipe. Use exterior welds for 30-inch and smaller.
2. Bell-and-Spigot, Lap-Welded Slip Joints: Deflection may be taken at joint by pulling joint up to 3/4 inch as long as 1-1/2-inch minimum lap is maintained. Spigot end may be miter cut to take deflections up to 5 degrees as long as proper joint tolerances are maintained. Miter end cuts of both ends of butt-welded joints may be used for joint deflections of up to 5 degrees.
3. Align piping and equipment so that no part is offset more than 1/8 inch. Set all fittings and joints square and true, and preserve alignment during welding operation. For butt-welded joints, align abutting ends to minimize offset between surfaces. For pipe of same nominal wall thickness, do not exceed 1/16 inch offset. Use line-up clamps for this purpose; however, care shall be taken to avoid damage to linings and coatings.
4. Protect coal-tar-epoxy lining during welding by draping an 18-inch-wide strip of heat-resistant material over top half of pipe on each side of lining holdback to avoid damage to lining by hot splatter. Protect tape coating similarly if external welding is required.
5. Welding Rods: Compatible with metal to be welded to obtain strongest bond, E-70XX.
6. Deposit metal in successive layers to provide at least 2 passes or beads for automatic welding and 3 passes or beads for manual welding in completed weld.
7. Deposit no more than 1/4 inch of metal on each pass. Thoroughly clean each individual pass with wire brush or hammer to remove dirt, slag or flux.
8. Do not weld under any weather condition that would impair strength of weld, such as wet surface, rain or snow, dust or high winds, unless work is properly protected.
9. Tack weld of same material and make by same procedure as completed weld. Otherwise, remove tack welds during welding operation.

10. Remove dirt, scale and other foreign matter from inside piping before tying in sections, fittings or valves.

D. Joint Grout (Steel):

1. Mix grout by machine except when less than 1/2 cubic yard is required. When less than 1/2 cubic yard is required, grout may be hand mixed. Mix grout only in quantities for immediate use. Use grout within 20 minutes after mixing. Discard grout that has set. Retempering of grout by any means is not permitted.
2. Prepare grout in small batches to prevent stiffening before it is used. Any grout which has become so stiff that proper placement cannot be assured without rettempering by any means shall be wasted. Provide grout for filling grooves of such consistency that it will adhere to ends of pipe.
3. Surface Preparation: Remove all defective concrete, laitance, dirt, oil, grease and other foreign material from concrete surfaces with wire brush or hammer to sound, clean surface. Remove rust and all foreign materials from all metal surfaces in contact with grout.
4. Follow established procedures for hot and cold weather concrete placement.
5. Complete joint grout operations and backfilling of pipe trenches as closely as practical to pipe laying operations. Allow grouted exterior joints to cure at least 1 hour before compacting backfill.
6. Grouting exterior joint space: Use minimum 9-inch-wide Ethafoam "diaper" or wrapper placed around pipe and over joint. Hold wrapper in place on both sides of joint with minimum 5/8-inch-wide steel straps or bands. Place no additional bedding or backfill material on either side of pipe until after grout band is filled and grout has mechanically stiffened. Pull ends of wrapper together at top of pipe to form access hole. Pour grout down one side of pipe until it rises on other side. Rod or puddle grout to ensure complete filling of the joint recess. Agitate for 15 minutes to allow excess water to seep through joint band. When necessary, add more grout to fill joint completely. Protect gap at top of joint band from backfill by allowing grout to stiffen or by covering with a structurally protective material. Do not remove band from joint.
7. Interior Joints for Pipe Smaller than 24-Inch: Circumferentially butter bell with grout prior to insertion of spigot, strike off flush surplus grout inside pipe by pulling filled burlap bag or inflated ball through pipe with rope.

8. Protect exposed interior surfaces of steel joint bands by metallizing, by other approved coatings, or by pointing with grout. Joint pointing may be omitted on potable water pipelines if the joint bands are protected by zinc metallizing or other approved protective coatings.
  9. Remove and replace all improperly cured or otherwise defective grout at no additional cost to Owner.
  10. When installed in tunnel or encasement pipe and clearance within casing does not permit outside grout to be placed in normal manner, apply flexible sealer, such as Flex Protex by Gifford-Hill America, or equal, to outside joint prior to joint engagement. Clean and prime surfaces receiving sealer in accordance with manufacturer's recommendations. Apply sufficient quantities of sealer to assure complete protection of all steel in joint area. Fill interior of joint with grout in normal manner after joint closure.
- E. Joint Testing:
1. In addition to testing individual joints with feeler gage approximately 1/2-inch wide and 0.015-inch thick, use any other joint testing procedure approved or recommended by pipe manufacturer which will help ensure watertight installation prior to backfilling. These tests shall be made at no additional cost to Owner.
  2. On any joint or seam welded after hydrostatic testing or not subjected to hydrostatic testing, test 100 percent of welded joint by methods as described in section on Welded Joints. Owner reserves right to require Contractor to make additional tests at Owner's expense except that if tests performed at Contractor's expense or Owner's expense indicate an unacceptable weld, then cost of test, subsequent repair of rejected weld and test of repaired weld shall be borne by Contractor.
- F. Make curves and bends by deflecting joints or other method as approved by manufacturer and Owner's Representative.
1. Deflection of pipe joints shall not exceed maximum deflection recommended by AWWA and pipe manufacturer, unless otherwise indicated on Drawings.
  2. If deflection exceeds maximum allowable, the contractor shall remove and install new pipe.
  3. Contractor shall replace, repair or reapply coatings and linings as required above.
  4. No additional payment will be made for above described work.

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5. Assessment of deflection may be measured by Owner at any location along pipe. Arithmetical averages of deflection or similar average measurement methods will not be deemed as meeting intent of standard.
  6. Contractor may submit details of other methods of providing curves and bends for consideration by Owner's Representative, and if deemed satisfactory, shall be installed at no additional cost to Owner.
  7. When rubber gasketed pipe is laid on a curve, joint pipe in a straight alignment and then deflect to curved alignment.
- G. Closures and Field Modifications:
1. Apply welded-wire fabric reinforcement to interior and exterior of all exposed interior and exterior surfaces greater than 6 inches in diameter. Welded-wire fabric: minimum W1; maximum spacing 2 inches by 4 inches; 3/8 inch from surface of steel plate or middle third of lining or coating thickness for mortar thickness less than 3/4 inch.
  2. Fill all exposed interior and exterior surfaces with nonshrink grout.

### 3.07 SECURING, SUPPORTING AND ANCHORING

- A. Support piping as shown on Drawings and as specified herein, to maintain line and grade and prevent transfer of stress to adjacent structures.
- B. Where shown on Drawings, anchor pipe fittings and bends installed on water main by welding consecutive joints of pipe together to distance each side of fitting. Restrained length, as shown on Drawings, assumes that installation of pipe and subsequent hydrostatic testing will begin upstream and proceed downstream, with respect to normal flow of water in pipe. If installation and testing differs from this assumption, submit for approval revised method of restraining pipe joints upstream and downstream of device used to test against (block valve, blind flange or dished head plug).
- C. Provide adequate temporary blocking of fittings when making connections to distribution system and during hydrostatic tests. Provide sufficient anchorage and blocking to resist all stresses and forces encountered while tapping existing waterline.

### 3.08 THRUST RESTRAINT

- A. For new water lines 12 inches in diameter and larger, restrain joints as specified in Part 3.06 A.4 of this section. The new water line shall also be additionally restrained with concrete thrust blocking.



- B. For existing waterlines and waterlines less than 12 inches in diameter, restrain pipe joints with concrete thrust blocks or provide joints as specified in Part 3.06A.4 of this section.
- C. Prevent any lateral movement of thrust restraints throughout pressure testing and operation. Place 2500 psi concrete conforming to Section 03305, Concrete for Utility Construction, for blocking at each change in direction of existing water lines, and water lines 12 inches in diameter and smaller to brace pipe against undisturbed trench walls. Complete placement of concrete blocking, made from Type I cement, 4 days prior to hydrostatic testing of pipeline. Test may be made 2 days after completion of blocking if Type II cement is used.

### 3.09 POLYETHYLENE WRAP

- A. Double wrap all ductile iron pipe and appurtenances (except fire hydrants) with 8-mil polyethylene film.
- B. Conform to requirements of Section 02630 - Polyethylene Wrap.

### 3.10 CLEANUP, RESTORATION AND PAYMENT

- A. Provide "cleanup" and "restoration" crews to work closely behind pipe laying crews, and where necessary, during chlorination, testing, service transfers, abandonment of old mains, backfill and surface restoration.
- B. Upon completion of water line installation in a street and prior to moving to another, chlorinate and pressure test. Provide City a sampling point every 1000 L.F. for testing. Begin transfer of services no later than seven calendar days after successful completion of chlorination and pressure testing.
- C. After completion of transfer of services, but no later than 21 calendar days after successful completion of chlorination and pressure testing, begin abandonment of old mains, backfill, resod, and placement of sidewalks and pavements.
- D. Do not begin construction of additional sections if above conditions are not met.

### 3.11 CLEANING PIPING SYSTEMS

- A. Remove construction debris or foreign material and thoroughly clean and flush piping systems. Provide temporary connections, equipment and labor for cleaning.

### 3.12 DISINFECTION OF WATERLINES

- A. Conform to requirements of Section 02675 - Disinfection of Waterlines.

3.13 FIELD HYDROSTATIC TESTS

- A. Conform to requirements of Section 02676 - Hydrostatic Testing of Pipelines.

END OF SECTION

SECTION 02665

WATER TAP AND SERVICE LINE INSTALLATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tapping existing mains and furnishing and installing new service lines for water.

1.02 UNIT PRICES

- A. Measurement for water taps and copper service lines 3/4 inch through 1 inch is on a lump sum basis for each installation. Separate measurements will be made for "Short Side" and "Long Side" connections as defined in Part 1.04 below.
- B. Measurement for water taps and service lines 1-1/2 inch through 2 inch is on a lump sum basis for each installation. Separate measurements will be made for "Short Side" and "Long Side" connections as defined in Part 1.04 below.
- C. Payment for "Short Side" and "Long Side" includes locating water main, tap installation and connection to meter and restoring site.
- D. No additional payment will be made for bedding, backfill, compaction, push-unders, etc.

1.03 DEFINITIONS

- A. Short Side Connection: Service line connecting proposed curb stop, located inside water meter box, to water main on same side of street.
- B. Long Side Connection: Service line connecting proposed curb stop, located inside water meter box, to water main on opposite side of street or from center of streets where supply main is located in street center such as boulevards and streets with esplanades.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Class 200, Polyethylene, Phillips Drisco pipe or equal.
- B. Corporation Stops: AWWA C800 as modified herein:
  - 1. Inlet End: AWWA standard thread.
  - 2. Valve Body: Tapered plug type, O-ring seat ball type, or rubber seat ball type.
  - 3. Outlet End: Compression type fitting for use with type-K, soft copper.

- C. Provide taps for various water main types and sizes in accordance with following schedule.

PIPE TAPPING SCHEDULE				
WATER MAIN TYPE AND DIAMETER	SERVICE SIZE			
	3/4"	1"	1-1/2"	2"
4" Cast Iron or Ductile Iron	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
4" Asbestos Cement	WBSS	WBSS	DSS, WBSS	DSS, WBSS
4" PVC (AWWA C900)	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
6" and 8" Cast Iron or Ductile Iron	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
6" and 8" Asbestos Cement	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
6" and 8" Cast Iron or Ductile Iron	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
6" and 8" PVC (AWWA C900)	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
12" Cast Iron or Ductile Iron	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
12" Asbestos Cement	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
12" PVC (AWWA C900)	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
16" and Up Cast Iron or Ductile Iron	DWBSS	DWBSS	DWBSS	DWBSS
16" and Up Asbestos Cement	DWBSS	DWBSS	DWBSS	DWBSS
16" and Up PVC (AWWA C900)	DWBSS	DWBSS	DWBSS	DWBSS

DSS - DUAL STRAP SADDLES

WBSS - WIDE BAND STRAP SADDLES

DWBSS - DUAL WIDE BAND STRAP SADDLES

\*Mueller H-15092, or equal

- D. Dual Strap Saddles: Red brass body and straps; ductile-iron; vinyl-coated body and straps; or ductile-iron, vinyl-coated body and stainless-steel straps.
- E. Taps for PVC Water Mains: Use dual-strap or single, wide-band strap saddles which provide full support around circumference of pipe and bearing area of sufficient width

along axis of pipe, 2 inches minimum, ensuring that pipe will not be distorted when saddle is tightened. Romac Series 101N wide-band, stainless-steel tapping saddle with AWWA standard thread (Mueller thread) or equal.

- F. Taps for Steel Pipe: Not allowed, unless specifically approved by Owner's Representative. Use saddle only if tap is approved on steel pipe.
- G. Curb Stops and Brass Fittings: AWWA C800 as modified herein.
1. Inlet End: Compression-type fitting.
  2. Valve Body: Straight-through or angled, meter-stop design equipped with the following:
    - a. O-Ring seal straight plug type.
    - b. Rubber seat ball type.
  3. Outlet End: Female, iron-pipe thread or swivel-nut, meter-spud thread on 3/4-inch and 1-inch stops and 2-hole flange on 1-1/2 and 2-inch sizes.
  4. Fittings: Ford or approved equal; use same size open end wrenches and tapping machines as used with respective Ford fittings.
  5. Factory Testing of Brass Fittings:
    - a. Submerge in water for 10 seconds at 85 psi with stop in both closed and open positions.
    - b. Reject any fitting that shows air leakage. Owner may confirm tests locally. Entire lot from which samples were taken will be rejected when random sampling discloses unsatisfactory fittings.
- H. Angle Stops: In accordance with AWWA C800; ground-key, stop type with bronze lock-wing head stop cap; inlet and outlet threads conform to application tables of AWWA C800; and inlets compression connection.
1. Outlet for 3/4-inch and 1-inch size: Meter swivel nut with saddle support.
  2. Outlet for 1-1/2-inch through 2-inch size: O-ring sealed meter flange, iron pipe threads.
- I. Fittings: In accordance with AWWA C800 and:
1. Castings: Smooth, free from burrs, scales, blisters, sand holes, and defects which would make them unfit for intended use.
  2. Nuts: Smooth cast and have symmetrical hexagonal wrench flats.

3. Thread fittings, of all types, shall have N.P.T. or AWWA threads, and male threaded ends shall be protected in shipment by plastic coating or other equally satisfactory means.
4. Compression tube fittings shall have Buna-N beveled gasket.
5. Stamp of manufacturer's name or trademark and size on body.

### **PART 3 EXECUTION**

#### **3.01 GENERAL**

- A. Set service taps at right angles to proposed meter location and locate taps in upper pipe segment within 45 degrees of pipe springline unless otherwise approved by Owner's Representative.
- B. For service lines and lateral connections larger than those allowed in Part 2.01C, branch connections and multiple taps may be used. Corporation stops: spaced minimum 2 feet apart.
- C. Tapped collars of appropriate sizes: Approved in new construction only provided they are set at right angles to proposed meter location.
- D. All 2-inch and smaller service taps on pressurized water mains: Use tapping machine manufactured for pressure tapping purposes.
- E. Install service lines in open-cut trench in accordance with Section 02227 except service lines under all paved roadways, other paved areas and areas indicated on Drawings shall be installed in bored hole in accordance with paragraph 3.01F. If service line is installed under paved roadways or other paved areas, service lines shall be installed in PVC casings.
- F. Unless otherwise approved by Owner's Representative, lay service lines with minimum of 30 inches of cover as measured from top of curb or, in absence of curbs, from centerline elevation of crowned streets or roads. Provide minimum of 18 inches of cover below flow line of all ditches to service lines, unless otherwise approved by Owner's Representative.
- G. Service lines across existing street (push-unders): Pull service line through prepared hole under paving. Only full lengths of tubing will be used. Take care not to damage copper tubing when pulling it through hole. A compression-type union is only permitted if Contractor cannot span underneath pavement with a full length of tubing. Contractor is allowed one compression-type union for each full length of tubing, provided it is not under the pavement.
- H. Maintain service lines free of dirt and foreign matter at all times.
- I. Install service lines so that top of meter will be 4 to 6 inches below finished grade.

- J. Locate water meters one foot inside street right-of-way, or if this is not applicable, one foot on curb side of sidewalk. Contact Owner's Representative when major landscaping or trees conflict with service line and meter box location. No additional payment will be made for work on customer side of meter.

### 3.02 CURB STOP INSTALLATION

- A. Set curb stops or angle stops at outer end of service line inside of meter box. Secure opening in curb stop to prevent unwanted material from entering. In close quarters, make an "S" curve in the field. No flattening of tube. In all 3/4-inch and 1-inch services, install meter coupling, swivel-nut, or curb stop ahead of meter. Install straight meter coupling on outlet end of meter.

### 3.03 SEQUENCE OF OPERATIONS

- A. Open trench for proposed service line in accordance with Section 02227.
- B. Install curb stop on meter end of service line.
- C. With curb stop open and prior to connecting service line to meter in slack position, open corporation stop and flush service line thoroughly. Close curb stop, leaving corporation stop in full-open position.
- D. Check service line for apparent leaks. Repair any leaks before proceeding.
- E. Call to schedule inspection prior to backfilling. After inspection, backfill in accordance with Section 02227.
- F. Install meter box centered over meter with top of lid flush with finished grade. Meter box: Refer to Section 02604.

END OF SECTION

SECTION 02667

WET CONNECTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wet connections for new water mains and service lines to existing water mains.

1.02 UNIT PRICES

- A. Measurement for wet connections shown on drawings is on lump sum basis for each connection. Separate payment will be made for each size of water main.
- B. No extra compensation for damages or extra work resulting from an incomplete shutoff.

1.03 DEFINITIONS

- A. Wet connections consist of isolating sections of pipe to be connected with installed valves, draining the isolated sections, and completing the connections.
- B. Connection of 2 inch or smaller lines, which may be referred to on Drawings as "2 inch standard connections" or "gooseneck connections" will be measured as 2" wet connections. This item is not to be used as any part of a 2-inch service line.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Pipe shall conform to requirements of applicable portions of Sections 02610 through 02630.
- B. Corporation stops and saddles shall conform to requirements of Section 02665.
- C. Valves shall conform to requirements of Section 02640.
- D. Brass fittings shall conform to requirements of AWWA C800.

PART 3 EXECUTION

3.01 GENERAL



- A. Plan wet connections in such manner and at such hours as to least inconvenience public. Notify Owner's Representative at least 48 hours in advance of making connections.
- B. Do not operate valves on mains in use by Owner. Owner will handle, at no cost to Contractor, all operations involving opening and closing valves for wet connections.
- C. Conduct connection operations when Inspector is at job site. Connection work shall progress without interruption until complete, once existing mains have been cut or plugs have been removed for making connections.
- D. Water main to be flushed inspected disinfected and tested in accordance with Section 02675.

3.02 2-INCH WET CONNECTIONS

- A. Tap water main. Provide and install corporation stops; saddles; copper tubing as required for line and grade adjustment; and brass fittings necessary to adapt to existing main. Provide 2-inch valves when indicated on Drawings for 2-inch copper gooseneck connections.

END OF SECTION

SECTION 02669

CUT, PLUG AND ABANDONMENT OF MAINS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cut, plug and abandonment of water mains.

1.02 UNIT PRICES

- A. Measurement for cut, plug and abandonment of mains is on lump sum basis for each main. Separate payment will be made for each size of water main.

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all provisions and sections of these specifications.
- B. Submit product data for proposed plugs and clamps for approval.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Concrete for reaction blocks: Class B conforming to requirements of Section 03305.
- B. Plugs and clamps shall be suitable for type of pipe to be plugged.

PART 3 EXECUTION

3.01 GENERAL

- A. Do not begin cut, plug and abandonment operations until replacement main has been constructed, disinfected, and tested, and all service lines have been transferred to replacement main.
- B. Install plug, clamp, and concrete reaction block and make cut at location shown on Drawings.
- C. Main to be abandoned shall not be valved off and shall not be cut or plugged other than at supply main or as shown on Drawings.

- D. After main to be abandoned has been cut and plugged, check for other sources feeding abandoned main. If sources are found, notify Owner's Representative immediately. Cut and plug abandoned main at point of other feed as directed by Owner's Representative.
- E. Plug or cap all ends or openings in abandoned main in an acceptable manner approved by Owner's Representative.
- F. Remove and dispose of all surface identifications such as valve boxes and fire hydrants. Valve boxes in improved streets, other than shell, may be poured full of concrete after removing cap.
- G. Grout fill lines over 12" in diameter with flowable fill in accordance with Section 02051.
- H. Backfill all excavations in accordance with Section 02227.
- I. Repair all street surfaces in accordance with Section 02570.

END OF SECTION

SECTION 02675

DISINFECTION OF WATERLINES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Disinfection of potable waterlines.

1.02 UNIT PRICES

- A. No payment will be made for disinfection of waterlines. Include cost in unit price of waterlines being disinfected.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL

- A. All waterlines constructed shall be promptly disinfected before any tests are conducted on waterlines and before waterlines are connected to water distribution system.
- B. Water for disinfection and flushing will be furnished without charge to Contractor.

3.02 PREPARATION

- A. Furnish all required temporary blind flanges, cast-iron sleeves, plugs, and other items needed to facilitate disinfection of new mains prior to connecting them to water distribution system. Normally, each valved section of waterline requires two each 3/4-inch taps. A 2-inch minimum blow-off is required for waterlines up to and including 6-inch diameter.
- B. Fire hydrants shall be used as blow-offs to flush newly constructed waterlines 8-inch diameter and above. Where fire hydrants are not available on waterlines, install temporary blow-off valves and remove promptly upon successful completion of disinfection and testing.
- C. Slowly fill each section of pipe with water in a manner approved by Owner's Representative. Average water velocity when filling pipeline should be less than 1 fps and shall not, under any circumstance, exceed 2 fps. Before beginning disinfection operations, expel all air from pipeline.

- D. All excavations made shall be backfilled immediately after installation of risers or blow-offs.
- E. Install blow-off valves at end of main to facilitate flushing at all dead-end water mains. Install permanent blow-off valves as per drawing.

3.03 DISINFECTION

- A. Use not less than 100 parts of chlorine per million parts of water. Introduce chlorinating material to water lines in accordance with AWWA C651. After contact period of not less than 24 hours, flush system with clean water until residual chlorine is no greater than 1.0 parts per million parts of water. Open and close valves in lines being sterilized several times during contact period.
- B. If a chemical compound is used for a sterilizing agent, it shall be placed in pipes as directed by Owner's Representative.

3.04 BACTERIOLOGICAL TESTING

- A. After disinfection and flushing of waterlines, bacteriological tests will be performed by Owner or testing laboratory in accordance with Section 01410 - Testing Laboratory Services. If test results indicate need for additional disinfection of waterlines based upon Texas Department of Health requirements, Contractor shall perform additional disinfection operations at no additional cost to the Owner.

3.05 COMPLETION

- A. Upon completion of disinfection and testing, remove risers except those approved for use in subsequent hydrostatic testing, and backfill excavation promptly.

END OF SECTION

SECTION 02676

HYDROSTATIC TESTING OF PIPELINES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Field hydrostatic testing of new water pipelines.

1.02 UNIT PRICES

- A. No payment will be made for hydrostatic testing of pipelines under this Section. Include cost in unit price of pipelines being tested.

PART 2 PRODUCTS - NOT USED.

PART 3 EXECUTION

3.01 GENERAL

- A. Hydrostatically test all new water pipelines for liquids after disinfection, if required, and before connecting to water distribution system.
- B. Pipelines shall be tested in lengths between valves, or plugs, of not more than 1,000 feet unless greater length is approved by Owner's Representative.
- C. Conduct hydrostatic tests in presence of Owner's Representative in accordance with requirements of this Section.

3.02 PREPARATION

- A. Disinfect water system pipelines prior to hydrostatic testing.

3.03 TEST PROCEDURES

- A. Furnish, install, and operate connections, pump, meter and gages necessary for hydrostatic testing.
- B. Allow pipeline to sit minimum of 24 hours from time it is initially disinfected until testing begins, to allow pipe wall or lining material to absorb water. Contractor should be aware that periods of up to 7 days may be required for mortar lining to become saturated.

- C. Expel all air and apply a minimum test pressure of 150 psi as directed by Owner’s Representative
- D. Maintain test pressure for 4 hours. If a large quantity of water is required to maintain pressure during test, testing shall be discontinued until cause of water loss is identified and corrected.

3.04 ALLOWABLE LEAKAGE FOR WATER MAINS

- A. During hydrostatic tests, no leakage will be allowed for sections of water mains consisting of welded joints.
- B. Maximum allowable leakage for water mains with rubber gasketed joints shall be as determined by the following formula:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

- C. Allowable Leakage per 1000 feet of Pipeline in GAL/HR at 150 psi:

3”	4”	6”	8”	10”	12”	14”	16”	18”	20”	24”	30”	36”
0.25	0.33	0.50	0.66	0.83	0.99	1.16	1.32	1.49	1.66	1.99	2.48	2.98

3.05 CORRECTION FOR FAILED TESTS

- A. Repair all joints showing visible leaks on surface regardless of total leakage shown on test. Check all valves and fittings to ensure that no leakage occurs that could affect or invalidate test. Remove any cracked or defective pipes, fittings and valves discovered during pressure test and replace with new items.
- B. Owner’s Representative may direct Contractor to disinfect failed lines after repair and prior to retesting. Conduct subsequent disinfection operations in accordance with requirements of Section 02675.
- C. Repeat test until satisfactory results are obtained.

3.06 COMPLETION

- A. Upon satisfactory completion testing, remove risers remaining from disinfection and hydrostatic testing, and backfill excavation promptly.

**Hydrostatic Pressure Test Data Sheet  
City of Galveston, Texas**

Project: \_\_\_\_\_ Sheet #: \_\_\_\_\_ Location: \_\_\_\_\_  
 Inspector: \_\_\_\_\_ Contractor: \_\_\_\_\_

**Section to be Tested**

	On (street name)	From (street name)	To (street name)	Total Length (ft)	Pipe Diameter (inch)

**Test Log**

	Hrs	Time	Pressure (PSI)	Flow Meter (GPM)	Leakage*
	Start				N/A
	1				
	2				
	3				
	4				

**TOTAL LEAKAGE =**

Test Result: (check one)      Passed \_\_\_\_\_      Failed (to be repaired & retested) \_\_\_\_\_

Inspector: \_\_\_\_\_      Date: \_\_\_\_\_  
 (Signature)

Contractor: \_\_\_\_\_      Date: \_\_\_\_\_  
 (Signature)



*Allowable Leakage per 1000 feet of pipeline in Gallons per hour at 150 psi:													
Line Size	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"
Leakage (GA/HR)	0.25	0.33	0.5	0.66	0.83	0.99	1.16	1.32	1.49	1.66	1.99	2.48	2.98
Pres. Drop (PSI/HR)	5	5	5	5	5	5	5	5	5	5	5	5	5

END OF SECTION

## SECTION 02720

## STORM SEWERS

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Storm sewers and appurtenances.

## 1.02 UNIT PRICES

- A. Measurement for storm sewers is on a linear foot basis for each type and size of pipe installed. Measurement will be taken along the centerline of the pipe from centerline to centerline of manholes or from end to end of culverts.
- B. No separate payment will be made for earthwork, connections to existing manholes and pipe, accessories, equipment and execution required are incidental to storm sewer work. Include payment in unit price for pipe.

## 1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all provisions and sections of these specifications.
- B. Submit manufacturer's literature for product specifications and installation instructions.
- C. Submit test reports as specified in Part 3 of this Section.

## 1.04 QUALITY ASSURANCE

- A. The condition for acceptance will be a storm sewer that is watertight both in pipe-to-pipe joints and in pipe-to-manhole connections.

## 1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Comply with manufacturer's recommendations.
- B. Handle pipe, fittings, and accessories carefully with approved handling devices. Do not drop or roll pipe off trucks or trailers. Materials cracked, gouged, chipped, dented, or otherwise damaged will not be approved for installation.
- C. Store pipe and fittings on heavy timbers or platforms to avoid contact with the ground.

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- D. Unload pipe, fittings, and specials as close as practical to the location of installation to avoid unnecessary handling.
- E. Keep interiors of pipe and fittings completely free of dirt and foreign matter.

## PART 2 PRODUCTS

### 2.01 PIPE

- A. Piping materials for storm sewers shall be of the sizes and types indicated on the Drawings.
- B. Materials for pipe and fittings, other than those specified or referenced, may be considered for use in storm sewers.
- C. For consideration of other materials, submit complete manufacturer's data including materials, sizes, flow carrying capacity, installation procedures, and history of similar installations to Engineer for pre-bid evaluations, if allowed, or as a substitution.

### 2.02 PIPE MATERIAL SCHEDULE

- A. Reinforced Concrete Pipe: Conform to requirement of Section 02615 - Reinforced Concrete Pipe.
- B. Monolithic Reinforced Concrete Box Sewers: Conform to requirements of Section 02616 - Monolithic Reinforced Concrete Box Sewers.
- C. Precast Reinforced Concrete Box Sewers: Conform to requirements of Section 02617 - Precast Reinforced Concrete Box Sewers.
- D. When approved by the Owner's Representative, high-density polyethylene, corrugated drainage pipe meeting requirements of AASHTO M252 or M294 and ASTM D3350, Hancor or equal.

### 2.03 BEDDING, BACKFILL, AND TOPSOIL MATERIAL

- A. Bedding and Backfill Material: Conform to requirements of Sections 02227 - Excavation and Backfill for Utilities, and 02229 - Utility Backfill Material.
- B. Topsoil: Conform to requirements of Section 02920 - Topsoil.

## PART 3 EXECUTION

### 3.01 PREPARATION

- A. Set up street detours and barricades in preparation for excavation if construction will affect traffic. Conform to requirements of Section 01570 - Traffic Control and Regulation.
- B. Provide barricades and warning lights and signs, for excavations. Conform to requirements of Section 01570 - Traffic Control and Regulation. Maintain barricades and warning lights for streets and intersections where work is in progress or where affected by the work and is considered hazardous to traffic movements.
- C. Perform work in accordance with OSHA standards. Employ a Trench Safety System as specified in Section 01526 - Trench Safety Systems, for excavations over 5 feet deep.
- D. Immediately notify the agency or company owning any utility line which is damaged, broken or disturbed. Obtain approval from Owner's Representative and agency for any repairs or relocations, either temporary or permanent.
- E. Remove old pavements and structures including sidewalks and driveways in accordance with requirements of Section 02050 - Demolition and Section 02076 - Removing Existing Pavements and Structures.
- F. Install and operate necessary dewatering and surface water control measures in accordance with Section 01563 - Control of Ground Water and Surface Water.

### 3.02 EXCAVATION

- A. Earthwork. Refer to Section 02227 - Excavation and Backfill for Utilities and as directed on Drawings.
- B. Line and Grade. Establish the proper line and grade in the trench as shown in the drawings. Maintain this control for a minimum of 100 feet behind and ahead of the pipe-laying operation. Use appropriately sized grade boards, as necessary, which are substantially supported. Protect the boards and location stakes from damage or dislocation. Use of a laser beam equipment to establish and maintain proper line and grade of the work is acceptable.
- C. Trench Excavation. Excavate pipe trenches to a level 8-inches below the indicated invert. Backfill the excavation with the specified bedding material to the level of the lower one-third of the pipe barrel. Tamp and compact backfill to provide bedding at the indicated grade. Form the bedding foundation to a minimum depth of one-eighth of the pipe diameter, but not less than 6 inches.

### 3.03 PIPE INSTALLATION

- A. Install in accordance with the pipe manufacturer's recommendations and as specified in this Section.

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- B. Install pipe only after excavation is completed, the bottom of the trench shaped, bedding material is installed, and the trench has been approved by the Owner's Representative.
- C. Install pipe to the line and grade indicated. Place pipe so that it has continuous bearing of barrel on bedding material and is laid in the trench so the interior surfaces of the pipe follow the grades and alignments indicated.
- D. Install pipe with the spigot ends toward the direction of flow.
- E. Form a concentric joint with each section of adjoining pipe so as to prevent offsets.
- F. Place and drive home newly laid sections with come-a-long winches so as to eliminate damage to sections. Use of backhoes or similar powered equipment will not be allowed unless protective measures are provided and approved in advance by the Owner's Representative.
- G. Keep the interior of pipe clean as the installation progresses. Where cleaning after laying the pipe is difficult because of small pipe size, use a suitable swab or drag in the pipe and pull it forward past each joint immediately after the joint has been completed.
- H. Keep excavations free of water during construction and until final inspection.
- I. When work is not in progress, cover the exposed ends of pipes with an approved plug to prevent foreign material from entering the pipe.

#### 3.04 PIPE INSTALLATION OTHER THAN OPEN CUT

- A. For installation of pipe by augering, boring, or jacking pipe, conform to requirements of Section 02315 - Pipe and Casing Augering for Sewers.

#### 3.05 INSTALLATION OF APPURTENANCES

- A. Construction manholes and inlets to conform to requirements of Sections 02600 - Cast-in-place Concrete Manhole and Section 02601 - Precast Concrete Manholes. Install frames, grate rings and covers to conform to requirements of Section 02603 - Frames, Grates, Rings and Covers.
- B. Install headwalls and wingwalls to conform to requirements of Section 02605 - Cast-in Place Inlets, Headwalls and Wingwalls and Section 02606 - Precast Concrete Inlets, Headwalls and Wingwalls.
- C. Rehabilitate existing manholes to conform to requirements of Section 02764 - Manhole Rehabilitation. Adjust manhole covers to grade conforming to requirements of Section 02607 - Adjusting Manholes, Inlets and Valve Boxes to Grade.

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3.06 BACKFILL AND SITE CLEANUP

- A. Backfill the trench only after pipe installation is approved by the Owner's Representative.
- B. Bed pipes with materials conforming to requirements of Section 02229 - Utility Backfill Material and as indicated on Drawings.
- C. Backfill and compact soil in accordance with Section 02227 - Excavation and Backfill for Utilities.
- D. Repair and replace removed or damaged pavement and sidewalks as specified in Section 02570 - Pavement Repair and Resurfacing.
- E. In unpaved areas, grade surface as a uniform slope to natural grade as indicated on the Drawings. Provide a minimum of 4 inches of topsoil and seed according to requirements of Section 02932 - Hydromulch Seeding.
- F. Form to requirements of Section 01564 - Waste Material Disposal.

END OF SECTION

SECTION 02932

HYDROMULCH SEEDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Seeding, fertilizing, mulching, and maintenance of areas indicated on Drawings.

1.02 UNIT PRICES

- A. No separate payment will be made for work performed under this Section unless unit cost is included in the Bid Proposal. Include cost for such work in unit cost for utility in the Bid Proposal.

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all provisions and sections of these specifications.
- B. Submit certification from supplier that each type of seed conforms to these specification requirements and the requirements of the Texas Seed Law. Certification shall accompany seed delivery.
- C. Submit a certificate stating that fertilizer complies with these specification requirements and the requirements of the Texas Fertilizer Law.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: Conform to material requirements of Section 02920 - Topsoil.
- B. Seed: Conform to U.S. Department of Agriculture rules and regulations of the Federal Seed Act and the Texas Seed Law. Seed shall be certified 90 percent pure and furnish 85 percent germination and meet the following requirements:
  - 1. Rye: Fresh, clean, Italian rye grass seed (lolium multi-florum), mixed in labeled proportions. As tested, minimum percentages of impurities and germination must be labeled. Deliver in original unopened containers.
  - 2. Bermuda: Extra-fancy, treated, lawn type common bermuda (Cynodon dactylon). Deliver in original, unopened container showing weight, analysis, name of vender, and germination test results.

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- 3. Wet, moldy, or otherwise damaged seed will not be accepted.
- 4. Seed requirements, application rates and planting dates are:

Type	Application Rate Pounds/A	Planting Date
Hulled Common Bermuda Grass 98/88	40	Jan 1 to Mar 31
Unhulled Common Bermuda Grass 98/88	40	
Hulled Common Bermuda Grass 98/88	40	Apr 1 to Sep 30
Hulled Common Bermuda Grass 98/88	40	Oct 1 to Dec 31
Unhulled Common Bermuda Grass 98/88	40	
Annual Rye Grass (Gulf)	30	

C. Fertilizer: Dry and free flowing, inorganic, water-soluble commercial fertilizer, which is uniform in composition. Deliver in unopened containers which bear the manufacturers guaranteed analysis. Caked, damaged, or otherwise unsuitable fertilizer will not be accepted. Fertilizer shall contain minimum percentages of the following elements:

Nitrogen	10 Percent
Phosphoric Acid	20 Percent
Potash	10 Percent

- D. Mulch: Virgin wood cellulose fibers from whole wood chips having a minimum of 20 percent fibers 0.42 inches (10.7 mm) in length and 0.01 inches (0.27 mm) in diameter. Mulch shall be dyed green for coverage verification purposes.
- E. Soil Stabilizer: "Terra Tack" 1 or approved equal.



- F. Weed control agent: Pre-emergent herbicide for grass areas, "Benefin" or approved equal.

PART 3 EXECUTION

3.01 PREPARATION

- A. Place and compact topsoil in accordance with requirements of Section 02920 - Topsoil.

3.02 APPLICATION

- A. Seed: Apply uniformly at rates given in Paragraph 2.01 B for type of seed and planting date.
- B. Fertilizer: Apply uniformly at a rate of 500 pounds per acre.
- C. Mulch: Apply uniformly at a rate of 50 pounds per 1000 square feet.
- D. Soil stabilizer: Apply uniformly at a rate of 40 pounds per acre.
- E. Weed control agent: Apply at manufacturer's recommended rate prior to hydromulching.
- F. Suspend all operations under conditions of drought, excessive moisture, high winds, or extreme or prolonged cold with Owner' approval. Obtain the Owner's Representative's approval before resuming operations.

3.03 MAINTENANCE

- A. Maintain grassed areas a minimum of 90 days, or as required to establish an acceptable lawn with 85% coverage. No acceptance will be given until coverage is at least 85%. For areas seeded in the fall, continue maintenance the following spring until an acceptable lawn is established.
- B. Maintain grassed areas by watering, fertilizing, weeding, and trimming.
- C. Repair areas damaged by erosion by regrading, rolling and replanting.

END OF SECTION

SECTION 02935

SODDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Restoration of existing lawn areas disturbed by construction shall be by installation of new sod.
- B. Sod is defined as blocks, squares, strips of turf grass, and adhering soil used for vegetative planting. To be placed edge to edge for complete coverage.
- C. Lawn is defined as ground covered with fine textured grass kept neatly mowed.

1.02 UNIT PRICES

- A. No separate payment will be made for work performed under this section unless unit cost is included in the Bid Proposal. Include the cost of such work for restoration of the existing sod or lawn areas in unit cost for utility and paving items in the Bid Proposal.

1.03 SUBMITTALS

- A. Submittals shall conform to the requirements of all provisions and sections of these specifications.

1.04 QUALITY ASSURANCE

- A. Perform sodding only when weather and soil conditions are deemed by Project Owner's Representative to be suitable for proper placement.
- B. Water and fertilize new sod.
- C. Guarantee sod to be growing 30 days after completion.
- D. Maintenance Period:
  - 1. Begin maintenance immediately after each section of grass sod is installed and continue for a 30-day period from date of substantial completion.
  - 2. Resod unacceptable areas.

3. Water, fertilize, control disease and insect pests, mow, edge, replace unacceptable materials, and perform other procedures consistent with good horticultural practice to ensure normal, vigorous and healthy growth. All disease control shall be installed within guidelines set forth by the Structural Pest Control Board of the State of Texas.
- E. Notify Owner's Representative 10 days before end of maintenance period for inspection.

## PART 2 PRODUCTS

### 2.01 SOD

- A. Species: Bermuda (*Cynodon Dactylon*), Buffalo (*Buchloe Dactyloides*), or St. Augustine.
- B. Contents: 95 percent permanent grass suitable to climate in which it is to be placed; not more than 5 percent weeds and undesirable grasses; good texture, free from obnoxious grasses, roots, stones and foreign materials. Block sod is usually a 16" x 16" square.
- C. Size: 16 inch wide strips, uniformly 2 inches thick with clean-cut edges.
- D. Sod is to be supplied and maintained in a healthy condition as evidenced by the grass being a normal green color.

### 2.02 FERTILIZER

- A. Available nutrient percentage by weight: 12 percent nitrogen, 4 percent phosphoric acid, and 8 percent potash; or 15 percent nitrogen, 5 percent phosphoric acid, and 10 percent potash.

### 2.03 WEED AND INSECT TREATMENT

- A. Provide acceptable treatment to protect sod from weed and insect infestation. Submit treatment method to the Owner's Representative for approval. All insect and disease control shall be installed within guidelines set forth by the Structural Pest Control Board of the State of Texas.

### 2.04 WATER

- A. Potable, available on-site through Contractor's water trucks. Do not use private resident's water.

### 2.05 BANK SAND

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- A. Free of clay lumps, roots, grass, salt or other foreign material.

## PART 3 EXECUTION

### 3.01 PREPARATION

- A. Verify that top soil placement and compaction has been satisfactorily completed. Verify that soil is within allowable range of moisture content.
- B. Topsoil shall be free of weeds and foreign material immediately before sodding.
- C. Do not start work until conditions are satisfactory. Do not start work during inclement or impending inclement weather.
- D. Rake areas to be sodded smooth, free from unsightly variations, bumps, ridges or depressions.
- E. Spread 2-inch layer of bank sand over areas to be sodded prior to planting of sod.
- F. Apply fertilizer at a rate of 25 lbs/1000 SF. Apply after raking soil surface and not more than 48 hours prior to laying sod. Mix thoroughly into upper 2 inches of soil. Lightly water to aid in dissipation of fertilizer.

### 3.02 APPLICATION

- A. Lay sod with closely fitted joints leaving no voids and with ends of sod strips staggered. Sod shall be laid within 24 hours of harvesting.
- B. After sod is laid, irrigate thoroughly to secure 6-inch minimum penetration into soil below sod.
- C. Tamp and roll sod with approved equipment to eliminate minor irregularities and to form close contact with soil bed immediately after planting and watering. Submit type of tamping and rolling equipment to be used to the Owner's Representative for approval, prior to construction.

### 3.03 MAINTENANCE

- A. Watering:
  - 1. Water lawn areas once a day with minimum 1/2 inch water for the first 3 weeks after area is sodded.
  - 2. After 3-week period, water twice a week with 3/4 inch of water each time unless comparable amount has been provided by rain.

3. Make weekly inspections to determine moisture content of soil unless soil is in frozen condition.
4. Water in the morning to enable soil to absorb maximum amount of water with minimum evaporation.

B. Mowing:

1. Mow sod at intervals which will keep grass height from exceeding 3-1/2 inches.
2. Set mower blades at 2-1/2 inches.
3. Not remove more than one-half of grass leaf surface.
4. Sodded areas requiring mowing within 1 month after installation shall be mowed with a light-weight rotary type mower. The sod shall be mowed only when dry and not in a saturated or soft condition.
5. Remove grass clippings during or immediately after mowing.

C. Fertilizer and Pest Control:

1. Evenly spread fertilizer composite at a rate of 40 pounds per 5,000 square feet or as recommended by manufacturer. Fertilizer shall not be placed until 2 weeks after placement of sod.
2. Restore bare or thin areas by topdressing with a mix of 50 percent sharp sand and 50 percent sphagnum peat moss.
3. Apply mixture 1/4 to 1/2 inch thick.
4. Treat areas of heavy weed and insect infestation as recommended by treatment manufacturer.

3.04 CLEANUP

- A. During course of planting, remove excess and waste materials; keep lawn areas clean and take precautions to avoid damage to existing structures, plants, grass and streets.
- B. Remove barriers, signs and all other Contractor material and equipment from project site at termination of establishment period.

END OF SECTION

## SECTION 03100

## CONCRETE FORMWORK

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Design, construction, erection and removal of structural concrete formwork.

## 1.02 UNIT PRICES

- A. No separate payment will be made for concrete formwork under this Section. Include payment in unit price for structural concrete.

## 1.03 SUBMITTALS

- A. Conform to all provisions and sections of these specifications.
- B. Shop Drawings: Show location, member size and loading of shoring. When reshoring is permitted, submit plans showing locations and member size of reshoring.
- C. Product Data and Samples:
  - 1. Corrugated Fiberboard Carton Forms: Submit certification of compliance with design criteria, description of forms, and one-foot-long sample.
  - 2. Form-coating Materials: Submit trade or brand names of manufacturers and complete description of products.
  - 3. Form ties and related accessories, including taper tie plugs, if taper ties are used.
  - 4. Form gaskets.
- D. Detailed Layout for Slip-forming: Submit detailed layout of proposed slipforming, including description of equipment, rate of progress, and other data to show suitability of method. Show provisions for ensuring attainment of required concrete surface finish.

## PART 2 PRODUCTS

## 2.01 MATERIAL

- A. Smooth Forms: New plywood, metal, plastic, tempered concrete-form hardboard, dressed lumber faced with plywood or fiberboard lining, or metal-framed plywood-faced panel material, to provide continuous, straight, smooth surfaces. Form material shall be free of raised grain, torn surfaces, worn edges, patches, dents or other defects. Furnish material in largest practical sizes to minimize number of joints and, when indicated on Drawings, conform to joint system indicated. Form material shall have sufficient strength and thickness to withstand pressure of newly placed concrete without bow or deflection.
- B. Rough Forms: Plywood, metal, dressed or undressed lumber free of knots, splits or other defects or other material acceptable to the Owner's Representative of sufficient strength and thickness to withstand pressure of newly placed concrete without bow or deflection.
- C. Plywood: Conform to PS 1, Class 1.
- D. Lumber: Conform to PS 20.
- E. Edge Forms and Intermediate Screed Strips: Type and strength compatible with the screed equipment and methods used.
- F. Plastic Forms: One-piece forms for domes, beams and pan joists. Single lengths for columns not exceeding height of 7'-6". For columns over 7'-6", use 7'-6" sections and filler sections as needed. To facilitate removal of pan joist forms, taper sides 1 inch per foot.
- G. Metal Pan Joist Forms: Removable type; fabricated of minimum 14-gage steel; one piece between end closures. Adjustable forms not allowed. Taper sides 1 inch per foot to facilitate removal.
- H. Earth Cuts for Forms:
  - 1. Use earth cuts for forming unexposed sides of grade beams cast monolithically with slabs on grade.
  - 2. Where sides of excavations are stable enough to prevent caving or sloughing, following surfaces may be cast against neat-cut excavations:
    - a. Sides of footings.
    - b. Inside face of perimeter grade beams not monolithic with slab on grade. When inside face is cast against earth, increase beam width indicated on Drawings by 1 inch.

- c. Both faces of interior grade beams not monolithic with slab on grade. When grade beam is cast against earth, increase beam width indicated on Drawings by 2 inches.
- I. Corrugated Fiberboard Carton Forms:
- 1. Corrugated fiberboard carton forms, when called for, are intended to form a void space beneath pile-supported and pier-supported slabs and other structural elements as shown.
  - 2. Provide products of a reputable manufacturer regularly engaged in commercial production of double-faced corrugated fiberboard carton forms, constructed of waterproof paper and laminated with waterproof adhesive.
  - 3. Fiberboard forms: Capable of supporting required dead load plus construction loads, and designed to lose their strength upon prolonged contact with moisture and soil bacteria.
  - 4. Seal cuts and ends of each form section by dipping in waterproof wax, unless liners and flutes are completely impregnated with waterproofing.
  - 5. Size forms as indicated on Drawings. Assemble as recommended by manufacturer, either with steel banding at 4'-0" maximum on centers, or, where liners and flutes are impregnated with waterproofing, with adequate stapling.
- J. Circular Forms:
- 1. Form round-section members with paper or fiber tubes, constructed of laminated plies using water-resistant adhesive with wax-impregnated exterior for weather and moisture protection. Provide units with sufficient wall thickness to resist loads imposed by wet concrete without deformation. Provide manufacturer's seamless units to minimize spiral gaps and seams.
  - 2. Fiberglass or steel forms may be used for round-section members.
- K. Shores: Wood or adjustable metal, with bearing plates; with double wedges at lower end.
- L. Form Ties:
- 1. Use commercially-manufactured ties, hangers and other accessories for embedding in concrete. Do not use wire not commercially fabricated for use as a form accessory.



2. Fabricate ties so ends or end fasteners can be removed without causing spalling of concrete faces. Depth from formed concrete face to the embedded portion: At least 1 inch, or twice the minimum dimension of tie, whichever is greater.
  3. Provide waterstop feature for form ties used on liquid-containing structures and on concrete walls which will have earth backfill on one side.
  4. Removable ties: Taper ties may be used when approved by the Owner's Representative. In the hole left by the removal of the taper tie, insert a preformed neoprene or polyurethane plug sized to seat at the center of the wall.
- M. Form Coating: Commercial formulation of form oil or form-release agent having proven satisfactory performance. Coating shall not bond with, stain or otherwise adversely affect concrete surfaces, or impair their subsequent treatment, including application of bonding agents, curing compounds, paint, protective liners and membrane waterproofing.
- N. Coating for Plastic Forms: Alkali-resistant gel-coat.
- O. Chamfer Strips: Unless otherwise indicated on Drawings, provide 3/4 inch chamfer strips in corners of forms to produce beveled edges where required by Part 3, Execution.
- P. Form Gaskets: Polyethylene rod, closed cell, 1-inch diameter.

## 2.02 DESIGN OF FORMWORK

- A. Conform to ACI 117, ACI 347 and building codes, unless more restrictive requirements are specified or shown on Drawings. Contractor shall design and engineer concrete formwork, including shoring and bracing. Design formwork for applicable gravity loads, lateral pressure, wind loads and allowable stresses. Camber formwork to compensate for anticipated deflection during placement of concrete when required to maintain specified tolerances. Design formwork to be readily removed without impact, shock or damage to concrete surfaces and adjacent materials.
- B. Slip Forming: Permitted on written approval of the Owner's Representative. Contractor shall demonstrate suitability of method proposed.

## PART 3 EXECUTION

### 3.01 INSTALLATION

**A. Formwork Construction**

1. Construct and maintain formwork so that it will maintain correct sizes of members, shape, alignment, elevation and position during concrete placement and until concrete has gained sufficient strength. Provide for required openings, offsets, sinkages, keyways, recesses, moldings, anchorages and inserts.
2. Construct forms for easy removal without damage to concrete surfaces.
3. Make formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt joints and provide backup material at joints as required to prevent leakage and fins. Provide gaskets for wall forms to prevent concrete paste leakage at their base.
4. Place chamfer strips in forms to bevel edges and corners permanently exposed to view, except top edges of walls, and slabs which are indicated on Drawings to be tooled. Do not bevel edges of formed joints and interior corners unless indicated on Drawings. Form beveled edges for vertical and horizontal corners of equipment bases. Unless otherwise indicated on Drawings, make bevels 3/4 inch wide.
5. Provide temporary openings at bases of column and wall forms and other points as required for observation and cleaning immediately before concrete is placed.
6. Where runways are required for moving equipment, support runways directly on the formwork or structural members. Do not allow runways or supports to rest on reinforcing steel.
7. Use smooth forms on formed concrete surfaces required to have smooth form finish or rubbed finish as specified in Section 03345 - Concrete Finishing.
8. Rough forms may be used on formed concrete surfaces indicated to have rough form finish as specified in Section 03345 - Concrete Finishing.

**B. Forms for Surfaces Requiring Smooth Form Finish:**

1. Drill forms to suit ties used and to prevent leakage of concrete mortar around tie holes. Uniformly space form ties and align in horizontal and vertical rows. Install taper ties, if used, with the large end on the wet face of the wall.
2. Provide sharp, clean corners at intersecting planes, without visible edges or offsets. Back up joints with extra studs or girts to maintain true, square intersections.

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3. Form molding shapes, recesses and projections with smooth-finish materials and install in forms with sealed joints to prevent displacement.
  4. Form exposed corners of beams and columns to produce square, smooth, solid, unbroken lines.
  5. Provide exterior exposed edges with 3/4-inch chamfer or 3/4-inch radius.
  6. Arrange facing material in orderly and symmetrical fashion. Keep number of joints to practical minimum. Support facing material adequately to prevent deflection in excess of allowable tolerances.
  7. For flush surfaces exposed to view in completed structure, overlap previously-placed hardened concrete with form sheathing by approximately 1 inch. Hold forms against hardened concrete to maintain true surfaces, preventing offsets or loss of mortar.
- C. Forms for Surfaces Requiring Rubbed Finish: Provide forms as specified in paragraph 3.01B, Smooth Form Finish. Use smooth plywood or fiberboard linings or forms, in as large sheets as practicable, and with smooth, even edges and close joints.
- D. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure supports for types of screeds required.
- E. Circular Forms: Set forms in one piece for full height of member.
- F. Surfaces to Receive Membrane Waterproofing: Coordinate surface finish, anchors, reglets and similar requirements with membrane waterproofing applicator.
- G. Fireproofing Steel Member: Construct forms to provide not less than the concrete thickness necessary, measured from face of steel member, to provide the required fire rating. Forms for concealed surfaces may be unlined.
- H. Tolerances:
1. Unless noted otherwise on Drawings, construct formwork so concrete surfaces will conform to tolerance limits listed in Tables 03100A and 03100B at end of this Section.
  2. Establish sufficient control points and benchmarks as references for tolerance checks. Maintain these references in undisturbed condition until final completion and acceptance of the work.
- I. Adjustment of Formwork:

1. Use wedges or jacks to provide positive adjustment of shores and struts. After final inspection and before concrete placement, fasten in position wedges used for final adjustment of forms.
2. Brace forms securely against lateral deflections. Prepare to compensate for settling during concrete placement.
3. For wall openings, construct wood forms that facilitate necessary loosening to counteract swelling of forms.

J. Corrugated Fiberboard Carton Forms:

1. Place on smooth firm bed of suitable material to prevent vertical displacement; set tight to prevent horizontal displacement. Exercise care to avoid buckling of forms. Install in accordance with manufacturer's directions and recommendations.
2. Fit carton forms tightly around piles and piers; completely fill the space between subgrade and concrete placement with carton forms to form a void space.
3. Protect carton forms from moisture and maintain in a dry condition until concrete is placed on them. If they become wet before placement of concrete, allow them to dry and carefully inspect for strength before concrete is placed.
4. Before concrete placement, replace damaged or deteriorated forms which are incapable of supporting concrete dead load plus construction live loads.

### 3.02 PREPARATION OF FORM SURFACES

- A. Clean surfaces of forms and embedded materials before placing concrete. Remove accumulated mortar, grout, rust and other foreign matter.
- B. Coat forms for exposed or painted concrete surfaces with form oil or form-release agent before placing reinforcement. Cover form surfaces with coating material in accordance with manufacturer's printed instructions. Do not allow excess coating material to accumulate in forms or to contact hardened concrete against which fresh concrete will be placed. Remove coating material from reinforcement before placing concrete.
- C. Forms for unexposed surfaces, other than retained-in-place metal forms, may be wet with water immediately before concrete placement in lieu of coating. When possibility of freezing temperatures exists, however, the use of coating is mandatory.

### 3.03 REMOVAL OF FORMS

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- A. Time Limits:
1. When repair of surface defects or finishing is required before concrete is aged, forms on vertical surfaces may be removed as soon as concrete has hardened sufficiently to resist damage from removal operations.
  2. Remove top forms on sloping surfaces of concrete as soon as concrete has attained sufficient stiffness to prevent sagging. Loosen wood forms for wall openings as soon as this can be accomplished without damage to concrete. Leave formwork for water-retaining structures in place for at least 4 days. Formwork for non-water-retaining columns, walls, sides of beams and other formwork components not supporting weight of concrete may be removed after 12 hours, provided concrete has hardened sufficiently to resist damage from removal operations, and provided removal of forms will not disturb members supporting weight of concrete.
  3. Forms and shoring supporting weight of concrete or construction loads: Leave in place until concrete has reached minimum strength specified for removal of forms and shoring. Do not remove such forms in less than 4 days.
- B. Circular Paper or Spiral Tube Forms: Follow manufacturer's directions for form removal. Take necessary precautions to prevent damage to concrete surface. When removal is done before completion of curing time, replace form, tie in place and seal to retard escape of moisture.
- C. Removal Strength:
1. Control Tests: Suitable strength-control tests will be required as evidence that concrete has attained specified strength for removal of formwork or shoring supporting weight of concrete in beams, slabs and other structural members. Furnish test cylinders and data to verify strength for early form removal.
    - a. Field-cured Test Cylinders: When field-cured test cylinders reach specified removal strength, formwork or shoring may be removed from respective concrete placements.
    - b. Laboratory-cured Test Cylinders: When concrete has been cured as specified for structural concrete for same time period required by laboratory-cured cylinders to reach specified strength, formwork or shoring may be removed from respective concrete placements. Determine length of time that concrete has been cured by totaling the days or fractions of days, not necessarily consecutive, during which air temperature surrounding concrete is above 50 degrees F and concrete

has been damp or thoroughly sealed against evaporation and loss of moisture.

2. Compressive Strengths: The minimum concrete compressive strength for removal of formwork supporting weight of concrete is 75 percent of specified minimum 28-day strength for class of concrete involved.

### 3.04 RESHORING

- A. When reshoring is permitted, plan operations in advance and obtain the Owner's Representative's approval of such operations. While reshoring is under way, keep live load off new construction. Do not permit concrete in any beam, slab, column or other structural member to be subjected to combined dead and construction loads in excess of loads permitted for developed concrete strength at time of reshoring.
- B. Place reshores as soon as practicable after form-stripping operations are complete but in no case later than end of day on which stripping occurs. Tighten reshores to carry required loads without over stressing construction. Leave reshores in place until tests representative of concrete being supported have reached specified strength at time of removal of formwork supporting weight of concrete.
- C. Floors supporting shores under newly-placed concrete: Leave original supporting shores in place, or re-shore. Locate reshores directly under shore position above. Extend reshoring over a sufficient number of stories to distribute weight of newly-placed concrete, forms and construction live loads in such manner that design superimposed loads of floors supporting shores are not exceeded.

### 3.05 FORM REUSE

- A. Do not reuse forms that are worn or damaged beyond repair. Thoroughly clean and recoat forms before reuse. For wood and plywood forms to be used for exposed smooth finish, sand or otherwise dress concrete contact surface to original condition or provide form liner facing material. For metal forms, straighten, remove dents and clean to return forms to original condition.

TABLE 03100A

TOLERANCES FOR FORMED SURFACES CONCRETE IN BUILDINGS\*\*

VARIATION FROM	VARIATION IN	FOR ANY 10-FOOT LENGTH	FOR ANY 20-FOOT LENGTH OR ANY BAY	MAXIMUM FOR ENTIRE DIMENSION
PLUMB OR SPECIFIED BATTER	Lines And Surfaces of Columns, Piers, Walls And Arrises	1/4"	---	1"
	Exposed Corner Columns, Control Joint Grooves, And Other Conspicuous Lines	---	1/4"	1/2"
LEVEL OR SPECIFIED GRADE	Slab Soffits, Ceilings, Beam Soffits, And Arrises (Measured Before Removal of Shores)	1/4"	3/8"	3/4"
	Exposed Lintels, Sills, Parapets, Horizontal Grooves And Other Conspicuous Lines	---	1/4"	1/2"
DRAWING DIMENSIONS	Position of Linear Building Lines, Columns, Walls, And Partitions	---	1/2"	1"
	Size And Location of Sleeves, Floor Openings And Wall Openings	---	---	±1/4"
	Cross Section of Columns, Beams, Slabs, And Walls	---	---	+1/2", -1/4"
	Footings* in Plan	---	---	+2", -1/2"
	Footing Misplacement or Eccentricity in Direction of Error (The Lesser Of)	---	---	2% OF WIDTH OR 2"
	Footing Thickness Decrease	---	---	5%
	Footing Thickness Increase	---	---	NO LIMIT
	Step Rise in Flight of Stairs	---	---	±1/8"
	Step Tread in Flight of Stairs	---	---	±1/4"
	Consecutive Step Rise	---	---	±1/16"
Consecutive Step Tread	---	---	±1/8"	

\* Footing tolerances apply to concrete dimensions only, not to positioning of vertical reinforcing steel, dowels, or embedded items.

\*\* Includes water and wastewater process structures.

TABLE 03100B  
TOLERANCES FOR FORMED SURFACES  
CONCRETE IN BRIDGES, WHARVES AND MARINE STRUCTURES

VARIATION FROM	VARIATION IN	MAXIMUM
PLUMB OR SPECIFIED BATTER	Surfaces of columns, piers and walls	1/2" in 10'
LEVEL OR SPECIFIED GRADE	Top surfaces of slabs	See Section 03345
	Top surfaces of curbs and railings	3/16" in 10'
DRAWING DIMENSIONS	Cross section of columns, caps, walls, beams and similar members	+1/2", -1/4"
	Thickness of deck slabs	+1/4", - 1/8"
	Size and location of slab and wall openings	± 1/2"
	Footings in plans	+2", -1/2"
	Footing misplacement or eccentricity in direction of error (the lesser of)	2% of Width or 2"
	Footing thickness decrease	5%
	Footing thickness increase	No Limit
	Step rise in flight of stairs	±1/8"
	Step tread in flight of stairs	±1/4"
	Consecutive step rise	±1/16"
	Consecutive step tread	±1/8"

END OF SECTION

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## SECTION 03210

## REINFORCING STEEL

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

Structural concrete reinforcement and grouting of reinforcement dowel bars into hardened concrete.

## 1.02 UNIT PRICES

No separate payment will be made for reinforcing steel or grouting that is part of the Work as bid. Include payment in unit price for structural concrete.

## 1.03 SUBMITTALS

Conform to all provisions and sections in these specifications.

Shop Drawings:

1. Submit shop drawings detailing reinforcement fabrication, bar placement location, splices, spacing, bar designation, bar type, length, size, bending, number of bars, bar support type and other pertinent information, including dimensions. Provide sufficient detail for placement of reinforcement without use of Contract Drawings. Information shall correspond directly to data listed on bill of materials.
2. Use of reproductions of Contract Drawings by Contractor, Subcontractor, erector, fabricator or material supplier in preparation of shop drawings (or in lieu of preparation of shop drawings) signifies acceptance by that party of information shown thereon as correct, and acceptance of obligation to pay for any job expense, real or implied, arising due to errors that may occur thereon. Remove references to Design Engineer, including seals, when reproductions of Contract Drawings are used as shop drawings.
3. Detail shop drawings in accordance with ACI 315, Figure 6.
4. Submit shop drawings showing location of proposed additional construction joints as required under Section 03250 - Joints in Concrete Structures, and obtain approval of the Owner's Representative, prior to submitting reinforcing steel shop drawings.

Bill of Materials: Submit with shop drawings.

Product Data:

5. Mechanical Bar Splices: Submit manufacturer's technical literature, including specifications and installation instructions.

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6. Epoxy grout proposed for anchoring reinforcing dowels to hardened concrete: Submit manufacturer's technical literature including recommended installation procedures.

Certificates:

7. Submit steel manufacturer's certificates of mill tests giving properties of steel proposed for use. List manufacturer's test number, heat number, chemical analysis, yield point, tensile strength and percentage of elongation. Identify proposed location of steel in work.
8. Foreign-manufactured reinforcing bars shall be tested for conformance to ASTM requirements by a certified independent testing laboratory located in United States. Certification from any other source is not acceptable. Submit test reports for review. Do not begin fabrication of reinforcement until material has been approved.

#### 1.04 HANDLING AND STORAGE

Store steel reinforcement above ground on platforms, skids or other supports. Protect reinforcing from mechanical injury, surface deterioration and formation of excessive, loose or flaky rust caused by exposure to weather. Protect epoxy-coated reinforcing from formation of any amount of rust.

#### 1.05 QUALITY ASSURANCE

Notify the Owner's Representative at least 48 hours before concrete placement so that reinforcement may be inspected, and errors corrected, without delaying Work.

### PART 2 PRODUCTS

#### 2.01 MATERIAL

Reinforcing Bars: Deformed bars conforming to ASTM A615, grade as indicated on Drawings, except column spirals and those shown on Drawings to be smooth bars. Where grade is not shown on Drawings, use Grade 60.

Smooth Bars: Where indicated on Drawings, use smooth bars conforming to ASTM A36; ASTM A615, Grade 60; or ASTM A675, Grade 70.

Column Spirals: Bars conforming to ASTM A615, Grade 60, or wire conforming to ASTM A82.

Epoxy-Coated Deformed Bars, Column Spirals and Smooth Bars: Conform to ASTM A775/A775M.

Welded Wire Fabric:

1. Welded Smooth Wire Fabric: Conform to ASTM A185.
2. Welded Deformed Wire Fabric: Conform to ASTM A497.

3. Provide wire size, type and spacing as shown. Where type is not shown on Drawings, use welded smooth wire fabric.

4. Furnish welded wire fabric in flat sheets only.

Tie Wire: 16-1/2 gage or heavier annealed steel wire. Use plastic-coated tie wire with epoxy-coated reinforcing steel.

Bar Supports: Provide chairs, riser bars, ties and other accessories made of plastic or metal, except as otherwise specified. Use bar supports and accessories of sizes required to provide required concrete cover. Where concrete surfaces are exposed to weather, water or wastewater, provide plastic accessories only; do not use galvanized or plastic-tipped metal in such locations. Provide metal bar supports and accessories rated Class 1 or 2 conforming to CRSI MSP-1 Manual of Standard Practice. Use epoxy-coated bar supports with epoxy-coated reinforcing bars.

Slabs on Grade: Provide chairs with sheet metal bases or provide precast concrete bar supports 3 inches wide, 6 inches long, and thick enough to allow required cover. Embed tie wires in 3-inch by 6-inch side.

Mechanical Bar Splices:

5. Conform to ACI 318; use where indicated on Drawings.

a. Compression splices shall develop ultimate stress of reinforcing bar.

b. Tension splices shall develop 125 percent of minimum yield point stress of reinforcing bar.

6. Regardless of chemical composition of steel, any heat effect shall not adversely affect performance of reinforcing bar.

Welded Splices:

7. Provide welded splices where shown and where approved by the Owner's Representative. Welded splices of reinforcing steel shall develop a tensile strength exceeding 125 percent of the yield strength of the reinforcing bars connected.

8. Provide materials for welded splices conforming to AWS D1.4.

Epoxy Grout: High-strength rigid epoxy adhesive, conforming to ASTM C881, Type IV, manufactured for purpose of anchoring dowels into hardened concrete and the moisture condition, application temperature and orientation of the hole to be filled. Unless otherwise shown, depth of embedment shall be as required to develop the full tensile strength (125 percent of yield strength) of dowel, but not less than 12 diameters.

## 2.02 FABRICATION

Bending: Fabricate bars to shapes indicated on Drawings by cold bending. Bends shall conform to minimum bend diameters specified in ACI 318. Do not straighten or rebend bars. Fabricate epoxy-coated reinforcing steel to required shapes in a manner that will not damage epoxy coating. Repair any damaged epoxy coating with patching material conforming to Item 4.4 of ASTM A775/A775M.

Splices:

1. Locate splices as indicated on Drawings. Do not locate splices at other locations without approval of the Owner's Representative. Use minimum number of splices located at points of minimum stress. Stagger splices in adjacent bars.
2. Length of lap splices: As shown on Drawings.
3. Prepare ends of bars at mechanical splices in accordance with splice manufacturer's requirements.

Construction Joints: Unless otherwise shown, continue reinforcing through construction joints.

Bar Fabrication Tolerances: Conform to tolerances listed in ACI 315, Figures 4 and 5.

Standard Hooks: Conform to the requirements of ACI 318.

Marking: Clearly mark bars with waterproof tags showing number of bars, size, mark, length and yield strength. Mark steel with same designation as member in which it occurs.

## PART 3 EXECUTION

### 3.01 PREPARATION

Clean reinforcement of scale, loose or flaky rust and other foreign material, including oil, mud or coating that will reduce bond to concrete.

### 3.02 INSTALLATION

Placement Tolerances: Place reinforcement within tolerances of Table 03210A at the end of this Section. Bend tie wire away from forms to maintain the specified concrete coverage.

Interferences: Maintain 2-inch clearance from embedded items. Where reinforcing interferes with location of other reinforcing steel, conduit or embedded items, bars may be moved within specified tolerances or one bar diameter, whichever is greater. Where greater movement of bars is required to avoid interference, notify the Owner's Representative. Do not cut reinforcement to install inserts, conduit, mechanical openings or other items without approval of the Owner's Representative.

Concrete Cover: Provide clear cover measured from reinforcement to face of concrete as listed in Table 03210B at the end of this Section, unless otherwise indicated on Drawings.

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**Placement in Forms:** Use spacers, chairs, wire ties and other accessory items necessary to assemble, space and support reinforcing properly. Provide accessories of sufficient number, size and strength to prevent deflection or displacement of reinforcement due to construction loads or concrete placement. Use appropriate accessories to position and support bolts, anchors and other embedded items. Tie reinforcing bars at each intersection, and to accessories. Blocking reinforcement with concrete or masonry is prohibited.

**Placement for Concrete on Ground:** Support bar and wire reinforcement on chairs spaced at approximately 3 feet on centers each way. Use minimum of one support for each 9 square feet. Tie supports to reinforcing bars and wires.

**Vertical Reinforcement in Columns:** Offset vertical bars by at least one bar diameter at splices. Provide accurate templates for column dowels to ensure proper placement.

**Splices:**

1. Do not splice bars, except at locations indicated on Drawings or reviewed shop drawings, without approval of the Owner's Representative.
2. **Lap Splices:** Unless otherwise shown or noted, Class B, conforming to ACI 318-89, Section 12.15.1. Tie securely with wire prior to concrete placement, to prevent displacement of splices during concrete placement.
3. **Mechanical Bar Splices:** Use only where indicated on Drawings or approved by the Owner's Representative. Install in accordance with manufacturer's instructions.
  - a. Couplers located at a joint face shall be of a type which can be set either flush or recessed from the face as shown. Seal couplers prior to concrete placement to completely eliminate concrete or cement paste from entering.
  - b. Couplers intended for future connections: Recess 1/2 inch minimum from concrete surface. After concrete is placed, plug coupler and fill recess with sealant to prevent contact with water or other corrosive materials.
  - c. Unless noted otherwise, match mechanical coupler spacing and capacity to that shown for the adjacent reinforcing.

**Construction Joints:** Place reinforcing continuous through construction joints, unless noted otherwise.

**Welded Wire Fabric:** Install wire fabric in as long lengths as practicable. Unless otherwise indicated on Drawings, lap adjoining pieces at least 6 inches or one full mesh plus 2 inches, whichever is larger. Lace splices with wire. Do not make end laps midway between supporting beams, or directly over beams of continuous

structures. Offset end laps in adjacent widths to prevent continuous laps. Conform to WRI - Manual of Standard Practice for Welded Wire Fabric.

Field Bending: Shape reinforcing bent during construction operations to conform to Drawings. Bars shall be cold-bent; do not heat bars. Closely inspect reinforcing for breaks. When reinforcing is damaged, replace, Cadweld, or otherwise repair, as directed by the Owner's Representative. Do not bend reinforcement after it is embedded in concrete.

Epoxy-coated Reinforcing Steel: Install in accordance with Paragraph 3.02J, Field Bending, and in a manner that will not damage epoxy coating. Repair damaged epoxy coating with patching material as specified in Paragraph 2.02A, Bending.

Field Cutting: Cut reinforcing bars by shearing or sawing. Do not cut bars with cutting torch.

Welding of reinforcing bars is prohibited, except where shown on Drawings.

### 3.03 GROUTING OF REINFORCING AND DOWEL BARS

Use epoxy grout for anchoring reinforcing and dowel steel to existing concrete in accordance with epoxy manufacturer's instructions. Drill hole not more than 1/4 inch larger than steel bar diameter (including height of deformations for deformed bars) in existing concrete. Just before installation of steel, blow hole clean of all debris using compressed air. Partially fill hole with epoxy, using enough epoxy so when steel bar is inserted, epoxy grout will completely fill hole around bar. Dip end of steel bar in epoxy and twist bar while inserting into partially filled hole.

TABLE 03210A  
 REINFORCEMENT PLACEMENT TOLERANCES

PLACEMENT	TOLERANCE IN INCHES
Clear Distance - To formed soffit: To other formed surfaces: Minimum spacing between bars	-1/4 ±1/4 -1/4
Clear distance from unformed surface to top reinforcement - Members 8 inches deep or less: Members more than 8 inches deep but less than 24 inches deep: Members 24 inches deep or greater: Uniform spacing of bars (but the required number of bars shall not be reduced): Uniform spacing of stirrups and ties (but the required number of stirrups and ties shall not be reduced):	±1/4 -1/4, +1/2 -1/4, +1 ±1 ±1
Longitudinal locations of bends and ends of reinforcement - General: Discontinuous ends of members: Length of bar laps:	±1 ±1/2 -1
Embedded length - For bar sizes No. 3 through 11: For bar sizes No. 14 and 18:	-1 -2

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TABLE 03210B  
 MINIMUM CONCRETE COVER FOR REINFORCEMENT

SURFACE	MINIMUM COVER IN INCHES
Slabs and Joists - Top and bottom bars for dry conditions - No. 14 and No. 18 bars: No. 11 bars and smaller:	   1-1/2  1
Formed concrete surfaces exposed to earth, water or weather; over, or in contact with, sewage; and for bottoms bearing on work mat, or slabs supporting earth cover - No. 5 bars and smaller: No. 6 through No. 18 bars:	   1-1/2  2
Beams and Columns - For dry conditions - Stirrups, spirals and ties: Principal reinforcement: Exposed to earth, water, sewage or weather - Stirrups and ties: Principal reinforcement:	   1-1/2  2   2  2-1/2
Walls -	



For dry conditions -	
No. 11 bars and smaller:	1
No. 14 and No. 18 bars:	1-1/2
Formed concrete surfaces exposed to earth, water, sewage or weather, or in contact with ground -	
Circular tanks with ring tension:	2
All others:	2
Footings and Base Slabs -	
At formed surfaces and bottoms bearing on concrete work mat:	2
At unformed surfaces and bottoms in contact with earth:	3
Over top of piles:	2
Top of footings – same as slabs	

END OF SECTION

## SECTION 03250

## JOINTS IN CONCRETE STRUCTURES

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Waterstops and similar joints in concrete structures intended to retain water or withstand hydrostatic pressure.

## 1.02 UNIT PRICES

- A. No separate payment will be made for joints under this Section. Include payment in unit price for structural concrete.

## 1.03 DEFINITIONS

- A. The following definitions refer to concrete joints in water-retaining structures. Unless otherwise indicated, all such joints shall have a waterstop or sealant groove to prevent water penetration at the joint.
- B. Construction Joint: The joint or surface between two concrete pours, produced by placing fresh concrete in contact with a hardened concrete surface.
  - 1. A bond breaker may or may not be used, as indicated.
  - 2. Reinforcing steel is continuous through the joint, unless otherwise indicated.
- C. Contraction Joint: A joint similar to a construction joint, but intended to accommodate concrete shrinkage and similar movement.
  - 1. A bond breaker is always used.
  - 2. Reinforcing steel is held back 4-1/2 inches from the joint surface, and sleeved dowels are used so pours can move apart, unless otherwise indicated.
- D. Expansion Joint: A joint similar to a construction or contraction joint, but intended to accommodate both expansion and contraction.
  - 1. Compressible joint filler is placed against the hardened concrete, to form and separate the second pour so pours can move together or apart.
  - 2. A centerbulb waterstop and joint sealant are used to fill the gap, unless otherwise indicated.

3. Reinforcing steel is held back, and sleeved dowels are used to allow and control movement, unless otherwise indicated.
- E. Control Joint: A groove cut or formed in the face of a single pour, producing a weaker plane more likely to crack; used in an attempt to control locations of normal shrinkage cracks.
1. Joint sealant is used to fill the groove.
  2. Reinforcing steel is continuous, since the pour is monolithic.

#### 1.04 SUBMITTALS

- A. Submit under provisions of all provisions and sections of these specifications.
- B. Product Data: Information sufficient to indicate compliance with Contract Documents, including manufacturer's descriptive literature and specifications.
- C. Shop Drawings: Indicate type, size and location of each joint in each structure, and installation details.
- D. Samples: For extrusions, submit 6-inch lengths. For molded or fabricated items, submit whole items. Submit 6-inch beads for sealants and 6-inch square samples for coatings, on appropriate substrates.
- E. Quality Control Submittals: Submit manufacturer's instructions and recommendations for storage, handling and installation including material safety data sheets, and, where specified, test reports certified by an independent testing laboratory or the manufacturer, and manufacturer's certification that products furnished comply with Contract Documents.

#### 1.05 QUALITY ASSURANCE

- A. Waterstop Inspection: Notify the Owner's Representative to schedule inspection at least 24 hours prior to work involving waterstop installation or fabrication of waterstop field joints.
- B. Defects include but are not limited to the following:
1. Offsets at joints greater at any point than 1/16 inch or 15 percent of material thickness, whichever is less.
  2. Exterior cracks at joints due to incomplete bond, which are deeper at any point than 1/16 inch or 15 percent of material thickness, whichever is less.

3. At any point, any combination of offsets or exterior cracks resulting in a net reduction in the cross-sectional area of the waterstop greater than 1/16 inch or 15 percent of material thickness at any point, whichever is less.
  4. Misalignment of joint resulting in misalignment of the waterstop in excess of 1/2 inch in 10 feet.
  5. Porosity in the welded joint as evidenced by visual inspection.
  6. Bubbles or inadequate bond which can be detected with a penknife. If, while probing the joint with the point of a penknife, the knife breaks through the outer portion of the weld into a bubble, the joint is defective.
- C. Field Joint Samples: Prior to use of the waterstop material in the field, fabricate and submit for review a sample of a fabricated mitered cross and a tee constructed of each size or shape of material to be used. Fabricate samples so material and workmanship represent fittings to be furnished. Field samples of fabricated fittings (crosses, tees, etc.) will be selected at random by the Owner for testing by a laboratory at Owner's expense; they shall have a tensile strength across the joints equal to at least 600 psi when tested in accordance with ASTM D638. Contractor shall pay cost of failed tests and retesting required by failures.
- D. Construction Joint Sealant: Prepare adhesion and cohesion test specimens, as specified, at intervals of 5 working days while sealants are being installed.
- E. Sealant material shall show no signs of adhesive or cohesive failure when tested in accordance with the following procedure in laboratory and field tests:
1. Prepare sealant specimen between 2 concrete blocks (1 inch by 2 inches by 3 inches); spacing between the blocks shall be 1 inch. Use coated spacers (2 inches by 1-1/2 inches by 1/2 inch) to ensure sealant cross-sections of 1/2 inch by 2 inches with a width of 1 inch.
  2. Cast and cure sealant according to manufacturer's recommendations except that curing period shall be not less than 24 hours.
  3. Following curing period, widen the gap between blocks to 1-1/2 inches. Use spacers to maintain this gap for 24 hours prior to inspection for failure.
- F. Sealant Installer: A competent waterproofing specialty contractor, approved by sealant manufacturer, having a record of successful performance in similar installations. Before beginning work, sealant manufacturer's representative shall instruct installer's crew in proper method of application.

## 1.06 WARRANTY

- A. Provide a written warranty covering entire sealant installation against faulty and incompatible materials and workmanship, and agreeing to repair or replace defective work at no additional cost to the Owner, for a period of 5 years.

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle materials in accordance with manufacturer's printed instructions.
- B. Store waterstops to permit free circulation of air around waterstop material.

### PART 2 PRODUCTS

#### 2.01 EPA POTABLE CLASSIFICATION

- A. All joint materials shall be materials that reach acceptability for use in potable water systems no later than 30 days after installation, as classified by the Environmental Protection Agency.

#### 2.02 PVC WATERSTOPS

- A. Extrude from virgin polyvinyl chloride elastomer. Use no reclaimed or scrap material. Submit waterstop manufacturer's current test reports and manufacturer's written certification that the material furnished meets or exceeds Corps of Engineers Specification CRD-C572 and other specified requirements.
- B. Flat Strip and Center-Bulb Waterstops: As detailed, and as manufactured by: Kirkhill Rubber Co., Brea, California; Water Seals, Inc., Chicago, Illinois; Progress Unlimited, Inc., New York, New York; Greenstreak Plastic Products Co., St. Louis, Missouri; or equal acceptable to the Owner's Representative, provided that at no place shall waterstop thickness be less than 3/8 inch.
- C. Multi-Rib Waterstops: As detailed, and as manufactured by Water Seals, Inc., Chicago, Illinois; Progress Unlimited, Inc., New York, New York; Greenstreak Plastic Products Co., St. Louis, Missouri; or equal acceptable to the Owner's Representative. Use prefabricated joint fittings at intersections of ribbed-type waterstops.
- D. Other Waterstops: When types of waterstops not listed above are indicated on the Drawings, they are subject to these specifications.
- E. Waterstop Properties: When tested in accordance with specified standards, waterstop material shall meet or exceed the following requirements:

<u>Physical Property, Sheet Material</u>	<u>Value</u>	<u>ASTM Standard</u>
Tensile Strength-min (psi):	1750	D638, Type IV
Ultimate Elongation-min (percent):	350	D638, Type IV
Low Temp Brittleness-max (degrees F):	-35	D746
Stiffness in Flexure-min (psi):	400	D747
Accelerated Extraction (CRD-C572) -		
Tensile Strength-min (psi):	1500	D638, Type IV
Ultimate Elongation-min (percent):	300	D638, Type IV
Effect of Alkalies (CRD-C572) -		
Change in Weight (percent):	+0.25/-0.10	-----
Change in Durometer, Shore A:	+5	D2240
Finished Waterstop -		
Tensile Strength-min (psi):	1400	D638, Type IV
Ultimate Elongation-min (percent):	280	D638, Type IV

2.03 JOINT SEALANT

A. Material: Polyurethane polymer designed for bonding to concrete which is continuously submerged in water. Use no material with an unsatisfactory history of bond or durability when used in joints of liquid-retaining structures.

B. Sealant Properties at 73 degrees F, 50 percent relative humidity:

Work Life: 45 - 180 minutes

Time to Reach 20 Shore A Hardness

(at 77 degrees F, 200 gr quantity):	24 hours, maximum
Ultimate Hardness (ASTM D2240):	20 - 45 Shore A
Tensile Strength (ASTM D412):	200 psi, minimum
Ultimate Elongation (ASTM D412):	400 percent, minimum
Tear Resistance (Die C ASTM D624):	75 pounds per inch of thickness, minimum
Color:	Light Gray

C. Polyurethane Sealants for Waterstop Joints in Concrete:

1. Sealant: 2-part polyurethane; when cured, sealant shall meet or exceed ANSI/ASTM C920 or Federal Specification TT-S-0227 E(3) for 2-part material.
2. Vertical and overhead horizontal joints: Use only "non-sag" compounds meeting ANSI/ASTM C920, Class 25, Grade NS, or Federal Specification TT-S-0227 E(3), Type II, Class A.
3. Plane horizontal joints: Self-leveling compounds meeting ANSI/ASTM C920, Class 25, Grade P, or Federal Specification TT-S-0227 E(3), Type I. For joints subject to either pedestrian or vehicular traffic, use a compound providing non-tracking characteristics and having a Shore A hardness range of 35 to 45.
4. Primer: Use only compatible materials manufactured or recommended for the application by the sealant manufacturer, in accordance with the printed instructions and recommendations of the sealant manufacturer.

D. Acceptable Products: Polymeric Systems Inc. "PSI-270"; Pacific Polymers "Elastothane 227R"; Sika Corporation "Sikaflex 2C", or equal acceptable to the Owner's Representative.

E. Sealants for non-waterstop joints: Conform to Section 07920 - Sealants and Caulking.

## 2.04 MISCELLANEOUS MATERIALS

A. Bearing Pad: ASTM D2000 neoprene, Grade 2 or 3, Type BC, tensile strength 1450 psi, 60 durometer hardness, unless otherwise indicated.

B. Neoprene Sponge: ASTM D1056, Type 2C3-E1 closed-cell expanded neoprene.

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- C. Preformed Joint Filler: ASTM D1752 Type I non-extruding type; neoprene sponge or polyurethane of firm texture, except as otherwise specified. Bituminous fiber type will not be permitted.
- D. Control Joint Former: Continuous plastic insert strips with anchorage ribs located at the bottom and an enlarged upper portion that is readily removable without damage to the concrete, and is sized to form sealant groove. Size to extend to at least 1/4 slab depth.
- E. Backing Rod: Extruded closed-cell polyethylene foam rod, compatible with joint sealant materials used, with a tensile strength not less than 40 psi, and compression deflection approximately 25 percent at 8 psi. Size: 1/8-inch larger in diameter than joint width, except use one-inch diameter rod for 3/4-inch wide joints.
- F. Bond Breaker: "Super Bond Breaker" manufactured by Burke Company, San Mateo, California; "Select Cure CRB", manufactured by Select Products Co., Upland, California, or equal acceptable to the Owner's Representative. Bond breaker shall contain a fugitive dye so areas of application will be readily distinguishable.
- G. Slip Dowels: Smooth epoxy-coated bars conforming to ASTM A775.
- H. PVC Tubing: ASTM D2241, Schedule SDR 13.5.

## 2.05 RESILIENT WATERSTOP

- A. Resilient waterstop, where called for on the Drawings, shall be either a bentonite or adhesive type material.
- B. Bentonite Waterstop:
  - 1. Material: 75 percent bentonite, mixed with butyl rubber-hydrocarbon containing less than 1.0 percent volatile matter, and free of asbestos fibers or asphaltics.
  - 2. Manufacturer's rated temperature ranges: For application, 5 to 125 degrees F; in service, -40 to 212 degrees F.
  - 3. Cross-sectional dimensions, unexpanded waterstop: One inch by 3/4 inch.
  - 4. Provide with adhesive backing capable of producing excellent adhesion to concrete surfaces.
- C. Adhesive Waterstop:
  - 1. Adhesive waterstop shall be at least 2 inches in diameter and shall be Synko-Flex preformed plastic adhesive waterstop by Synko-Flex Products, Inc., or

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equal. The waterstop shall meet or exceed requirements of Federal Specification SS-S-210A.

2. The adhesive waterstop shall be supplied wrapped completely by a two part protective paper.
3. The adhesive waterstop material shall have independent laboratory tests verifying that the material seals joints in concrete against leakage when subjected to a minimum of 30 psi water pressure for at least 72 hours.
4. Primer, to be used on hardened concrete surfaces, shall be provided by the same manufacturer as the waterstop material.

### PART 3 EXECUTION

#### 3.01 INSTALLATION

- A. Embed waterstops in concrete across joints as shown. Waterstops shall be continuous for the extent of the joint; make splices necessary to provide such continuity in accordance with manufacturer's instructions. Support and protect waterstops during construction operations; repair or replace waterstops damaged during construction.
- B. Install waterstops in concrete on one side of joints, leaving other side exposed until the next pour. When a waterstop will remain exposed for 2 days or more, shade and protect the exposed waterstop from direct rays of the sun during the entire exposure and until the exposed portion of the waterstop is embedded in concrete.

#### 3.02 SPLICES IN WATERSTOPS

- A. Splice waterstops by heat-sealing adjacent waterstop sections in accordance with the manufacturer's printed instructions.
  1. Do not damage material by heat sealing.
  2. Splice tensile strength: At least 60 percent of unspliced material tensile strength.
  3. Maintain continuity of waterstop ribs and tubular center axis.
- B. Butt end-to-end joints of 2 identical waterstop sections may be made in the forms during placement of waterstop material.
- C. Prior to placement in formwork, prefabricate all waterstop joints involving more than 2 ends to be joined together, an angle cut, an alignment change, or the joining of 2 dissimilar waterstop sections, allowing not less than 24-inch long strips of waterstop material beyond the joint. Upon inspection and approval by the Owner's

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Representative, install prefabricated waterstop joint assemblies in formwork, and butt-weld ends of the 24-inch strips to the straight-run portions of waterstop in the forms.

- D. Where a center bulb waterstop intersects and is joined to a non-center bulb waterstop, take care to seal the end of the center bulb, using additional PVC material if needed.

### 3.03 JOINT CONSTRUCTION

#### A. Setting Waterstops:

1. Correctly position waterstops during installation. Support and anchor waterstops during progress of the work to ensure proper embedment in concrete. Locate symmetrical halves of waterstops equally between concrete pours at joints, with center axis coincident with joint openings. Thoroughly work concrete in joint vicinity for maximum density and imperviousness.
2. Flat-strip waterstop: Prevent folding over by concrete during placement. Unless otherwise shown, hold waterstops in place with wire ties on 12-inch centers passed through the waterstop edge and tied to reinforcing steel.
  - a. Horizontal waterstops (with flat face in vertical plane): Hold in place by fastening upper waterstop edge to continuous supports.
  - b. Horizontal waterstops (with flat face in horizontal plane): Work concrete under waterstops by hand to eliminate air and rock pockets.
3. Place center bulb waterstops in expansion joints centered on joint filler material.
4. Where a waterstop in a vertical wall joint does not connect with any other waterstop, and is not intended to be connected to a waterstop in a future concrete placement, terminate the waterstop 6 inches below the top of the wall.

- B. Joint Location: Unless specifically noted otherwise, provide construction joints at 25-foot maximum spacing for concrete construction. Where joints are shown spaced greater than 40 feet apart, provide additional joints to maintain the 25-foot maximum spacing. Submit joint locations for review by the Owner's Representative.

- C. Joint Preparation: Prepare surfaces in accordance with Section 03310 - Structural Concrete. Unless otherwise indicated, bonding is required at horizontal concrete joints in walls. Except on horizontal wall construction joints, wall-to-slab joints, or where otherwise shown or specified, at joints where waterstops are required, coat the joint face of the first pour with bond breaker as specified.

- D. Replacement of Defective Field Joints: Replace waterstop field joints showing evidence of misalignment, offset, porosity, cracks, bubbles, inadequate bond or other defects with products and joints complying with Contract Documents.
- E. Construction Joint Sealant:
1. In water-bearing floor slabs and elsewhere where indicated, provide construction joints with tapered grooves filled with construction joint sealant. Leave groove-forming material in place until time grooves are cleaned and filled with joint sealant. After removing groove forms, remove laitance and fins and sandblast the grooves. Allow grooves to dry thoroughly, then blow out, immediately prime surfaces, place bond-breaker tape in bottom of groove and fill with construction joint sealant. Use no sealant without a primer. Completely fill sealant grooves. Thoroughly clean areas designated to receive sealant, as specified for tapered grooves, prior to sealant application.
  2. Mix and install primer and sealant in accordance with manufacturer's printed instructions and recommendations. Do not coat sides of sealant groove with bond breaker, curing compound or other substance which would interfere with proper sealant bond. Allow at least 7 days for sealant to achieve final cure before filling structure with water.
  3. Thoroughly and uniformly mix 2-part catalyst-cured material.
  4. Remove and replace improperly cured sealants after the manufacturer's recommended curing time; thoroughly sandblast the groove to remove all traces of uncured or partially-cured sealant and primer, then re-prime and re-seal with specified sealant.
- F. Resilient Waterstop:
1. Install resilient waterstop in accordance with manufacturer's instructions and recommendations except as otherwise indicated and specified.
  2. When requested by the Owner's Representative, provide technical assistance by manufacturer's representative in the field at no additional cost to the Owner.
  3. Use resilient waterstop only where complete confinement by concrete is provided; do not use in expansion or contraction joints.
  4. Where resilient waterstop is used in combination with PVC waterstop, lap resilient waterstop over PVC waterstop a minimum of 6 inches and place in contact with the PVC waterstop. Where crossing PVC at right angles, melt PVC ribs to form a smooth joining surface.

5. At the free top of walls without connecting slabs, stop the resilient waterstop and grooves (where used) 6 inches from the top in vertical wall joints.
6. Bentonite Waterstop:
7. Locate bentonite waterstop as near as possible to the center of the joint and extend continuous around the entire joint. Minimum distance from edge of waterstop to face of member: 5 inches.
  - a. Where thickness of the concrete member to be placed on the bentonite waterstop is less than 12 inches, place waterstop in grooves at least 3/4 inch deep and 1-1/4 inches wide formed or ground into the concrete. Minimum distance from edge of waterstop placed in groove to face of member: 2.5 inches.
  - b. Do not place bentonite waterstop when waterstop material temperature is below 40 degrees F. Waterstop material may be warmed so that it remains above 40 degrees F during placement but means used to warm it shall in no way harm the material or its properties. Do not install waterstop where air temperature falls outside manufacturer's recommended range.
  - c. Place bentonite waterstop only on smooth and uniform surfaces; grind concrete smooth if necessary to produce satisfactory substrate, or bond waterstop to irregular surfaces using an epoxy grout which completely fills voids and irregularities beneath the waterstop material. Prior to installation, wire brush the concrete surface to remove laitance and other substances that may interfere with bonding of epoxy.
  - d. In addition to the adhesive backing provided with the waterstop, secure bentonite waterstop in place with concrete nails and washers at 12-inch maximum spacing.
8. Adhesive Waterstop:
  - a. Thoroughly clean the concrete surface on which the waterstop is to be placed with a wire brush and coat with primer.
  - b. If the surface is too rough to allow the waterstop to form a complete contact, grind to form an adequately smooth surface.
  - c. Install the waterstop with the top protective paper left in place. Overlap joints between strips a minimum of 1 inch and cover back over with the protective paper.

- d. Do not remove protective paper until just before final formwork completion. Concrete shall be placed immediately. The time that the waterstop material is uncovered prior to concrete placement shall be minimized and shall not exceed 24 hours.

G. Control Joints:

1. Where indicated, form in slabs by sawcutting, preformed plastic inserts or other means acceptable to the Owner's Representative. Minimum insert or sawcut: 1/4 slab depth.
2. Perform sawcutting during the curing period as soon as possible after concrete has reached its final set, has attained sufficient strength to support sawcutting operations without damage, and while it remains fully saturated.
3. Leave the removable portion of plastic inserts in place and protect sawcuts against damage and intrusion of foreign material until the end of the curing period and until concrete has dried sufficiently to allow sealant installation.
4. Sealant Installation: Blow foreign material from formed or sawcut space. Insert a foam backer rod to form a sealant depth equal to the width of the space but not less than 3/8 inch. Install sealant as specified elsewhere in the Contract Documents.

END OF SECTION

## SECTION 03305

## CONCRETE FOR UTILITY CONSTRUCTION

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Cast-in-place concrete work for utility construction or rehabilitation, such as slabs on grade, small vaults, site-cast bases for precast units, cast-in-place manholes, inlets, headwalls and miscellaneous small structures.

## 1.02 UNIT PRICES

- A. No payment will be made for concrete for utility construction under this Section unless specifically noted in bid documents. Include payment in applicable utility structure section.

## 1.03 SUBMITTALS

- A. Conform to all provisions and sections of these specifications.
- B. Submit proposed mix design and test data for each type and strength of concrete in the Work.
- C. Submit laboratory reports prepared by an independent testing laboratory stating that materials used comply with the requirements of this Section.
- D. Submit manufacturer's mill certificates for reinforcing steel. Provide specimens for testing when required by the Owner's Representative.
- E. Submit certification from concrete supplier that materials and equipment used to produce and deliver concrete comply with this Specification.
- F. When required on Drawings, submit shop drawings showing reinforcement type, quantity, size, length, location, spacing, bending, splicing, support, fabrication details and other pertinent information.
- G. For waterstops, submit product information sufficient to indicate compliance with specifications, including manufacturer's descriptive literature and specifications, when required on Drawings.

## 1.04 HANDLING AND STORAGE

- A. Cement: Store cement off of the ground in a well-ventilated weatherproof building.

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- B. Aggregate: Prevent mixture of foreign materials with aggregate and preserve gradation of aggregate.
- C. Reinforcing Steel: Store reinforcing steel to protect it from mechanical injury and formation of rust. Protect epoxy-coated steel from damage to the coating.

## PART 2 PRODUCTS

### 2.01 CONCRETE MATERIALS

- A. Cementitious Material:
  - 1. Portland cement: ASTM C150, Type II, unless the use of Type III is authorized by the Owner's Representative; or ASTM C595, Type IP. For concrete in contact with sewage use Type II cement.
  - 2. When aggregates are potentially reactive with alkalis in cement, use cement not exceeding 0.6 percent alkali content in the form of  $\text{Na}_2\text{O} + 0.658\text{K}_2\text{O}$ .
- B. Water: Clean, free from harmful amounts of oils, acids, alkalis or other deleterious substances, and meeting requirements of ASTM C94.
- C. Aggregate:
  - 1. Coarse Aggregate: ASTM C33. Unless otherwise indicated, use the following ASTM standard sizes: No. 357 or No. 467; No. 57 or No. 67, No. 7. Maximum size: Not larger than 1/5 of the narrowest dimension between sides of forms, nor larger than 3/4 of minimum clear spacing between reinforcing bars.
  - 2. Fine Aggregate: ASTM C33.
  - 3. Determine the potential reactivity of fine and coarse aggregate in accordance with the Appendix to ASTM C33.
- D. Air Entraining Admixtures: ASTM C260.
- E. Chemical Admixtures:
  - 1. Water Reducers: ASTM C494, Type A.
  - 2. Water Reducing Retarders: ASTM 494, Type D.
  - 3. High Range Water Reducers (Superplasticizers): ASTM C494, Types F and G.



- F. Prohibited Admixtures: Admixtures containing calcium chloride, thiocyanate, or materials that contribute free chloride ions in excess of 0.1 percent by weight of cement.
- G. Reinforcing Steel:
1. Use new billet steel bars conforming to ASTM A615, ASTM A767, or ASTM A775, grade 40 or grade 60, as shown on Drawings. Use deformed bars except where smooth bars are specified. When placed in work, keep steel free of dirt, scale, loose or flaky rust, paint, oil or other harmful materials.
  2. Where shown, use welded wire fabric with wire conforming to ASTM A185 or ASTM A884. Supply the gage and spacing shown, with longitudinal and transverse wires electrically welded together at points of intersection with welds strong enough not to be broken during handling or placing.
  3. Wire: ASTM A82. Use 16-1/2 gage minimum for tie wire, unless otherwise indicated.
- H. Fiber:
1. Polypropylene Fiber:
    - a. Ratio: 1.5 pounds of fiber per cubic yard of concrete.
    - b. Physical Properties:
      - (1). Material: Polypropylene.
      - (2). Length: 3/4 inch
      - (3). Specific Gravity: 0.91.
      - (4). Absorption: None.
      - (5). Tensile Strength: 70-110 Ksi.
      - (6). Modulus of Elasticity: 500 Ksi.
      - (7). Melt Point: 140 degrees F (60 degrees C).
      - (8). Flash Point: 932 degrees F (500 degrees C).
      - (9). Density: 3 pounds/cubic yard.

- c. Acceptable Manufacturer: W. R. Grace Company, Fibermesh, or approved equal.
- I. Curing Compounds: Type 2 white-pigmented liquid membrane-forming compounds conforming to ASTM C309.

## 2.02 FORMWORK MATERIALS

- A. Lumber and Plywood: Seasoned and of good quality, free from loose or unsound knots, knot holes, twists, shakes, decay and other imperfections which would affect strength or impair the finished surface of concrete. Use S4S lumber for facing or sheathing. Forms for bottoms of caps: At least 2-inch (nominal) lumber or 3/4-inch form plywood backed adequately to prevent misalignment. General use: Provide lumber of 1-inch nominal thickness or form plywood of approved thickness.
- B. Formwork for Exposed Concrete Indicated to Receive Rubbed Finish: Form or form-lining surfaces free of irregularities; plywood of 1/4-inch minimum thickness, preferably oiled at the mill.
- C. Chamfer Strips and Similar Moldings: Redwood, cypress or pine that will not split when nailed and which can be maintained to true line. Use mill-cut molding dressed on all faces.
- D. Form Ties: Metal or fiberglass of approved type with tie holes not larger than 7/8 inch in diameter. Do not use wire ties or snap ties.
- E. Metal Forms: Clean and in good condition, free from dents and rust, grease or other foreign material that tend to disfigure or discolor concrete in a gage and condition capable of supporting concrete and construction loads without significant distortion. Countersink bolt and rivet heads on facing sides. Use only metal forms which present a smooth surface and which line up properly.

## 2.03 PRODUCTION METHODS

- A. Use either ready-mixed concrete conforming to requirements of ASTM C94, or concrete produced by volumetric batching and continuous mixing in accordance with ASTM C685.

## 2.04 MEASUREMENT OF MATERIALS

- A. Measure dry materials by weight, except volumetric proportioning may be used when concrete is batched and mixed in accordance with ASTM C685.
- B. Measure water and liquid admixtures by volume.

2.05 DESIGN MIX

- A. Use design mixes prepared by a certified testing laboratory in accordance with ASTM C1077 and conforming to requirements of this section.
- B. Proportion concrete materials based on ACI 211.1 to comply with durability and strength requirements of ACI 318, Chapters 4 and 5, and this specification. Prepare mix design of Class A concrete so minimum cementitious content is 564 pounds per cubic yard. Submit concrete mix designs to the Owner’s Representative for review.
- C. Proportioning on the basis of field experience or trial mixtures in accordance with the requirements at Section 5.3 of ACI 318 may be used, if approved by the Owner’s Representative.
- D. Classification, unless shown otherwise on plans:

Class	Type	Minimum		Maximum W/C Ratio (Percent)	Air Content (Percent)	Consistency Range in Slump (Inches)
		Compressive Strength (Lbs/sq. in.) 7-Day	Compressive Strength (Lbs/sq. in.) 28-Day			
A	Structural	3200	4000	0.45	4 +/- 1%	2 to 4*
B	Pipe Block Fill, Thrust Block	----	2500	----	4 +/- 1%	5 to 7

\* When ASTM C494, Type F or TYPE G admixture is used to increase workability, this range may be 6 to 9.

\*\* Construction drawings govern

- E. Add polypropylene fibers only when called for on the Drawings or in another section of these Specifications.

- F. Determine air content in accordance with ASTM C138, ASTM C173 or ASTM C231.
- G. Use of Concrete Classes: Use classes of concrete as indicated on the drawings and other specifications. Use Class B for un-reinforced concrete used for plugging pipes, seal slabs, thrust blocks, trench dams, and concrete fill unless indicated otherwise. Use Class A for all other applications.

## 2.06 PVC WATERSTOPS

- A. Extrude from virgin polyvinyl chloride elastomer. Use no reclaimed or scrap material. Submit waterstop manufacturer's current test reports and manufacturer's written certification that the material furnished meets or exceeds Corps of Engineers Specification CRD-C572 and other specified requirements.
- B. Flat Strip and Center-Bulb Waterstops: As detailed, and as manufactured by: Kirkhill Rubber Co., Brea, California; Water Seals, Inc., Chicago, Illinois; Progress Unlimited, Inc., New York, New York; Greenstreak Plastic Products Co., St. Louis, Missouri; or equal acceptable to the Owner's Representative, provided that at no place shall waterstop thickness be less than 3/8 inch.

## 2.07 RESILIENT WATERSTOP

- A. Resilient waterstop, where called for on the Drawings, shall be either a bentonite or adhesive type material.
- B. Bentonite Waterstop:
  - 1. Material: 75 percent bentonite, mixed with butyl rubber-hydrocarbon containing less than 1.0 percent volatile matter, and free of asbestos fibers or asphaltics.
  - 2. Manufacturer's rated temperature ranges: For application, 5 to 125 degrees F; in service, -40 to 212 degrees F.
  - 3. Cross-sectional dimensions, unexpanded waterstop: 1 inch by 3/4 inch.
  - 4. Provide with adhesive backing capable of producing excellent adhesion to concrete surfaces.
- C. Adhesive Waterstop:
  - 1. Adhesive waterstop shall be at least 2 inches in diameter and shall be Synko-Flex preformed plastic adhesive waterstop by Synko-Flex Products, Inc., or equal. The waterstop shall meet or exceed requirements of Federal Specification SS-S-210A.

2. The adhesive waterstop shall be supplied wrapped completely by a two part protective paper.
3. The adhesive waterstop material shall have independent laboratory tests verifying that the material seals joints in concrete against leakage when subjected to a minimum of 30 psi water pressure for at least 72 hours.
4. Primer, to be used on hardened concrete surfaces, shall be provided by the same manufacturer as the waterstop material.

## PART 3 EXECUTION

### 3.01 FORMS AND SHORING

- A. Provide mortar-tight forms sufficient in strength to prevent bulging between supports. Set and maintain forms to lines designated such that finished dimensions of structures are within the tolerances specified in ACI 117. Construct forms to permit removal without damage to concrete. Forms may be given slight draft to permit ease of removal. Provide adequate cleanout openings. Before placing concrete, remove extraneous matter from within forms.
- B. Install rigid shoring having no excessive settlement or deformation. Use sound timber in shoring centering. Shim to adjust and tighten shoring with hardwood timber wedges.
- C. Design Loads for Horizontal Surfaces of Forms and Shoring: Minimum fluid pressure, 175 pounds per cubic foot; live load, 50 pounds per square foot. Maximum unit stresses: 125 percent of allowable stresses used for form materials and for design of support structures.
- D. Back formwork with a sufficient number of studs and wales to prevent deflection.
- E. Re-oil or lacquer the liner on the job before using. Facing may be constructed of 3/4-inch plywood made with waterproof adhesive backed by adequate studs and wales. In such cases, form lining will not be required.
- F. Unless otherwise indicated, form outside corners and edges with triangular 3/4-inch chamfer strips (measured on sides).
- G. Remove metal form ties to depth of at least 3/4 inch from surface of concrete. Do not burn off ties. Do not use pipe spreaders. Remove spreaders which are separate from forms as concrete is being placed.
- H. Treat facing of forms with approved form coating before concrete is placed. When directed by the Owner's Representative, treat both sides of face forms with coating.

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Apply coating before reinforcement is placed. Immediately before the concrete is placed, wet surface of forms which will come in contact with concrete.

### 3.02 PLACING REINFORCEMENT

- A. Place reinforcing steel accurately in accordance with approved Drawings. Secure steel adequately in position in forms to prevent misalignment. Maintain reinforcing steel in place using approved concrete and hot-dip galvanized metal chairs and spacers. Place reinforcing steel in accordance with CRSI Publication "Placing Reinforcing Bars." Request inspection of reinforcing steel by the Owner's Representative and obtain acceptance before concrete is placed.
- B. Minimum spacing center-to-center of parallel bars: 2-1/2 times nominal bar diameter. Minimum cover measured from surface of concrete to face of reinforcing bar unless shown otherwise on the Drawings: 3 inches for surfaces cast against soil or subgrade, 2 inches for other surfaces.
- C. Detail bars in accordance with ACI 315. Fabricate reinforcing steel in accordance with CRSI Publication MSP-1, "Manual of Standard Practice." Bend reinforcing steel to required shape while steel is cold. Excessive irregularities in bending will be cause for rejection.
- D. Do not splice bars without written approval of the Owner's Representative. Approved bar bending schedules or placing drawings constitute written approval. Splice and development length of bars shall conform to ACI 318, Chapters 7 and 12, and as shown on Drawings. Stagger splices or locate at points of low tensile stress.

### 3.03 EMBEDDED ITEMS

- A. Install conduit and piping as shown on Drawings. Accurately locate and securely fasten conduit, piping and other embedded items in forms.
- B. Install waterstops as specified in other sections and according to manufacturer's instructions. Securely position waterstops at joints as indicated on Drawings. Protect waterstops from damage or displacement during concrete placing operations.

### 3.04 BATCHING, MIXING AND DELIVERY OF CONCRETE

- A. Measure, batch, mix, and deliver ready-mixed concrete in accordance with ASTM C94, Sections 8 through 11. Produce ready-mixed concrete using an automatic batching system as described in NRMCA Concrete Plant Standards, Part 2 - Plant Control Systems.
- B. Measure, mix and deliver concrete produced by volumetric batching and continuous mixing in accordance with ASTM C685, Sections 6 through 8.

- C. Maintain concrete workability without segregation of material and excessive bleeding. Obtain approval of the Owner's Representative before adjustment and change of mix proportions.
- D. Ready-mixed concrete delivered to the site shall be accompanied by batch tickets providing the information required by ASTM C94, Section 16. Concrete produced by continuous mixing shall be accompanied by batch tickets providing the information required by ASTM C685, Section 14.
- E. Clean, maintain and operate equipment so that it thoroughly mixes material as required.
- F. Hand-mix only when approved by the Owner's Representative.

### 3.05 PLACING CONCRETE

- A. Give sufficient advance notice to the Owner's Representative (at least 24 hours prior to commencement of Operations) to permit inspection of forms, reinforcing steel, embedded items and other preparations for placing concrete. Place no concrete prior to the Owner's Representative's approval.
- B. Schedule concrete placing to permit completion of finishing operations in daylight hours. However, if necessary to continue after daylight hours, light the site as required. If rainfall occurs after placing operations are started, provide covering to protect the Work.
- C. When adverse weather conditions affect quality of concrete, postpone concrete placement. Do not place concrete when the air temperature is at or below 40 degrees F and falling. Concrete may be placed when temperature is 35 degrees F and rising. Take temperature readings in the shade, away from artificial heat. Protect concrete from temperatures below 32 degrees F until the concrete has cured for a minimum of 3 days at 70 degrees F or 5 days at 50 degrees F.

When concrete temperature is 85 degrees F or above, do not exceed 60 minutes between introduction of cement to the aggregates and discharge. When the weather is such that the concrete temperature would exceed 90 degrees F, employ effective means, such as pre-cooling of aggregates and mixing water, using ice or placing at night, as necessary to maintain concrete temperature, as placed, below 90 degrees F.

- D. Use troughs, pipes and chutes lined with approved metal or synthetic material in placing concrete so that concrete ingredients are not separated. Keep chutes, troughs and pipes clean and free from coatings of hardened concrete. Allow no aluminum material to be in contact with concrete.

- E. Limit free fall of concrete to 4 feet. Do not deposit large quantities of concrete at one location so that running or working concrete along forms is required. Do not jar forms after concrete has taken on initial set; do not place any strain on projecting reinforcement or anchor bolts.
- F. Use tremies for placing concrete in walls and similar narrow or restricted locations. Use tremies made in sections, or provide in several lengths, so that outlet may be adjusted to proper height during placing operations.
- G. Place concrete in continuous horizontal layers approximately 12 inches thick. Place each layer while layer below is still plastic.
- H. Compact each layer of concrete with concrete spading implements and mechanical vibrators of approved type and adequate number for the size of placement. When immersion vibrators cannot be used, use form vibrators. Apply vibrators to concrete immediately after depositing. Move the vibrator vertically through the layer of concrete just placed and several inches into plastic layer below. Do not penetrate or disturb layers previously placed which have partially set. Do not use vibrators to aid lateral flow concrete. Closely supervise consolidation to ensure uniform insertion and duration of immersion.
- I. Handling and Placing Concrete: Conform to ACI 302.1R, ACI 304R and ACI 309R.

### 3.06 WATERSTOPS

- A. Embed waterstops in concrete across joints as shown. Waterstops shall be continuous for the extent of the joint; make splices necessary to provide such continuity in accordance with manufacturer's instructions. Support and protect waterstops during construction operations; repair or replace waterstops damaged during construction.
- B. Install waterstops in concrete on one side of joints, leaving other side exposed until the next pour. When a waterstop will remain exposed for 2 days or more, shade and protect the exposed waterstop from direct rays of the sun during the entire exposure and until the exposed portion of the waterstop is embedded in concrete.
- C. Splicing PVC Waterstops:
  - 1. Splice waterstops by heat-sealing adjacent waterstop sections in accordance with the manufacturer's printed instructions.
  - 2. Butt end-to-end joints of 2 identical waterstop sections may be made in the forms during placement of waterstop material.
  - 3. Prior to placement in formwork, prefabricate all waterstop joints involving more than two ends to be joined together, an angle cut, an alignment change,

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or the joining of two dissimilar waterstop sections, allowing not less than 24-inch long strips of waterstop material beyond the joint. Upon inspection and approval by the Owner's Representative, install prefabricated waterstop joint assemblies in formwork, and butt-weld ends of the 24-inch strips to the straight-run portions of waterstop in the forms.

D. Setting PVC Waterstops:

1. Correctly position waterstops during installation. Support and anchor waterstops during progress of the work to ensure proper embedment in concrete and to prevent folding over of the waterstop by concrete placement. Locate symmetrical halves of waterstops equally between concrete pours at joints, with center axis coincident with joint openings. Thoroughly work concrete in joint vicinity for maximum density and imperviousness.
2. Where a waterstop in a vertical wall joint does not connect with any other waterstop, and is not intended to be connected to a waterstop in a future concrete placement, terminate the waterstop 6 inches below the top of the wall.

E. Replacement of Defective Field Joints: Replace waterstop field joints showing evidence of misalignment, offset, porosity, cracks, bubbles, inadequate bond or other defects with products and joints complying the Contract Documents.

F. Resilient Waterstop:

1. Install resilient waterstop in accordance with manufacturer's instructions and recommendations except as otherwise indicated and specified.
2. When requested by the Owner's Representative, provide technical assistance by manufacturer's representative in the field at no additional cost to the Owner.
3. Use resilient waterstop only where complete confinement by concrete is provided; do not use in expansion or contraction joints.
4. Where resilient waterstop is used in combination with PVC waterstop, lap resilient waterstop over PVC waterstop a minimum of 6 inches and place in contact with the PVC waterstop. Where crossing PVC at right angles, melt PVC ribs to form a smooth joining surface.
5. At the free top of walls without connecting slabs, stop the resilient waterstop and grooves (where used) 6 inches from the top in vertical wall joints.
6. Bentonite Waterstop:

- a. Locate bentonite waterstop as near as possible to the center of the joint and extend continuous around the entire joint. Minimum distance from edge of waterstop to face of member: 5 inches.
  - b. Where thickness of the concrete member to be placed on the bentonite waterstop is less than 12 inches, place waterstop in grooves at least 3/4 inch deep and 1-1/4 inches wide formed or ground into the concrete. Minimum distance from edge of waterstop placed in groove to face of member: 2.5 inches.
  - c. Do not place bentonite waterstop when waterstop material temperature is below 40 degrees F. Waterstop material may be warmed so that it remains above 40 degrees F during placement but means used to warm it shall in no way harm the material or its properties. Do not install waterstop where air temperature falls outside manufacturer's recommended range.
  - d. Place bentonite waterstop only on smooth and uniform surfaces; grind concrete smooth if necessary to produce satisfactory substrate, or bond waterstop to irregular surfaces using an epoxy grout which completely fills voids and irregularities beneath the waterstop material. Prior to installation, wire brush the concrete surface to remove laitance and other substances that may interfere with bonding of epoxy.
  - e. In addition to the adhesive backing provided with the waterstop, secure bentonite waterstop in place with concrete nails and washers at 12-inch maximum spacing.
7. Adhesive Waterstop:
- a. Thoroughly clean the concrete surface on which the waterstop is to be placed with a wire brush and coat with primer.
  - b. If the surface is too rough to allow the waterstop to form a complete contact, grind to form an adequately smooth surface.
  - c. Install the waterstop with the top protective paper left in place. Overlap joints between strips a minimum of 1 inch and cover back over with the protective paper.
  - d. Do not remove protective paper until just before final formwork completion. Concrete shall be placed immediately. The time that the waterstop material is uncovered prior to concrete placement shall be minimized and shall not exceed 24 hours.

### 3.07 CONSTRUCTION JOINTS

#### A. Definitions:

1. Construction joint: Contact surface between plastic (fresh) concrete and concrete that has attained initial set.
2. Monolithic: Manner of concrete placement to reduce or eliminate construction joints; joints other than those indicated on Drawings will not be permitted without written approval of the Owner's Representative. Where so approved, make additional construction joints with details equivalent to those indicated for joints in similar locations.

- #### B. Preparation for Construction Joints:
- Roughen surface of concrete previously placed, leaving some aggregate particles exposed. Remove laitance and loose materials by sandblasting or high-pressure water blasting. Keep surface wet for several hours prior to placing of plastic concrete.

### 3.08 CURING

- #### A. Comply with ACI 308. Cure by preventing loss of moisture, rapid temperature change and mechanical injury for a period of 7 curing days when Type II or IP cement has been used and for 3 curing days when Type III cement has been used. Start curing as soon as free water has disappeared from the concrete surface after placing and finishing. A curing day is any calendar day in which the temperature is above 50 degrees F for at least 19 hours. Colder days may be counted if air temperature adjacent to concrete is maintained above 50 degrees F. In continued cold weather, when artificial heat is not provided, removal of forms and shoring may be permitted at the end of calendar days equal to twice the required number of curing days. However, leave soffit forms and shores in place until concrete has reached the specified 28-day strength, unless directed otherwise by the Owner's Representative.

- #### B. Cure formed surfaces not requiring rub-finished surface by leaving forms in place for the full curing period. Keep wood forms wet during the curing period. Add water as needed for other types of forms. Or, at Contractor's option, forms may be removed after 2 days and curing compound applied.

#### C. Rubbed Finish:

1. At formed surfaces requiring rubbed finish, remove forms as soon as practicable without damaging the surface.
2. After rub-finish operations are complete, continue curing formed surfaces by using either approved curing/sealing compounds or moist cotton mats until normal curing period is complete.

- D. Unformed Surfaces: Cure by membrane curing compound method.
1. After concrete has received a final finish and surplus water sheen has disappeared, immediately seal surface with a uniform coating of approved curing compound, applied at the rate of coverage recommended by manufacturer or as directed by the Owner's Representative. Do not apply less than 1 gallon per 180 square feet of area. Provide satisfactory means to properly control and check rate of application of the compound.
  2. Thoroughly agitate the compound during use and apply by means of approved mechanical power pressure sprayers equipped with atomizing nozzles. For application on small miscellaneous items, hand-powered spray equipment may be used. Prevent loss of compound between nozzle and concrete surface during spraying operations.
  3. Do not apply compound to a dry surface. If concrete surface has become dry, thoroughly moisten surface immediately prior to application. At locations where coating shows discontinuities, pinholes or other defects, or if rain falls on a newly coated surface before film has dried sufficiently to resist damage, apply an additional coat of compound at the specified rate of coverage.

### 3.09 REMOVAL OF FORMS AND SHORING

- A. Remove forms from surfaces requiring rubbing only as rapidly as rubbing operation progresses. Remove forms from vertical surfaces not requiring rub-finish when concrete has aged for the required number of curing days. When curing compound is used, do not remove forms before 2 days after concrete placement,
- B. Leave soffit forms and shores in place until concrete has reached the specified 28-day strength, unless directed otherwise by the Owner's Representative.

### 3.10 DEFECTIVE WORK

- A. Immediately repair any defective work discovered after forms have been removed. If concrete surface is bulged, uneven, or shows excess honeycombing or form marks which cannot be repaired satisfactorily through patching, remove and replace the entire section.

### 3.11 FINISHING

- A. Patch honeycomb, minor defects and form tie holes in concrete surfaces with cement mortar mixed one part cement to two parts fine aggregate. Repair defects by cutting out unsatisfactory material and replacing with new concrete, securely keyed and bonded to existing concrete. Finish to make junctures between patches and existing concrete as inconspicuous as possible. Use a stiff mixture and thoroughly tamp into

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place. After each patch has stiffened sufficiently to allow for greatest portion of shrinkage, strike off mortar flush with the surface.

- B. Apply a rubbed finish to exposed surfaces of formed concrete structures as noted on Drawings. After pointing has set sufficiently, wet the surface with a brush and perform first surface rubbing with No. 16 carborundum stone or equal. Rub sufficiently to bring surface to paste, to remove form marks and projections, and to produce a smooth, dense surface. Add cement to form surface paste as necessary. Spread or brush material, which has been ground to paste, uniformly over surface and allow to reset. In preparation for final acceptance, clean surfaces and perform final finish rubbing with No. 30 carborundum stone or equal. After rubbing, allow paste on the surface to reset; then wash surface with clean water. Leave structure with a clean, neat and uniform-appearing finish.
- C. Apply a wood float finish to concrete slabs.

### 3.12 FIELD QUALITY CONTROL

- A. Testing shall be performed under provisions of Section 01410 - Testing Laboratory Services.
- B. Unless otherwise directed by the Owner's Representative, the following minimum testing of concrete is required. Testing shall be performed by qualified individuals employed by an approved independent testing agency, and conform to the requirements of ASTM C1077.
  - 1. Take concrete samples in accordance with ASTM C172.
  - 2. Make one set of four compression test specimens for each mix design at least once per day and for each 150 cubic yards or fraction thereof. Make, cure and test the specimens in accordance with ASTM C31 and ASTM C39.
  - 3. When taking compression test specimens, test each sample for slump according to ASTM C143, for temperature according to ASTM C1064, for air content according to ASTM C231, and for unit weight according to ASTM C138.
  - 4. Inspect, sample and test concrete in accordance with ASTM C94, Section 13, 14 and 15, and ACI 311-5R.
- C. Test Cores: Conform to ASTM C42.
- D. Testing High Early Strength Concrete: When Type III cement is used in concrete, the specified 7-day and 28-day compressive strengths shall be applicable at 3 and 7 days, respectively.

- E. If 7-day or 3-day test strengths (as applicable for type of cement being used) fail to meet established strength requirements, extended curing or resumed curing on those portions of structure represented by test specimens may be required. If additional curing fails to produce the required strength, strengthening or replacement of portions of structure which fail to develop required strength may be required by the Owner's Representative, at no additional cost to the Owner.

### 3.13 PROTECTION

- A. Protect concrete against damage until final acceptance by the Owner.
- B. Protect fresh concrete from damage due to rain, hail, sleet, or snow. Provide such protection while the concrete is still plastic, and whenever such precipitation is imminent or occurring.
- C. Do not backfill around concrete structures or subject them to design loadings until all components of the structure needed to resist the loading are complete and have reached the specified 28-day compressive strength, except as authorized otherwise by the Owner's Representative.

END OF SECTION

## SECTION 03345

## CONCRETE FINISHING

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Concrete finishing for structures and basins and includes:
  - 1. Repairing surface defects.
  - 2. Finishing concrete surfaces including both formed and unformed surfaces.
  - 3. Sealing concrete surfaces.
  - 4. Installation of concrete fill and installation of concrete topping in bottoms of clarifiers and thickeners.
- B. Section does not cover concrete paving finishing as covered in Section 2521 – Concrete Paving.

## 1.02 UNIT PRICES

- A. No separate payment will be made for concrete finishing under this Section. Include payment in unit price for structural concrete.

## 1.03 SUBMITTALS

- A. Conform to all provisions and sections of these specifications.
- B. Submit manufacturer's technical literature on the following products proposed for use. Include manufacturer's installation and application instructions and, where specified, manufacturer's certification of conformance to requirements and suitability for use in the applications indicated.
  - 1. Floor hardener.
  - 2. Sealer.
  - 3. Epoxy floor topping.
  - 4. Epoxy penetrating sealer.
  - 5. Latex bonding agent.

6. Epoxy adhesive.
7. Abrasive aggregate.
8. Evaporation retardant.

## PART 2 PRODUCTS

### 2.01 MATERIALS

- A. Sealer/Dustproofer (VOC Compliant): Water-based acrylic sealer; non-yellowing under ultraviolet light after 200-hour test in accordance with ASTM D4587. Conform to local, state and federal solvent emission requirements.
- B. Epoxy Floor Topping: Two-component epoxy resin meeting ASTM C881 Type III, resistant to wear, staining and chemical attack, blended with granite, sand, trap rock or quartz aggregate, trowel-applied over concrete floor. Topping thickness, 1/8 inch; color, gray.
- C. Abrasive Aggregate for Non-slip Finish: Fused aluminum oxide grit, or crushed emery aggregate containing not less than 40 percent aluminum oxide and not less than 25 percent ferric oxide. Material shall be factory graded, packaged, rustproof and non-glazing, and unaffected by freezing, moisture and cleaning materials.
- D. Epoxy Penetrating Sealer: Low-viscosity, two-component epoxy system designed to give maximum penetration into concrete surfaces. Sealer shall completely seal concrete surfaces from penetration of water, oil and chemicals; prevent dusting and deterioration of concrete surfaces caused by heavy traffic; and be capable of adhering to floor surfaces subject to hydrostatic pressure from below. Color, transparent amber or gray; surface, non-slip.
- E. Latex Bonding Agent: Non-redispersable latex base liquid conforming to ASTM C1059. When used in water and wastewater treatment structures, bonding agent shall be suitable for use under continuously submerged conditions. Conformance and suitability certification by manufacturer is required.
- F. Bonding Grout: Prepare bonding grout by mixing approximately one part cement to one part fine sand meeting ASTM C144 but with 100 percent passing No. 30 mesh sieve. Mix with water to consistency of thick cream. At Contractor's option, a commercially prepared bonding agent used in accordance with manufacturer's recommendations and instructions may be used. When used in water and wastewater treatment structures, bonding agent shall be suitable for use under continuously submerged conditions. Conformance and suitability certification by manufacturer is required. Submit manufacturer's technical information on proposed bonding agent.



**G. Patching Mortar:**

1. Make patching mortar of same materials and of approximately same proportions as concrete, except omit coarse aggregate. Substitute white Portland cement for part of gray Portland cement on exposed concrete in order to match color of surrounding concrete. Determine color by making trial patch. Use minimum amount of mixing water required for handling and placing. Mix patching mortar in advance and allow to stand. Mix frequently with trowel until it has reached stiffest consistency that will permit placing. Do not add water.
2. Proprietary compounds for adhesion or specially formulated cementitious repair mortars may be used in lieu of or in addition to foregoing patching materials provided that properties of bond and compressive strength meet or exceed the foregoing and color of surrounding concrete can be matched where required. Use such compounds according to manufacturer's recommendations. When used in water and wastewater treatment structures, material shall be suitable for use under continuously submerged conditions. Conformance and suitability certification by manufacturer is required.

H. Epoxy Adhesive: Two-component, 100 percent solids, 100 percent reactive compound developing 100 percent of strength of concrete, suitable for use on dry or damp surfaces. Epoxy used to inject cracks and as a binder in epoxy mortar shall meet ASTM C881, Type VI. Epoxy used as a bonding agent for fresh concrete shall meet ASTM C881, Type V.

I. Non-shrink Grout: See Section 03600 - Structural Grout.

J. Spray-Applied Coating: Acceptable products are Thoro System Products "ThoroSeal Plaster Mix" or equal. Color: Gray.

K. Concrete Topping: Class H concrete with 3/8-inch maximum coarse aggregate size, as specified in Section 03310 - Structural Concrete.

L. Concrete Fill: Class H concrete with 3/8-inch maximum coarse aggregate size, (Class C where fill thickness exceeds 3 inches throughout a placement), as specified in Section 03310 - Structural Concrete.

M. Evaporation Retardant: Confilm, manufactured by Master Builders; Eucobar, manufactured by Euclid Chemical Company; or equal.

**PART 3 EXECUTION****3.01 AGGREGATE CONCEALMENT**

- A. Unless indicated otherwise on Drawings or approved by the Owner's Representative, all surfaces to be finished shall be free of exposed aggregate.

### 3.02 REPAIRING SURFACE DEFECTS

- A. Defective Areas: Repair immediately after removal of forms and obtaining approval by the Owner's Representative. Remove honeycombed and other defective concrete down to sound concrete but in no case to a depth less than 1 inch. Make edges of cuts perpendicular to concrete surface. Thoroughly work bonding grout into the surface with a brush as that the entire surface is covered. Alternatively, a proprietary bonding agent may be used. Use bonding agent in accordance with manufacturer's instructions. While bonding coat is still tacky, apply premixed patching mortar. Thoroughly consolidate mortar into place and strike off to leave patch slightly higher than surrounding surface. To permit initial shrinkage, leave undisturbed for at least 1 hour before final finishing. Keep patched area damp for 7 days. Alternatively, a proprietary cementitious repair mortar may be used and placed in accordance with manufacturer's instructions. Do not use metal tools in finishing patches in formed walls which will be exposed.
- B. Tie Holes: Patch holes immediately after removal of forms. After cleaning and roughening with a wire brush on a rotary drill, thoroughly dampen tie hole and fill solid with patching mortar. Taper tie holes shall have the plug, specified in 03100 - Concrete Formwork, driven into the hole to the center of the wall before grouting. Completely fill taper tie holes with patching mortar except that non-shrink grout shall be used for all walls in contact with soil or liquid. On wall faces exposed to view, fill the outer 2 inches of the taper tie hole with patching mortar blended to match adjacent concrete.
- C. Cracks: Repair cracks in excess of 0.01 inch by pressure injection of moisture-insensitive epoxy-resin system. Submit proposed material and method of repair for approval by Owner's Representative prior to making repairs.
- D. Structural Repair: When required, make structural repairs after prior approval of the Owner's Representative as to method and procedure, using specified epoxy adhesive or approved epoxy mortar.

### 3.03 FINISHING OF FORMED SURFACES

- A. Unfinished Surfaces: Finish is not required on surfaces concealed from view in completed structure by earth, ceilings or similar cover, unless indicated otherwise on Drawings.
- B. Rough Form Finish:
  - 1. No form facing material is required on rough form finish surfaces.

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2. Patch tie holes and defects. Chip off fins exceeding 1/4 inch in height.
3. Rough form finish may be used on concrete surfaces which will be concealed from view by earth in completed structure, except concealed surfaces required to have smooth form finish, as shown on Drawings.

C. Smooth Form Finish:

1. Form facing shall produce smooth, hard, uniform texture on concrete. Use plywood or fiberboard linings or forms in as large sheets as practicable, and with smooth, even edges and close joints.
2. Patch tie holes and defects. Rub fins and joint marks with wooden blocks to leave smooth, unmarred finished surface.
3. Provide smooth form finish on the wet face of formed surfaces of water-holding structures, and of other formed surfaces not concealed from view by earth in completed structure, except where otherwise indicated on Drawings. Walls that will be exposed after future construction, at locations indicated on Drawings, shall have smooth form finish. Smooth form finish on exterior face of exterior walls shall extend 2 feet below final top of ground elevation. Exterior face of all perimeter grade beams shall have smooth form finish for full depth of grade beam.

D. Rubbed Finish:

1. Use plywood or fiberboard linings or forms in as large sheets as practicable, and with smooth, even edges and close joints.
2. Remove forms as soon as practicable, repair defects, wet surfaces, and rub with No. 16 carborundum stone or similar abrasive. Continue rubbing sufficiently to bring surface paste, remove form marks and fins, and produce smooth, dense surface of uniform color and texture. Do not use cement paste other than that drawn from concrete itself. Spread paste uniformly over surface with brush. Allow paste to reset, then wash surface with clean water.
3. Use rubbed finish at locations indicated on Drawings, except where rubbed finish is indicated for a wall which will be containing a liquid, use spray-applied coating.

E. Spray-applied Coating: At Contractor's option, in lieu of rubbed finish, spray-applied coating may be applied after defects have been repaired and fins removed. Remove form oil, curing compound and other foreign matter that would prevent bonding of coating. Apply coating in uniform texture and color in accordance with coating manufacturer's instructions.

- F. Related Unformed Surfaces: Tops of piers, walls, bent caps, and similar unformed surfaces occurring adjacent to formed surfaces shall be struck smooth after concrete is placed. Float unformed surfaces to texture reasonably consistent with that of formed surfaces. Continue final treatment on formed surfaces uniformly across unformed surfaces.
- G. Provide color and finish uniformity to be determined by the Owner’s Representative.
- H. Color of concrete pours should be consistent. If not consistent, Contractor shall submit plan for remedying the inconsistency.

3.04 HOT WEATHER FINISHING

- A. When hot weather conditions exist, as defined by Section 03310 - Structural Concrete and as judged by the Owner’s Representative, apply evaporation retardant to the surfaces of slabs, topping and concrete fill placements immediately after each step in the finishing process has been completed.

3.05 FINISHING SLABS AND SIMILAR FLAT SURFACES TO CLASS A, B AND C TOLERANCES

- A. Apply Class A, B and C finishes at locations indicated on Drawings.
- B. Shaping to Contour: Use strike-off templates or approved compacting-type screeds riding on screed strips or edge forms to bring concrete surface to proper contour. See Section 03100 - Concrete Formwork for edge forms and screeds.
- C. Consolidation and Leveling: Concrete to be consolidated shall be as stiff as practicable Thoroughly consolidate concrete in slabs and use internal vibration in beams and girders of framed slabs and along bulkheads of slabs on grade. Consolidate and level slabs and floors with vibrating bridge screeds, roller pipe screeds or other approved means. After consolidation and leveling, do not permit manipulation of surfaces prior to finishing operations.
- D. Tolerances for Finished Surfaces: Check tolerances by placing straightedge of specified length anywhere on slab. Gap between slab and straightedge shall not exceed tolerance listed for specified class.

	Straightedge Length	Tolerance
Class	in Feet	in Inches
A	10	1/8

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B	10	1/4
C	2	1/4

- E. Raked Finish: After concrete has been placed, struck off, consolidated and leveled to Class C tolerance, roughen surface before final set. Roughen with stiff brushes or rakes to depth of approximately 1/4 inch. Notify the Owner's Representative prior to placing concrete requiring initial raked surface finish so that acceptable raked finish standard may be established for project. Protect raked, base-slab finish from contamination until time of topping. Provide raked finish for following:
1. Surfaces to receive bonded concrete topping or fill.
  2. Steep ramps, as noted on Drawings.
  3. Additional locations as noted on Drawings.
- F. Float Finish:
1. After concrete has been placed, struck off, consolidated and leveled, do not work further until ready for floating. Begin floating when water sheen has disappeared, or when mix has stiffened sufficiently to permit proper operation of power-driven float. Consolidate surface with power-driven floats. Use hand floating with wood or cork-faced floats in locations inaccessible to power-driven machine and on small, isolated slabs.
  2. After initial floating, re-check tolerance of surface with 10-foot straightedge applied at not less than two different angles. Cut down high spots and fill low spots to Class B tolerance. Immediately re-float slab to a uniform, smooth, granular texture.
  3. Provide float finish at locations not otherwise specified and not otherwise indicated on Drawings.
- G. Trowel Finish:
1. Apply float finish as previously specified. After power floating, use power trowel to produce smooth surface which is relatively free of defects but which may still contain some trowel marks. Do additional troweling by hand after surface has hardened sufficiently. Do final troweling when ringing sound is produced as trowel is moved over surface. Thoroughly consolidate surface by hand troweling operations.

2. Produce finished surface free of trowel marks, uniform in texture and appearance and conforming to Class A tolerance. On surfaces intended to support floor coverings, remove defects which might show through covering by grinding.
3. Provide trowel finish for floors which will receive floor covering and additional locations indicated on Drawings.

H. Broom or Belt Finish:

1. Apply float finish as previously specified. Immediately after completing floated finish, draw broom or burlap belt across surface to give coarse transverse scored texture.
2. Provide broom or belt finish at locations indicated on Drawings.

3.06 FINISHING SLABS AND SIMILAR FLAT SURFACES TO "F-NUMBER SYSTEM" FINISH

- A. Shaping to Contour: Use strike-off templates or approved compacting-type screeds riding on screed strips or edge forms to bring concrete surface to proper contour. Edge forms and screeds: Conform to Section 03100 - Concrete Formwork.
- B. Consolidation and Leveling: Concrete to be consolidated shall be as dry as practicable. Thoroughly consolidate concrete in slabs and use internal vibration in beams and girders of framed slabs and along bulkheads of slabs on grade. Consolidate and level slabs and floors with vibrating bridge screeds, roller pipe screeds or other approved means. After consolidation and leveling, do not manipulate surfaces prior to finishing operations.
- C. Tolerances for Finished Surfaces: Owner's Representative may check floor flatness and levelness in accordance with Paragraph 3.12, Field Quality Control.
- D. Float Finish:
  1. After concrete has been placed, struck off, consolidated and leveled, do not work further until ready for floating. Begin floating when water sheen has disappeared, or when mix has stiffened sufficiently to permit proper operation of power-driven float. Consolidate surface with power-driven floats. Use hand floating with wood or cork-faced floats in locations inaccessible to power-driven machine and on small, isolated slabs.
  2. Check tolerance of surface after initial floating with a 10-foot straightedge applied at not less than two different angles. Cut down high spots and fill low

spots. Immediately refloat slab to uniform, smooth, granular texture to  $F_F20/F_L17$  tolerance, unless shown otherwise on Drawings.

3. Provide "F-Number System" float finish at locations indicated on Drawings.

E. Trowel Finish:

1. Apply float finish as previously specified. After power floating, use power trowel to produce smooth surface which is relatively free of defects but which may still contain some trowel marks. Do additional trowelings by hand after surface has hardened sufficiently. Do final troweling when ringing sound is produced as trowel is moved over surface. Thoroughly consolidate surface by hand troweling operations.
2. Produce finished surface free of trowel marks, uniform in texture and appearance and conforming to an  $F_F25/F_L20$  tolerance for slabs on grade and  $F_F25/F_L17$  for elevated slabs, unless shown otherwise on Drawings. On surfaces intended to support floor coverings, remove defects, which might show through covering, by grinding.
3. Provide "F-Number System" trowel finish at locations indicated on Drawings.

### 3.07 BONDED CONCRETE TOPPING AND FILL

A. Surface Preparation:

1. Protect raked, base-slab finish from contamination until time of topping. Mechanically remove oil, grease, asphalt, paint, clay stains or other contaminants, leaving clean surface.
2. Prior to placement of topping or fill, thoroughly dampen roughened slab surface and leave free of standing water. Immediately before topping or fill is placed, scrub coat of bonding grout into surface. Do not allow grout to set or dry before topping or fill is placed.

B. Concrete Fill:

1. Where concrete fill intersects a wall surface at an angle steeper than 45 degrees from vertical, provide a 1.5-inch deep keyway in the wall at the point of intersection; size keyway so that no portion of the concrete fill is less than 1.5 inches thick. Form keyway in new walls; create by saw cutting the top and bottom lines and chipping in existing walls.
2. Apply wood float finish to surfaces of concrete fill.

3. Provide concrete fill at locations shown on Drawings.
- C. Bonded Concrete Topping in Bottom of Clarifiers and Thickeners:
1. Minimum thickness of concrete topping: 1 inch. Maximum thickness when swept in by clarifier and thickener equipment: 3 inches.
  2. Compact topping and fill by rolling or tamping, bring to established grade, and float. Topping grout placed on sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the placement. Coat surface with evaporation retardant as needed between finishing operations to prevent plastic shrinkage cracks.
  3. Screed topping to true surface using installed equipment. Protect equipment from damage during sweeping-in process. Perform sweeping-in process under supervision of equipment manufacturer's factory representative. After topping has been screeded, apply wood float finish. During finishing, do not apply water, dry cement or mixture of dry cement and sand to the surface.
  4. As soon as topping or fill finishing is completed, coat surface with curing compound. After the topping is set and sufficiently hard in clarifiers and where required by the Owner's Representative, fill the tank with sufficient water to cover the entire floor for 14 days.
  5. Provide bonded concrete topping in bottom of all clarifiers and thickeners.

### 3.08 EPOXY PENETRATING SEALER

- A. Surfaces to receive epoxy penetrating sealer: Apply wood float finish. Clean surface and apply sealer in compliance with manufacturer's instructions.
- B. Rooms with concrete curbs or bases: Continue application of floor coating on curb or base to its juncture with masonry wall. Rooms with solid concrete walls or wainscots: Apply minimum 2-inch-high coverage of floor coating on vertical surface.
- C. Mask walls, doors, frames and similar surface to prevent floor coating contact.
- D. When coving floor coating up vertical concrete walls, curbs, bases or wainscots, use masking tape or other suitable material to keep a neat level edge at top of cove.
- E. Provide epoxy-penetrating sealer at locations indicated on Drawings.



### 3.09 EPOXY FLOOR TOPPING

- A. Surfaces to receive epoxy floor topping: Apply wood float finish unless recommended otherwise by epoxy floor topping manufacturer. Clean surface and apply epoxy floor topping in compliance with manufacturer's recommendations and instructions. Thickness of topping: 1/8 inch.
- B. Rooms with concrete curbs or bases: Continue application of floor coating on curb or base to its juncture with masonry wall. Rooms with solid concrete walls or wainscots: apply 2-inch-high coverage of floor coating on vertical surface.
- C. Mask walls, doors, frames and similar surfaces to prevent floor coating contact.
- D. When coving floor coating up vertical concrete walls, curbs, bases or wainscots, use masking tape or other suitable material to keep a neat level edge at top of cove.
- E. Finished surface shall be free of trowel marks and dimples.
- F. Provide epoxy floor topping at locations indicated on Drawings.

### 3.10 SEALER/DUSTPROOFER

- A. Where sealer or sealer/dustproofers is indicated on Drawings, just prior to completion of construction, apply coat of specified clear sealer/dustproofing compound to exposed interior concrete floors in accordance with manufacturer's instructions.

### 3.11 NONSLIP FINISH

- A. Apply float finish as specified. Apply two-thirds of required abrasive aggregate by method that ensures even coverage without segregation and re-float. Apply remainder of abrasive aggregate at right angles to first application, using heavier application of aggregate in areas not sufficiently covered by first application. Re-float after second application of aggregate and complete operations with troweled finish. Perform finishing operations in a manner that will allow the abrasive aggregate to be exposed and not covered with cement paste.
- B. Provide non-slip finish at locations indicated on Drawings.

### 3.12 FIELD QUALITY CONTROL

- A. Flatness and levelness of slabs and similar flat surfaces that are indicated on Drawings to receive "F-Number System" finish will be checked by independent testing laboratory employed by Owner in accordance with Section 01410 - Testing Laboratory Services.

B. Tolerances for "F-Number System" finished surfaces:

1. Floor tolerance shall be determined in accordance with ASTM E1155.
2. Floor flatness and levelness tolerances:
  - a.  $F_F$  defines maximum floor curvature allowed over 24 inches. Computed on the basis of successive 12-inch elevation differentials,  $F_F$  is commonly referred to as the "flatness F-Number."

$$F_F = \frac{4.57}{\text{Maximum difference in elevation, in decimal inches, between successive 12" elevation differences.}}$$

- b.  $F_L$  defines relative conformity of floor surface to horizontal plane as measured over 10-foot distance.  $F_L$  is commonly referred to as "levelness F-number."

$$F_L = \frac{12.5}{\text{Maximum difference in elevation, in inches, between two points separated by 10 feet.}}$$

3. Achieve specified overall slab tolerance. Minimum local tolerance (1/2 bay, unless otherwise designated by the Owner's Representative): 2/3 of specified tolerance.
4. Tolerance for floated finish:  $F_F20/F_L17$ , unless otherwise shown on Drawings.
5. Tolerance for troweled finish:  $F_F25/F_L20$  for slabs on grade, and  $F_F25/F_L17$  for elevated slabs, unless otherwise shown on Drawings.

### 3.13 CURING

- A. Conform to requirements of Section 03370 - Curing Concrete.

END OF SECTION

## SECTION 03370

## CONCRETE CURING

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Curing of structural concrete.

## 1.02 UNIT PRICES

- A. No separate payment will be made for concrete curing under this Section. Include payment in unit price for structural concrete.

## 1.03 DEFINITIONS

- A. Mass Concrete: Concrete sections 4 feet or more in least dimension.

## 1.04 SUBMITTALS

- A. Conform to all provisions and sections of these specifications.
- B. Product Data: Submit description of proposed curing method for concrete. When use of membrane-forming compound is proposed, submit manufacturer's technical information including material specifications, installation instructions and recommendations, and evidence that compound is satisfactory for intended application. State locations where curing compound will be used.
- C. When membrane-forming compounds are to be used, submit certification by the manufacturer of compliance with specified requirements and compatibility with toppings, coatings, finishes, and adhesives to be applied.

## PART 2 PRODUCTS

## 2.01 MATERIALS

- A. Membrane-forming Curing Compound: Conform to ASTM C309, Type 1D, and following requirements.
  - 1. Minimum solids content: 30 percent.
  - 2. Compound shall not permanently discolor concrete. When used for liquid-containing structures, curing compound shall be white-pigmented.
  - 3. When used in areas that are to be coated, or that will receive topping or floor covering, material shall not reduce bond of coating, topping, or floor covering

to concrete. Curing compound manufacturer's technical information shall state conditions under which compound will not prevent bond.

4. Conform to local, state and federal solvent emission requirements.
- B. Clear Curing and Sealing Compound (VOC Compliant): Conform to ASTM C309, Type 1, Class B, and the following requirements: 30 percent solids content minimum; non-yellowing under ultraviolet light after 500-hour test in accordance with ASTM D4587. Sodium silicate compounds are not permitted. Conform to local, state and federal solvent emission requirements.
- C. Sheet Material for Curing Concrete: ASTM C171; waterproof paper, polyethylene film or white burlap-polyethylene sheeting.
- D. Curing Mats (for use in Curing Method 2): Heavy shag rugs or carpets, or cotton mats quilted at 4 inches on center; 12 ounce per square yard minimum weight when dry.
- E. Water for curing: Clean and potable.

## PART 3 EXECUTION

### 3.01 CURING PROCEDURES

- A. Comply with ACI 308 and the requirements specified herein. Protect freshly deposited concrete from premature drying and excessively hot or cold temperatures. Maintain minimal moisture loss and relatively constant temperature during time necessary for hydration of cement and proper hardening of concrete.
- B. Unformed Surfaces: For concrete surfaces not in contact with forms, use one of following procedures immediately after completion of placement and finishing.
  1. Ponding or continuous sprinkling.
  2. Absorptive mat or fabric kept continuously wet.
  3. Sand or other covering kept continuously wet.
  4. Continuous steam bath (not exceeding 150 degrees F at surface of concrete).
  5. Vapor mist bath.
  6. Membrane-forming curing compound applied according to manufacturer's recommendations. After the curing compound has dried, wet slab surfaces and cover with waterproof paper, polyethylene film, or white burlap-polyethylene sheeting after the application of the curing compound. Tape sheet seams together and provide sufficient weights to keep the sheeting in

- place. Wet the slab surface again if the sheeting becomes dislodged, and replace the sheeting.
7. Other moisture-retaining coverings as approved by the Owner's Representative.
- C. Restrictions on Use of Curing Compounds: Unless curing compound manufacturer certifies that curing compound will not prevent bond to cured surface, do not use curing compound on surfaces that will be rubbed or receive additional concrete, mortar, topping, terrazzo or other cementitious finishing materials, on slabs under resilient floors or built-up roofing, or on surfaces to be waterproofed, sealed, hardened or painted.
- D. Curing and Sealing Compounds: At locations indicated, cure exposed interior slabs and troweled slabs receiving mastic-applied adhesives with specified clear curing and sealing compound in accordance with manufacturer's recommendations. Do not store materials directly on curing membranes. Use plywood to protect curing membrane from damage. Immediately repair membranes damaged by foot traffic or other operations.
- E. Duration of Curing: Continue curing until cumulative number of days or fractions of days during which ambient temperature is above 50 degrees F has totaled 7. Continue curing of water-retaining structures for a total of 14 days. When high-early-strength concrete has been used, continue curing for total of 3 days. Prevent rapid drying at end of curing period.
- F. Formed Surfaces: During the curing period keep wet steel forms heated by sun and wood forms in contact with concrete. When forms are to be removed during curing period, employ curing materials or methods immediately. Continue such curing for remainder of curing period.
- G. Temperature:
1. Cold Weather: When mean daily temperature of atmosphere is less than 40 degrees F, maintain temperature of concrete between 50 and 70 degrees F for required curing period. When necessary, make arrangements for heating, covering, insulating or housing concrete work in advance of placement to maintain required temperature and moisture conditions. Prevent damage or injury due to concentration of heat. When combustion heaters are necessary in enclosed or protected area where concrete slabs are being placed, vent heaters.
  2. Hot Weather: In advance of placement make arrangements for shading, fog spraying, sprinkling, ponding or installation of windbreaks or wet covering of light color. Take such protective measures as quickly as concrete hardening and finishing operations will allow.

3. Temperature Changes: Control so rate of change in temperature of concrete is as uniform as possible. Do not permit temperature change to exceed 5 degrees F in any one hour or 50 degrees F in any 24-hour period.
- H. Protection from Mechanical Injury: During curing period, protect concrete from damaging mechanical disturbances, particularly load stresses, heavy shock, and excessive vibration. Protect finished concrete surfaces from damage caused by construction equipment, materials or methods, and by rain or running water. Do not load self-supporting structures in a way that over stresses concrete.

### 3.02 CURING MASS CONCRETE

- A. Observe the following additional restrictions when curing mass concrete.
1. Minimum curing period: 2 weeks.
  2. When ambient air temperature falls below 32 degrees F, protect surface of concrete against freezing.
  3. Do not use steam or other curing methods that will add heat to concrete.
  4. Keep forms and exposed concrete continuously wet for at least the first 48 hours after placing, and whenever surrounding air temperature is above 90 degrees F during final curing period.
  5. During 2-week curing period, provide necessary controls to prevent ambient air temperature immediately adjacent to concrete from falling more than 30 degrees F in 24 hours.

END OF SECTION

## SECTION 03600

## STRUCTURAL GROUT

## PART 1 GENERAL

## 1.01 SECTION INCLUDES

- A. Non-shrink grout used wherever grout is shown in the Documents, unless another type is specifically referenced. Two classes of non-shrink grout (Class I and II) and areas of application are specified.

## 1.02 UNIT PRICES

- A. Include the cost for grout in the lump sum for each structure in which it will be used. No separate payment will be made for grout.
- B. Measurement for extra grout (Class I and II) is on cubic foot basis. Payment includes associated work performed in accordance with related sections included in the Contract Documents.

## 1.03 SUBMITTALS

- A. Conform to all provisions and sections of these specifications.
- B. Quality Control:
  - 1. The Contractor shall submit manufacturer's literature certifying compliance with the specified properties for Class I and II grouts.
  - 2. The Contractor shall submit manufacturer's literature containing instructions and recommendations on the mixing, handling, placement and appropriate uses for each type of grout used in the work.
- C. The Contractor shall submit manufacturer's written warranty as specified.

## 1.04 QUALITY ASSURANCE

- A. Field Tests:
  - 1. Compression test specimens will be taken during construction from the first placement of each type of grout, and at intervals thereafter as selected by the Engineer to ensure continued compliance with these Specifications. The specimens will be made by the Owner's Representative or its representative.
  - 2. Compression tests and fabrication of specimens for non-shrink grout will be performed as specified in ASTM C109 at intervals during construction as selected by the Owner's Representative. A set of three specimens will be

made for testing at 7 days, 28 days, and each additional time period as appropriate.

3. Grout already placed which fails to meet the requirements of these Specifications is subject to removal and replacement no additional cost to the Owner.
4. The cost of laboratory tests on grout will be borne by the Owner, but the Contractor shall assist the Owner’s Representative obtaining specimens for testing. However, the Contractor shall be charged for the cost of any additional tests and investigation on work performed which does not meet the Specifications. The Contractor shall supply materials necessary for fabricating the test specimens.

B. Warranty:

1. Provide 1-year warranty for work provided under this Section.
2. Manufacturer's warranty shall not contain a disclaimer limiting responsibility to only the purchase price of products or materials furnished.
3. Manufacturer shall warrant participation with Contractor in replacing or repairing grout found to be defective due to faulty materials, as determined by industry standard test methods.

PART 2 PRODUCTS

2.01 APPLICATION

- A. The following is a listing of typical applications and the corresponding type of grout which is to be used. Unless indicated otherwise, grouts shall be provided as listed below whether or not called for on the Drawings.

Application:	Type of Grout
Structural member base plates	Non-shrink Class II
Storage tanks and other equipment	Non-shrink Class I
Filling blockout spaces for embedded items such as railing posts, gate guide frames, etc.	Non-shrink Class II (Class I where placement time exceeds 15 minutes)
Under precast concrete elements	Non-shrink Class I



Toppings and concrete fill less than 3 inches thick	Concrete Topping per Section 03310 and Section 03345
Toppings and concrete fill greater than 3 inches thick	Concrete Fill per Section 03310 and Section 03345
Any application not listed above, where grout is called for on the Drawing.	Non-shrink Class I, unless noted otherwise

## 2.02 PREPACKAGED GROUTS

### A. Basic Requirements for Cementitious Non-Shrink Grout

1. Provide prepackaged non-shrink grout that is inorganic, flowable, non-gas-liberating, non-metallic, and cement-based, requiring only the addition of water.
2. Deliver grout in original packaging with manufacturer's instructions printed on each container.
3. Select the specific formulation for each class of non-shrink grout specified to conform to that recommended by the manufacturer for the particular application.
4. Compressive strength at 28 days: 7000 psi minimum.
5. Do not use a grout for which the non-shrink property is based on a chemically generated gas or gypsum expansion.

### B. Class I Non-Shrink Grout:

1. Supply Class I Grout conforming to these specifications and to CRD-C621 and ASTM C1107 Grade C and B (as modified below) when tested using the amount of water needed to achieve the following properties:
  - a. Fluid consistency (20 to 30 seconds) per CRD-C611 at initial testing.
  - b. Fluid consistency (45 seconds) per CRD-C611 at 30 minutes after mixing.
  - c. At temperatures of 45, 73.4, and 95 degrees F.

2. To satisfy non-shrink requirements, the length change from placement to time of final set shall not have a shrinkage greater than the amount of expansion measured after final set at 3 and 14 days. The expansion at 3 and 14 days shall not exceed the 28-day expansion.
3. Fluid grout shall pass through the flow cone, with a continuous flow, 1 hour after mixing.
4. Demonstrate in tests that grout maintains contact with the base plate to provide a minimum effective bearing area of 95 percent of the gross contact area after final set.
5. The grout packaging shall list weight, maximum amount of mixing water to be used, maximum usable working time (pot life) at flowable consistency, and temperature restrictions for preparation and placement within which grout will meet specified requirements.

C. Class II Non-Shrink Grout:

1. Supply Class II Grout confirming to ASTM C1107 and the following requirements when tested using the amount of water needed to achieve the following properties:
  - a. Flowable consistency: 140 percent flow on ASTM C230, five drops in 30 seconds.
  - b. Fluid working time: 15 minutes, minimum.
  - c. Flowable duration: 30 minutes, minimum.
2. When tested, the grout shall not bleed at maximum allowed water.

## 2.03 CURING MATERIALS

- A. Curing materials: As specified in Section 03370 - Concrete Curing and as recommended by the manufacturer of prepackaged grouts.

## 2.04 CONSISTENCY

- A. Mix grouts to the consistency necessary to completely fill the space to be grouted. Dry pack consistency is such that the grout is plastic and moldable but will not flow. Where "dry pack" is called for in the Contract Documents, it shall mean a grout of that consistency; the type of grout to be used shall be as specified herein for the particular application.

## PART 3 EXECUTION

### 3.01 PREPARATION

- A. Verify that base concrete or masonry has attained design strength before grout is placed.
- B. When cementitious grouts are used on concrete surfaces, saturate the concrete surface with water for 24 hours prior to placement of cement-based grout. Upon completion of saturation period remove excess water prior to grouting.

### 3.02 GROUTING PROCEDURES

- A. **Prepackaged Grouts:** Perform mixing, surface preparation, handling, placing, consolidation, curing, and other means of execution for prepackaged grouts according to the written instructions of the manufacturer. Use prepackaged materials in the quantities and proportions as directed by the manufacturer unless there is certified test data verifying that the specified properties are attained by modified mix.

### 3.03 CONSOLIDATION

- A. Place grout in such a manner, for the consistency necessary for each application, so as to assure that the space to be grouted is completely filled.

END OF SECTION