



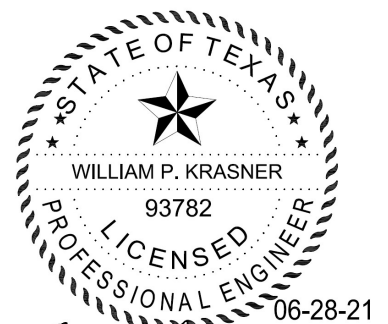
**COUNTY OF GALVESTON**  
**SPECIFICATIONS AND CONTRACT DOCUMENTS**

**Texas City Annex Foundation and HVAC Project**

**Bid # B211036**

**HUITT-ZOLLARS**

Huitt-Zollars, Inc.  
TBPE Firm Registration # F-761  
10350 Richmond Avenue, Suite 300  
Houston, Texas 77042  
291-496-0066



*William P. Krasner*  
Huitt-Zollars Inc.  
Firm Registration No. F-761

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**GALVESTON COUNTY  
PURCHASING DEPARTMENT**



**REQUEST FOR PROPOSAL**

**RFP #B211036**

**TEXAS CITY ANNEX**

**PROPOSAL DUE DATE: 07/22/2021**

**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***



**REQUEST FOR PROPOSAL  
TEXAS CITY ANNEX  
GALVESTON COUNTY, TEXAS**

Sealed proposals in **sets of six (6), one (1) unbound original, five (5) copies** will be received in the office of the Galveston County Purchasing Agent **until 2:00 P.M. CST, on Thursday, July 22, 2021** and opened immediately in that office in the presence of Galveston County Auditor and the Purchasing Agent. Sealed qualifications 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 proposals received after 2:00 P.M. CST on the specified date will be returned unopened.**

**Purpose:**

In response to the damages from Hurricane Ike in 2008, FEMA has approved Galveston County's Texas City Annex facility to have specific repairs and replacements. For the facility's foundation movement, and because the facility is located in a drought region, structural piers at the perimeter of the building and a foundation watering system are to be provided. For the interior wall damage associated with this foundation movement, repairs to the walls are to be provided. For two, old air handling units, these units are to be replaced. This request for proposals is for repair, replacement, and mitigation of these systems as outlined in the Project Drawings and Specifications.

All proposals must be marked on the outside of the envelope:

**RFP #B211036  
Texas City Annex**

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

Specifications can be obtained by visiting the Galveston County website @ <http://www1.galvestoncountytexas.gov/pu/Pages/OpenSolicitations.aspx>.

**Pre-Proposal Conference/Site Visit:**

**A non-mandatory pre-proposal conference and site visit will be held on Thursday, July 8, 2021 at 10:00 a.m. at the Texas City Annex, 2516 Texas Avenue, Texas City, TX 77591.**

Copies of bid/Contract Documents may also be obtained from [www.Civcast.com](http://www.Civcast.com) search Texas City Annex. 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 Huitt-Zollars at 281.496.0066.

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:**

- **PROPOSAL GUARANTEE:** Evidencing its firm commitment to engage in the contract if Proposer is selected for award of contract, each Proposer 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 proposer, 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).

Attention is called to the fact that not less than, the federally determined prevailing (Davis-Bacon and Related Acts) wage rate, as issued by the Office of Rural Community Affairs and contained in the contract documents, must be paid on this project. 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.

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.

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

Rufus G. Crowder, CPPO CPPB  
Purchasing Agent  
Galveston County

**REQUEST FOR PROPOSAL  
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**GENERAL PROVISIONS – REQUEST FOR PROPOSAL  
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**1. PROPOSAL PACKAGE**

*The Request for Proposal, general and special provisions, drawings, specifications/line item details, contract documents, addenda (if any), and the Proposal are all part of the Proposal package. **PROPOSALS must be submitted in sets of six (6), one (1) unbound original, and five (5) copies** on the forms provided by the County if County forms are provided, and shall include the Proposal sheets completed in their entirety and signed by an authorized representative by original signature. Failure to complete and sign the proposal sheets/contract page(s) may disqualify the proposal from being considered by the Commissioners' Court. Any individual signing on behalf of the Proposer expressly affirms that he or she is duly authorized to tender this proposal and to sign the proposal under the terms and conditions in this request for proposal on behalf of the Proposer and to bind the Proposer to the terms and conditions of this request for proposal and the Proposer's response hereto. Proposer further understands that Proposers' 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 Proposer is required to thoroughly review this entire request for proposal package to familiarize themselves with the proposal procedures, the plans and specifications for the requested work, as well as the terms and conditions of the contract the successful Proposer will execute with the County.*

**2. PROPOSER'S RESPONSIBILITY**

The Proposer must affirmatively demonstrate its responsibility. The Proposer 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 proposal;
- 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.

**3. TIME FOR RECEIVING PROPOSALS**

Proposals may be submitted by mail or hand delivery and **must be submitted only to the Galveston County Purchasing Agent**. If by delivery, the Proposer must deliver the Proposal 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**

Proposals will **not** be accepted by facsimile transmission or by electronic mail (email) unless superseded by instructions within the Special Provisions sections of this solicitation. Proposals must be received by the County Purchasing Agent on or before the deadline for the opening of the proposals. For clarity, mailing date/postmark is **not** sufficient – proposals **must be received** by the County Purchasing Agent on or before the deadline. Late proposals

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will not be accepted and will be returned to the proposer unopened. Proposals received prior to the submission deadline will be maintained unopened until the specified time for opening.

The County Purchasing Agent will accept proposals 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 proposal was timely received.*

**The proposer should prominently identify the procurement number and name on the outside of the envelope/mailing package.** A label shall be provided for this purpose and usage of the label is preferred. If the proposer fails to identify the request for proposal 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 proposal.

If a proposal is not submitted, return this Request for Proposal 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, **proposers 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 proposal of the firm found to be in non-compliance.

**All questions regarding this Request for Proposal 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 proposers by addendum. No inquiries except clarification of instructions will be addressed by telephone.

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

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

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**5. PROPOSAL OPENING**

The Purchasing Agent shall open the proposals on the date and time specified herein. Only the names of the proposers will be read at the opening. Proposals shall be opened in a manner that avoids disclosure of the contents to competing offerors and that keeps the proposals secret during negotiations. The Purchasing Agent will examine proposals promptly and thoroughly. Upon opening, no proposal may be withdrawn for a period of sixty (60) calendars days after the proposal opening date.

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

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

**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.

**8. REJECTION OF PROPOSALS/DISQUALIFICATION**

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

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

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

- A. Failure to use the proposal forms furnished by the County, if applicable;
- B. Lack of signature by an authorized representative of proposer;
- C. Failure to properly complete the proposal;
- 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 Agent's Office;
- E. Failure to meet the mandatory requirements of this request for proposal; and/or
- F. Evidence of collusion among proposers.

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**9. RESTRICTIVE OR AMBIGUOUS SPECIFICATIONS**

It is the responsibility of the prospective proposer to review the entire request for proposal 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 proposal procedures must be received in the Purchasing Agent's Office not less than seventy-two (72) hours prior to the time set for proposal opening. Proposers are to submit their proposal 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 proposer 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. Proposer, by submission of its proposal, certifies that if awarded any portion of this procurement, the proposer will supply only material and equipment that is 100% asbestos free.

**11. EXCEPTIONS TO PROPOSAL**

**The proposer will list on a separate sheet of paper any exceptions to the conditions of this request for proposal.** This sheet will be labeled, "Exceptions to Proposal Conditions", and will be attached to the proposal. If no exceptions are stated, it will be understood that all general and special conditions will be complied with, without exception.

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

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

**12. PRICING**

Proposals will be either lump sum or unit prices as shown on the proposal sheet. The net priced items will be delivered to Galveston County, including all freight, shipping, and delivery charges.

Cash discount must be shown on the proposal, otherwise prices will be considered net. Unless prices and all information requested are complete, the proposal 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.



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**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), this should be notated in the Proposal 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 proposal.

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 proposal 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 PROPOSALS**

A proposer may modify a proposal by letter at any time prior to the submission deadline for receipt of proposals. Modification requests must be received by the Purchasing Agent prior to the submission deadline. Modifications made before opening time must be initialed by proposer guaranteeing authenticity. Proposals 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-PROPOSAL CONFERENCE**

A pre-proposal conference for the purpose of discussing contract requirements and answering questions of prospective proposers may be conducted in this procurement. A pre-proposal conference may be mandatory or voluntary. If the pre-proposal conference is mandatory, then the County is authorized to condition acceptance of a proposal on compliance with attendance. The Special Provisions of this procurement shall specify if a pre-proposal conference is to be held and shall specify whether the pre-proposal conference is mandatory or voluntary. Regardless of whether the pre-proposal conference is mandatory or voluntary, only a principal, officer, or employee of the proposer may

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represent the proposer at the pre-proposal conference and no person may represent more than one proposer at the pre-proposal conference.

**17. SIGNATURE OF PROPOSALS**

Each proposal shall give the complete name of the proposer and the mailing address of the proposer 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 proposal shall include the proposer's Federal Employer Identification Number (FEIN). Failure to sign the Contract page(s) and proposal response sheets may disqualify the proposal from being considered by the County. The person signing on behalf of the proposer expressly affirms that the person is duly authorized to tender the proposal on behalf of the proposer and to sign the proposal sheets and contract under the terms and conditions of this Request for Proposal and to bind the proposer 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.

**18. AWARD OF PROPOSALS – EVALUATION CRITERIA AND FACTORS**

The award will be made to the responsible proposer whose proposal is determined to be the lowest and best evaluated offer demonstrating the best ability to fulfill the requirements set forth in this Request for Proposal. **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 proposer, by submitting a proposal, agrees that if its' proposal is accepted by the Commissioners' Court, the proposer will furnish all items and services upon which prices have been tendered and upon the terms and conditions in this proposal, 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 proposal 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 Legal Department prior to being signed by the County's authorized representatives.

The County of Galveston reserves the right to accept proposals on individual items listed, or group items, or on the proposal as a whole; to reject any and all proposals; to waive any informality in the proposals; to disregard proposals

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that are not submitted timely; to disregard the proposals of proposers determined to be not responsible; and to accept the proposal 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 proposal.

In determining and evaluating the best proposal, 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 proposals in whole or in part received by reason of this Request for Proposal and may discontinue its efforts under this Request for Proposal 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.

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

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

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

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

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 Proposer 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 proposer 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.

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**If proposer 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 proposal, proposer expressly affirms that it has clearly and conspicuously marked any information within its submission that proposer 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 proposer has marked as confidential, proprietary, and /or trade secret, then the County agrees that it shall provide notice to the proposer 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 proposer to submit correspondence to the Attorney General if the proposer wishes its information to be withheld. Proposer is deemed to have knowledge of the Public Information Act. **By the submission of its proposal, proposer expressly acknowledges that the burden to withhold its' information from public disclosure lays with the proposer;** thus, proposer further acknowledges and agrees that it shall submit comments to the Texas Attorney General in the request for decision process if proposer wishes to have its' information withheld from public disclosure.

**21. PROPOSER'S E-MAIL ADDRESSES – CONSENT TO DISCLOSURE**

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

**22. RESULTANT CONTRACT**

Proposer 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, proposal package (including best and final offer(s) if such is utilized), any addenda issued, and any change orders issued during the work. If applicable to the attached proposal, proposer must sign three (3) original contracts and return all three with their proposal submittal.

Proposer should submit a proposed contract with its proposal or its sample material terms and conditions for review and consideration.

**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. 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.

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All notices relating to default by proposer of the provisions of the contract shall be issued by the County through its Legal Department, and all replies shall be made in writing to the County Legal Department. Notices issued by or issued to anyone other than the County Legal Department 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 proposals or further negotiations. At a minimum, proposer 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 proposer.

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 proposer:

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

**25. 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 proposer should this contract be terminated early.

**26. 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.

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.

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**27. ESTIMATED QUANTITIES**

Any reference to quantities shown in the request for proposal 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.

**28. CONTRACTOR INVESTIGATION**

Before submitting a proposal, each proposer 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. Proposer 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 proposer receives an award as a result of its proposal submission in this procurement, the proposer's failure to have made such investigations and examinations will in no way relieve the proposer 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.

**29. 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 proposal in response to this request for proposal and does not commit the County of Galveston to procure or contract for services or supplies.

**30. PROPOSAL COSTS BORNE BY PROPOSER**

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

**31. BEST AND FINAL OFFERS (BAFO)**

In acceptance of proposals, the County reserves the right to negotiate further with one or more of the proposers as to any features of their proposals 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 proposers. If a Best and Final Offer is invoked, this allows acceptable proposers the opportunity to amend, change, or supplement their original proposal. Proposers 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.

**32. SINGLE PROPOSAL RESPONSE**

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

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**33. CHANGES IN SPECIFICATIONS**

If it becomes necessary to revise any part of this proposal, a written notice of such revision will be provided to all proposers 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 proposers in a written addendum from the Purchasing Agent. Proposers are advised to inquire prior to the submission deadline as to whether any addenda to this request for proposal have been issued, as the successful proposer 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 proposals. 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 proposal 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 proposals may be postponed by such number of days as in the opinion of the County shall enable prospective contractors to revise their proposals. In any case, the proposal 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 proposals.

**34. PROPOSAL 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 proposal.

**35. PROPOSAL DISCLOSURES**

While this procurement is pending, the names of those who submitted proposals will not be made public unless in conformity with the County Purchasing Act. Likewise, no pricing, staffing, or other contents of the proposal information will be released unless in conformity with the County Purchasing Act. Proposers are requested to withhold all inquiries regarding their proposal 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 proposal was received - violations of this provision may result in the rejection of a proposal.

**36. 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, 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.

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**37. REQUIREMENT OF AND PROOF OF INSURANCE**

The successful proposer 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 insuring 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 proposer that the contract is being activated as written proof of such insurance and further provided that proposer 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 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 proposer 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 proposer. Current insurance certificates certifying that such policies as specified above are in full force and effect shall be furnished by successful proposer to the County.**

Insurance is to be placed with insurers having a Best rating of no less than A. The proposer shall furnish the County with certificates of insurance and original endorsements affecting coverage required by these insurance clauses within



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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 proposer 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 proposer 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. Proposer 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 proposer.

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

**Subrogation Waiver.** Proposer and proposer'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 proposer's performance under this agreement.

**38. PROPOSAL GUARANTEE**

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

Evidencing its firm commitment to engage in contract if proposer is selected for award of contract, each proposer is required to furnish with their bid a cashier's check or an acceptable proposer's bond (generally, a bid bond) in the amount of five percent (5%) of the total contract price. If proposer is using a bond, then the bond must be executed with a surety company authorized to do business in the State of Texas. Failure to furnish the proposal guarantee in the proper form and amount, by the time set for opening of proposals may be cause for rejection of the proposal.

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

**39. PERFORMANCE AND PAYMENT BONDS (if required)**

Successful proposer, 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

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- 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 proposal 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 Government Code. Proposer should familiarize itself with the entire provisions of Chapter 2253 of the Texas Government Code.

**40. PATENT AND COPYRIGHT PROTECTION**

The proposer agrees at its sole expense to protect the County from claims involving infringement of patents, copyright, trademark, trade secret, or other intellectual property rights. **Proposer 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.** Proposer also agrees that if proposer is awarded this contract, that no work performed hereunder shall be subject to patent, copyright, or other intellectual property by proposer.

**41. CONFLICT OF INTEREST DISCLOSURE REPORTING (FORM CIQ)**

Proposer 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 proposer 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 proposer 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 proposer **MUST** complete a CIQ Form and file the original of the CIQ Form with the County Clerk of Galveston County.

**Gift-giving.** If proposer 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

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(\$100.00) 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.

**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 proposer has a “family relationship” with a local government officer of Galveston County then proposer **MUST** complete a CIQ Form and file the original of the CIQ Form with the County Clerk of Galveston County, regardless of whether proposer 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 proposer 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.

Proposer 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 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 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 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 of the Local Government Code. 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, and the failure to file may be grounds to void the contract, if proposer is awarded a contract.

If proposer has any questions about compliance with Chapter 176, proposer 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.

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**42. 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:

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

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

Proposer 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, proposer 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 proposal. **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 proposer's proposal and is a mandatory requirement of this request for proposal. Proposer'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 proposal and grounds for the rejection of proposer's proposal.** Proposer 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

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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.

If the contract to be awarded pursuant to this procurement involves the use of Federal funds, then proposer 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 proposer unless and until such registration is current and in good standing under SAM. Successful proposer must maintain SAM registration throughout the entire term of the agreement with the County. If this contract involves the use of Federal funds, then proposer 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 proposer's response to this procurement (i.e., bid, proposal, or qualifications statement, as applicable).

**44. 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.

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**45. 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.
- (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.

**46. 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.

**47. CONTROLLING LAW AND VENUE**

Proposer 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.

**48. MERGERS, ACQUISITIONS**

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

If subsequent to the award of any contract resulting from this request for proposal the proposer 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);

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

Moreover, proposer is required to provide the County with notice of any anticipated merger or acquisition as soon as proposer has actual knowledge of the anticipated merger or acquisition. The New Proposer'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.

**49. 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. Proposer 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 proposer attributed to these delays, should any occur. In addition, proposer 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.

**50. ACCURACY OF DATA**

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

**51. SUBCONTRACTING/ASSIGNMENT**

Proposer 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 proposer of any of its responsibilities under this contract.

**52. INDEPENDENT CONTRACTOR**

Proposer 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 proposer or proposer's subcontractors perform in providing the requirements stated in the request for proposal.

**53. MONITORING PERFORMANCE**

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

**54. 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 budgets to be approved during the periods of this contract, except for unanticipated needs or events which may prevent such payments

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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.

**55. 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 proposer 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.

**56. 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.

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;



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- 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:**

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

**Contract Clause:**

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

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**57. NON-COLLUSION AFFIDAVIT**

Proposer certifies, by signing and submitting a proposal, that the proposal is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the proposal 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 proposal, and has not directly or indirectly colluded, conspired, connived, or agreed with any contractor or anyone else to put in a sham proposal 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 proposer, or to fix any overhead, profit or cost element of the proposal 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 proposal are true; and further, that the contractor has not, directly or indirectly, submitted his or her proposal 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 proposal.

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

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.

**58. CERTIFICATION REGARDING LOBBYING**

Proposer certifies 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.
- 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. 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.

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The truthful and fully completed and executed original of the Certification Regarding Lobbying (included with bid packet) must be included with the submission of proposer's proposal and is a mandatory requirement of this request for proposal. Proposer'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 proposal and grounds for the rejection of the Proposer's proposal. Submission of the certification is a prerequisite for making or entering into a contract with Proposer 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.

**59. NON-DISCRIMINATION**

- a. **Equal Employment Opportunity:** Proposer will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, disability, genetic information or veteran status. Proposer 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. Proposer agrees to post in conspicuous places, available to employees and applicants for employment, notices of employment.

Proposer will, in all solicitation or advertisements for employees placed by or on behalf of proposer, 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.

Proposer 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.

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

- b. **Drug Free Work Place Act:** Proposer 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.
- c. **Americans with Disabilities Act:** Proposer 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:** Proposer 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:** Proposer agrees to comply with all requirements of the U.S. Immigration Reform and Control Act of 1986, as amended, and any implementing regulations thereto. Proposer further agrees to utilize the E-Verify system through the Department of Homeland Security on its employees. Proposer 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 Proposer 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:** Proposer agrees to comply with all other State and Federal laws and regulations applicable to the provision of services under this contract.

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**60. RECORD RETENTION AND RIGHT TO AUDIT**

Proposer 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, proposer shall allow the County reasonable access to the records in proposer'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 proposer 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 proposer 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.

**61. 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) 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;

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(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.

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

Pursuant to Title 5, Section 231.006 of the Texas Family Code, as applicable, Proposer 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. Proposer 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 proposal, the Proposer certifies that it has included the names and social security numbers of each person with at least 25% ownership interest in Proposer within its response to the request for proposal and that all such persons are current in child support payments.

**63. ANTITRUST**

Pursuant to 15 U.S.C. § 1, et seq., and Texas Business and Commerce Code, Chapter 15, Contractor, by the submission of its proposal, 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.

**64. LABOR STANDARDS**

On contracts funded under a federal grant: Proposer acknowledges that the contract to be awarded pursuant to this solicitation is on a grant program funded with Federal funds. Proposer 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. Proposer 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.

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**65. PROCUREMENT LAWS**

- a. Proposer 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

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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.

- 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

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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 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.



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- (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 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 Contract 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

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

**9.) Procurement of Recovered Materials.**

(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).

(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.

(c) 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.

**66. 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.

**67. LEAD AND ASBESTOS**

If this request for proposal 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

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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.

**68. 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.

**69. 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.

**70. 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.

**71. ACKNOWLEDGMENT OF GOVERNMENT RECORD**

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

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

Proposer acknowledges, by its submission in this Request for Proposals, 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.

**73. 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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**74. 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 (proposer shall provide its notice information with its proposal 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:**

(Proposer to provide its contact name, address, and facsimile number for notice under the contract.)

*End of General Provisions Section*

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**The Special Provisions and the General Provisions of this Request for Proposal and the Exhibits attached hereto are made a part of the 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:**

In response to the damages from Hurricane Ike in 2008, FEMA has approved Galveston County's Texas City Annex facility to have specific repairs and replacements completed. This request for proposal is for the repair, replacement, and mitigation of these systems as outlined in the project's drawings and specifications.

For the facility's foundation movement, and because the facility is located in a drought region;

- structural piers at the perimeter of the building and a foundation watering system are to be provided;

For the interior wall damage associated foundation movement;

- repairs to the walls are to be provided;

For two (2) old and failed air handling units;

- these units are to be replaced in their entirety.

**B. DEFINITIONS (As mentioned in FAR Subpart 52.2—Text of Provisions and Clauses)**

**52.202-1 Definitions.**

**Definitions (Nov 2013)**

When a solicitation provision or contract clause uses a word or term that is defined in the Federal Acquisition Regulation (FAR), the word or term has the same meaning as the definition in FAR [2.101](#) in effect at the time the solicitation was issued, unless—

- (a) The solicitation, or amended solicitation, provides a different definition;
- (b) The contracting parties agree to a different definition;
- (c) The part, subpart, or section of the FAR where the provision or clause is prescribed provides a different meaning; or
- (d) The word or term is defined in FAR [Part 31](#), for use in the cost principles and procedures

**C. PROPOSAL SURETY:**

A 5% surety bond is a requirement of this solicitation.

**D. PERFORMANCE AND PAYMENT BONDS**

100% Performance and Payment Bonds are a requirement of this solicitation.

**E. BEST AND FINAL OFFERS (BAFO):**

The Best and Final Offer process is applicable to this solicitation.

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**F. DAVIS BACON WAGE RATES:**

Attention is called to the fact that not less than, the federally determined prevailing (Davis-Bacon and Related Acts) wage rate, as issued by the Office of Rural Community Affairs and contained in the contract documents, must be paid on this project. 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.

**G. PROCUREMENT TIMELINE:**

A timeline for this RFP 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:

Advertise RFP (first date of publication)	Tuesday, June 29, 2021
Advertise RFP (second date of publication)	Tuesday, July 6, 2021
Pre-Proposal Conference/Site Visit	Thursday, July 8, 2021 at 10:00 a.m.
Deadline for Questions & Inquiries	Monday, July 12, 2021 by 5:00 p.m.
Proposals due from proposers/RFP Opening	Thursday, July 22, 2021 at 2:00 p.m.

**H. SUBMISSION INSTRUCTIONS:**

One (1) unbound original and five (5) copies must be submitted no later than **2:00 P.M. CST**, on **Thursday, July 22, 2021**:

**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 proposals received after **2:00 P.M. CST** on the specified date will be returned unopened.

Proposal 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://www1.galvestoncountytexas.gov/pu/Pages/OpenSolicitations.aspx>

**I. PRE-PROPOSAL CONFERENCE/SITE VISIT:**

**A non-mandatory pre-proposal conference and site visit will be held on Thursday, July 8, 2021, at 10:00 a.m. at the Texas City Annex, 2516 Texas Avenue, Texas City, TX 77591.**

**J. TYPE OF CONTRACT:**

It is the intent of this solicitation to enter into a contract that meets federal guidelines. It is imperative that all responders seeking a contract under this RFP solicitation effort must familiarize and adhere to 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 attached hereto as **ATTACHMENT A and REQUIRED CONTRACT PROVISIONS ARE attached hereto as ATTACHMENT B.**

**The resultant contract consists of the following documents: Request for Proposal, General Provisions, Special Provisions, General Terms and Conditions (including specifications, drawings, and addenda),**

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**Responder's response, Proposal Sheets, contract award, and any other documents referenced herein or attached hereto for the work.**

*In an effort to satisfy cost reasonableness responsibilities, 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 contract. The solicited results may be used by the County to determine if the contract extensions or amendments will be considered or other service options be utilized.*

**K. 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.

**L. AWARD PRICE:**

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.

**M. INVOICES AND PAYMENT:**

Invoices for services rendered under this contract shall be prepared monthly and rendered for payment to the County of Galveston's Auditing Department in the month following the month within which the services were received. All invoices must have a Purchase Order Number listed on the invoice to be prepared properly processed.

The County Auditor's address is as follows:

**Galveston County Auditing Department  
Attn: Accounts Payable  
P.O. box 1418  
Galveston, Texas 77553**

**N. PERSONNEL TO CONTACT REGARDING THIS SOLICITATION:**

Proposers 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 Proposer, which in the opinion of the County affects all responders or would be prejudicial to other proposers if not communicated, shall be furnished to all proposers as an addendum to the solicitation. Proposers **must** direct all inquiries to the following:

**Rufus G. Crowder, CPPO CPPB  
Purchasing Agent  
722 21<sup>st</sup> Street (Moody), 5<sup>th</sup> Floor  
Galveston, Texas 77550  
E-mail: [purchasing.bids@co.galveston.tx.us](mailto:purchasing.bids@co.galveston.tx.us)**



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**Proposers must e-mail their inquiries** (with the subject line “Texas City Annex” — RFP #B211036 – Questions”) for additional information and/or clarification to the address listed above. The request must include the Proposer’s name and the RFP 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 proposals due date.*** Late requests or those not delivered to the proper address may not receive a reply. Proposers shall not attempt to contact the County by any other means. The Purchasing Agent’s Office shall post the answers to 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 Proposal Submission Date. The County, at its sole discretion, may not issue a response to a RFI submittal. Proposers should not rely on any oral or written representations, statements, or explanations, other than those made in this RFP or in any written addendum to this RFP. Where there appears to be conflict between the RFP 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 Proposer's sole responsibility to ensure receipt of all addenda prior to submitting its proposal. All Proposers 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://www1.galvestoncountytexas.gov/pu/Pages/OpenSolicitations.aspx>.

The Proposer must acknowledge the receipt of all addenda on the forms provided. In the event a Proposer 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 Proposal and waive the acknowledgement of one or more addenda.

Proposers 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 proposal receipt date or in sufficient time for the Proposer to prepare a responsive or competitive submittal.

**O. PROGRAM ADMINISTRATION:**

The County’s Facilities Department has designated a Program Administrator that will manage the work to be performed under the resultant contract, who for the purpose of this RFP is:

**William (Will) Riordan  
Facilities Director  
722 Moody, 6<sup>th</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.

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**P. SAFETY:**

All prospective bidders will need to provide their OSHA 300 logs for the past three (3) years, display work crew safety training logs and safety policies and procedures for RFP committee purview. Safety is a primary concern of the county and the awardee will be required to follow all relevant OSHA Code of Federal Regulations regarding workplace safety. Violations of safety protocol will be addressed by the County Risk Manager and could lead to construction delays and possible termination of the contract.

**Q. CONSULTATION:**

Upon completion of site visit and inspection the bidder should provide information regarding the most advantageous methodology, solution, services, supplies, delivery and counsel in order to insure successful completion of this project. The ability of the bidder to inform and consult on the conditions of the equipment as well as work plan, starting, and finishing time will be heavily weighed and considered by the RFP evaluation committee.

**R. LABOR:**

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.

**S. INSURANCE:**

Respondent 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, Respondents may submit a notarized statement from an insurance company authorized to conduct business in the State of Texas guaranteeing that Respondent has such insurance. Provided however, that successful Respondent(s) shall be required to provide a current certificate of insurance to the Galveston County Purchasing Agent's Office before Respondent 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 insuring 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.** Respondent 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.

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**Commercial General Liability.** Respondent 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.** Respondent 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.

**Professional Liability.** Respondent shall carry in full force professional liability insurance with limits of not less than \$1,000,000.00.

**T. MANDATORY REQUIREMENTS:**

- **Past Projects References:** Bidder shall provide the following information from three projects of the general scope and major types of work that are in this project, that is performed within the last five years;
  - Description of each Project;
  - Client contact information – company name, title, telephone number, etc.

**U. EVALUATION CRITERIA AND AWARD:**

The award(s) will be made to the responsible proposer(s) whose proposal is determined to be the best evaluated offer demonstrating the best ability to fulfill the requirements set forth in this Request for Proposal. In awarding the contract, the Evaluation Committee may take into consideration the proposer's skill, capacity, experience, support capabilities, previous work/safety record, costs, the necessity of prompt and efficient completion of work described in the proposal documents, or other factors considered relevant.

The requested services will be awarded primarily based on the evaluation criteria listed below as well as complying with the provisions as stated on pages 6-7 of the General Provisions, Item 18, Award of Proposals – Evaluation Criteria and Factors.

**METHODOLOGY – 35%**

The following shall apply to this section:

- Ability of contractor to provide the most advantageous methodology, solution, services, and delivery as requested herein;
- The ability of the proposer to satisfy the detailed requirements outlined in this RFP;
- The ability of the proposer to satisfy the construction objectives outlined in this RFP;
- Completeness of work plan and ability to meet the goal of substantially completing the requested project within the requested or reasonably stated time frame.

**COST – 35%**

The Proposer shall provide pricing information relative to providing the proposed solution/system, services, and supplies as outlined herein. Included in the cost evaluation will be the total initial costs and on-going costs to the County;

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**REFERENCES, QUALIFICATIONS, PAST PERFORMANCE AND EXPERIENCE – 15%**

The proposer shall have experience in all of the major types of work that are in this project. The proposer shall provide references and information describing the make-up and experience of the company personnel providing the construction services.

**SAFETY PLAN / SAFETY RECORD / EMR – 15%**

The proposer shall include company adopted documentation outlining the procedures, rules, and regulations that are or will be put in place to protect workers over the course of the construction project. The proposer shall submit information with regard to their EMR (experience modification rate) as it applies to this request.

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

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**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.

(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.

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(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.

(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

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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
- (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



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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 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.

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(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

(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]

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(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.

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(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;

(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

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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

#### **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

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**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

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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.

(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



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**CONTRACT PROVISIONS (2 C.F.R. 200.327)**

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)

**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.

(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).

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(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.

(d) See also § 200.471.

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#### 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.

#### **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.

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**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.
- (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.

**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.

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**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 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.

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**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.

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**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

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.

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- (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.

#### **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.



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**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.

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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-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).

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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 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,

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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 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.

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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

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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 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.

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#### **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.
  - 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.

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- 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,



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the contractor shall also provide to the employment service delivery system the contact information for the job search organization(s). The disclosures required 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

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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.
- 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.

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- 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.

#### **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:

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- 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 for Bids. 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.

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**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 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).

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- 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;
- 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

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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 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

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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



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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.

**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.

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- 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 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

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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.
- 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.

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### REQUEST FOR PROPOSAL TEXAS CITY ANNEX GALVESTON COUNTY, TEXAS

#### **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.

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

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

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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.

#### § 135.38 Section 3 clause.

All section 3 covered contracts shall include the following clause (referred to as the section 3 clause):

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

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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.

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 7(b).

**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.

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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 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.



## 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: \_\_\_\_\_





## 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: \_\_\_\_\_

**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:** \_\_\_\_\_

RFP #B211036, Texas City Annex \_\_\_\_\_

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

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**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 **RFP #B211036, Texas City Annex**
- 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 \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

**GALVESTON COUNTY, TEXAS  
TEXAS CITY ANNEX  
PROPOSAL FORM**

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.

<b>Items:</b>	<b>Confirmed (X):</b>
1. References (if required)	_____
2. Addenda, if any	#1_____ #2_____ #3_____ #4_____
3. One (1) original and five (5) copies of submittal	_____
4. Proposal Forms	_____
5. Vendor Qualification packet	_____
6. Payment Terms:	_____net 30 _____Other
7. Non-Collusion Affidavit	_____
8. Debarment Form	_____
9. Lobbying Certificate	_____
10. Companies Boycotting Israel	_____
11. Contracts with Certain Companies	_____

Person to contact regarding this proposal: \_\_\_\_\_

Title: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail address: \_\_\_\_\_

Name of person authorized to bind the Firm: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail address: \_\_\_\_\_

**GALVESTON COUNTY, TEXAS  
TEXAS CITY ANNEX  
PROPOSAL FORM**

Proposer 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."

Proposer to submit reference information. Proposer shall use this form to provide minimum required reference information. If Proposer wishes to provide more than the minimum, Proposer should supplement this form and should clearly mark the supplement as "Supplementary Reference Information."

1. References who can attest to the Proposer's capability to carry out the requirements set forth in this qualification:

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: \_\_\_\_\_

**PROPOSAL FORM  
TEXAS CITY ANNEX  
GALVESTON, TEXAS**

References of major supplier of Proposer who can speak to the financial capability of the Proposer to carry out the requirements set forth in this qualification:

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: \_\_\_\_\_

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**County of Galveston**

**ACKNOWLEDGMENT AND CERTIFICATION REGARDING DEBARMENT,  
SUSPENSION, AND OTHER INELGIBILITY**

**Executive Orders 12549 & 12689 Certification, Debarment and Suspension**

Solicitation Number: RFP #B211036

Solicitation Title: Texas City Annex

**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.

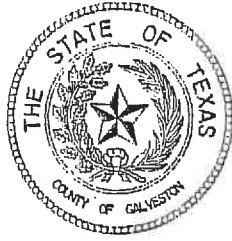
Contractor **Represents and Warrants** that the individual executing this Acknowledgment and Certification on its behalf has the full power and authority to do so and can legally bind the Contractor hereto.

\_\_\_\_\_  
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/1045v9.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://www.federalcontractorregistry.com/?gclid=CIG1hE2r8wCFYkCaOoducANZw> or at <https://www.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).*

**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 (f), 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, 1<sup>st</sup> 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.co.galveston.tx.us>.

As well, blank CIQ Forms may be obtained by visiting the Texas Ethics Commission website, specifically at <http://www.ethics.state.tx.us/whatsnew/conflictforms.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*

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<b>Main Phone Number:</b>																	
<b>Fax Number:</b>																	
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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.

Print or type See Specific Instructions on page 2.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.	
2 Business name/disregarded entity name, if different from above	
3 Check appropriate box for federal tax classification; check only <b>one</b> of the following seven boxes: <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ <small>Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner.</small> <input type="checkbox"/> Other (see instructions) ▶ _____ <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____ <small>(Applies to accounts maintained outside the U.S.)</small>
5 Address (number, street, and apt. or suite no.)	Requester's name and address (optional)
6 City, state, and ZIP code	
7 List account number(s) here (optional)	

## 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 Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

**Note.** If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number					
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	-		-		
or					
Employer identification number					
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; border: 1px solid black; height: 20px;"></td> <td style="width: 5%; border: 1px solid black; text-align: center;">-</td> <td style="width: 70%; border: 1px solid black; height: 20px;"></td> </tr> </table>		-			
	-				

## 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 on page 3.

**Sign Here**

Signature of U.S. person ▶

Date ▶

## General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

**Future developments.** Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at [www.irs.gov/fw9](http://www.irs.gov/fw9).

### 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?* on page 2.

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?* on page 2 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 Publication 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 28% 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 Part II instructions on page 3 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* on page 3 and the separate instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships* above.

## 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* on page 3 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, list first, and then circle, the name of the person or entity whose number you entered in Part I of 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 in line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box in line 3.

**Limited Liability Company (LLC).** If the name on line 1 is an LLC treated as a partnership for U.S. federal tax purposes, check the "Limited Liability Company" box and enter "P" in the space provided. If the LLC has filed Form 8832 or 2553 to be taxed as a corporation, check the "Limited Liability Company" box and in the space provided enter "C" for C corporation or "S" for S corporation. If it is a single-member LLC that is a disregarded entity, do not check the "Limited Liability Company" box; instead check the first box in line 3 "Individual/sole proprietor or single-member LLC."

**Line 4, Exemptions**

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space in 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 national 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.

**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. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on this page), 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 the chart on page 4 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. You can get Forms W-7 and SS-4 from the IRS by visiting [IRS.gov](http://IRS.gov) or by calling 1-800-TAX-FORM (1-800-829-3676).

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 items 1, 4, or 5 below indicate 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), 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)	The actual owner of the account or, if combined funds, the first individual on the account <sup>1</sup>
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor <sup>2</sup>
4. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee <sup>3</sup>  The actual owner <sup>3</sup>
5. Sole proprietorship or disregarded entity owned by an individual	The owner <sup>3</sup>
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor <sup>3</sup>
For this type of account:	Give name and EIN of:
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity <sup>4</sup>
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. 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
14. 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* on page 2.

\*Note. 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 Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system 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 contact them at [www.ftc.gov/idtheft](http://www.ftc.gov/idtheft) or 1-877-IDTHEFT (1-877-438-4338).

Visit [IRS.gov](http://IRS.gov) 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

## **SPECIAL PROVISIONS FOR CONSTRUCTION**

### **1. Contract and Contract Documents**

- (a) The project to be constructed pursuant to this contract will be financed with assistance from FEMA and is subject to all applicable Federal and State laws and regulations.
- (b) 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 Huitt-Zollars, 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 365 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 benchmarks 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, however, 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, however, 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.

**Bid Sheet Texas City Annex Foundation and HVAC Project**

Bid Item	Description	Units	Quantity	Unit Price	Bid Amount
1	Mobilization ( Not to exceed 5% of bid Price)	Lump Sum	1		
2	Foundation watering system	Lump Sum	1		
3	Interior wall repairs	Lump Sum	1		
4	Air Handling Unit replacements, Condensing Unit installations	Lump Sum	1		
5	Foundation piers	Ea.	54		
6	Remove and Replace Concrete Sidewalk, complete in place	SF	1		
7	Channel Drain	LF	55		
	Total Bid				

**CONTRACT AWARD**

**CONTRACT FOR: TEXAS CITY ANNEX FOUNDATION AND HVAC PROJECT**

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.

Contract No: \_\_\_\_\_

Bid No: \_\_\_\_\_

Contractor: \_\_\_\_\_

The Specifications and Drawings are enumerated as follows:

Standard Specifications: Huitt-Zollars, Inc.'s Specifications

Special Provisions:       None

Special Items:           None

DRAWINGS:  
ADDENDA: \_\_\_\_\_

**Contract Award** (continued)

Invitation to Bid, General Provisions, Special Provisions, Bid Forms, Non-Collusion Affidavit, Vendor Qualification Packet, Debarment Form, Special Provisions for Construction, Bid Proposal, Affidavit and Surety Forms, Wage Rates, Specifications and Plans 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 365 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 \_\_\_\_\_, 20\_\_.

EXECUTED this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

COUNTY OF GALVESTON, TEXAS

BY: \_\_\_\_\_  
MARK HENRY, County Judge

ATTEST:

\_\_\_\_\_  
DWIGHT SULLIVAN, County Clerk

CONTRACTOR

BY: \_\_\_\_\_  
Signature - Title

\_\_\_\_\_  
Printed Name

**CONSENT OF SURETY TO REDUCTION IN OR PARTIAL RELEASE OF RETAINAGE**

TO:

PROJECT NO.

PROJECT:  
Texas City Annex

CONTRACT FOR:

CONTRACT DATE:

---

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the

, 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

2021,

\_\_\_\_\_  
SURETY

\_\_\_\_\_  
Signature of Authorized Representative

\_\_\_\_\_  
Title

ATTEST:  
(Seal):



**CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIEN:**

TO (Owner):

PROJECT NO:

CONTRACT FOR:

PROJECT:

Texas City Annex

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 \_\_\_\_\_, 2021.

Notary Public:

My Commission Expires:

**CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS**

TO (Owner):

PROJECT NO:

CONTRACT FOR:

PROJECT:

Texas City Annex

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 \_\_\_\_\_

CONTRACTOR:

Address:

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 Sub-contractors and material and equipment Suppliers to the extent required by the Owner, Accompanied by a list thereof.
3. Contractor's Affidavit of Release of Lien.

BY:

Subscribed and sworn to before me this

day of 2021

Notary Public:

My Commission Expires:

**CONSENT OF SURETY COMPANY TO FINAL PAYMENT**

TO (Owner):

PROJECT NO:

CONTRACT FOR:

PROJECT:

CONTRACT DATE:

Texas City Annex

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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 at 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,

day of

, 2021.

\_\_\_\_\_  
Surety Company

\_\_\_\_\_  
Signature of Authorized Representative

\_\_\_\_\_  
Title

ATTEST:  
(Seal)

NOTE: This form is to be used as a companion document to Contractor's Affidavit of Payment of Debts and Claims.

"General Decision Number: TX20210248 03/12/2021

Superseded General Decision Number: TX20200248

State: Texas

Construction Type: Building

County: Galveston County in Texas.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 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, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.95 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 calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts).

Modification Number	Publication Date
0	01/01/2021
1	03/12/2021

ASBE0022-009 06/01/2019

Rates Fringes

ASBESTOS WORKER/HEAT & FROST  
INSULATOR (Duct, Pipe and  
Mechanical System Insulation)...\$ 24.28 14.16

-----

BOIL0074-003 01/01/2017

	Rates	Fringes
BOILERMAKER.....	\$ 28.00	22.35

-----  
CARP0551-011 04/01/2016

	Rates	Fringes
CARPENTER (Excludes Acoustical Ceiling Installation, Drywall Finishing/Taping, Drywall Hanging, Form Work and Metal Stud Installation).....	\$ 23.05	8.78

-----  
ELEC0527-002 10/28/2019

	Rates	Fringes
ELECTRICIAN (Excludes Low Voltage Wiring and Installation of Alarms).....	\$ 29.43	3% + 10.65

-----  
\* ELEV0031-003 01/01/2021

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 45.48	36.365

FOOTNOTES:

A. 6% under 5 years based on regular hourly rate for all hours worked. 8% over 5 years based on regular hourly rate for all hours worked.

B. Holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Friday after Thanksgiving Day; Christmas Day; and Veterans Day.

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ENGI0450-002 04/01/2014

	Rates	Fringes
POWER EQUIPMENT OPERATOR Cranes.....	\$ 34.85	9.85

-----  
IRON0084-011 06/01/2020

Rates Fringes

IRONWORKER, ORNAMENTAL.....\$ 25.26 7.13

-----  
PAIN0130-002 06/01/2018

Rates Fringes

PAINTER (Brush, Roller, and  
Drywall Finishing/Taping).....\$ 17.88 9.50

-----  
PLAS0079-004 01/01/2015

Rates Fringes

PLASTERER.....\$ 19.92 1.00

-----  
\* PLUM0068-002 10/01/2020

Rates Fringes

PLUMBER.....\$ 36.15 11.88

-----  
PLUM0211-010 10/01/2018

Rates Fringes

PIPEFITTER (Including HVAC  
Pipe Installation).....\$ 33.30 12.26

-----  
SHEE0054-012 04/01/2020

Rates Fringes

SHEET METAL WORKER  
Excludes HVAC Duct and  
Unit Installation.....\$ 29.70 13.85  
HVAC Duct Installation Only.\$ 29.70 13.85

-----  
SUTX2014-024 07/21/2014

Rates Fringes

ACOUSTICAL CEILING MECHANIC.....\$ 16.41 3.98

BRICKLAYER.....\$ 19.86 0.00

CAULKER.....\$ 15.36 0.00

CEMENT MASON/CONCRETE FINISHER...\$ 13.82 0.00

DRYWALL HANGER AND METAL STUD

INSTALLER.....	\$ 17.88	5.24
ELECTRICIAN (Alarm Installation Only).....	\$ 17.97	3.37
ELECTRICIAN (Low Voltage Wiring Only).....	\$ 19.23	3.55
FLOOR LAYER: Carpet.....	\$ 20.00	0.00
FORM WORKER.....	\$ 12.07	0.00
GLAZIER.....	\$ 17.09	3.41
HVAC MECHANIC (Installation of HVAC Unit Only).....	\$ 17.40	0.00
IRONWORKER, REINFORCING.....	\$ 12.10	0.00
IRONWORKER, STRUCTURAL.....	\$ 25.37	6.00
LABORER: Common or General.....	\$ 11.47	0.00
LABORER: Mason Tender - Brick...	\$ 13.37	0.00
LABORER: Mason Tender - Cement/Concrete.....	\$ 10.50	0.00
LABORER: Pipelayer.....	\$ 12.94	0.00
LABORER: Roof Tearoff.....	\$ 11.28	0.00
LABORER: Landscape and Irrigation.....	\$ 9.49	0.00
LATHER.....	\$ 20.11	0.00
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 14.10	0.00
OPERATOR: Bobcat/Skid Steer/Skid Loader.....	\$ 13.93	0.00
OPERATOR: Bulldozer.....	\$ 20.77	0.00
OPERATOR: Drill.....	\$ 16.22	0.34
OPERATOR: Forklift.....	\$ 15.64	0.00
OPERATOR: Grader/Blade.....	\$ 13.37	0.00

OPERATOR: Loader.....	\$ 13.55	0.94
OPERATOR: Mechanic.....	\$ 17.52	3.33
OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....	\$ 16.03	0.00
OPERATOR: Roller.....	\$ 16.00	0.00
PAINTER: Spray (Excludes Drywall Finishing/Taping).....	\$ 17.43	4.43
ROOFER.....	\$ 15.40	0.00
SPRINKLER FITTER (Fire Sprinklers).....	\$ 18.62	3.03
TILE FINISHER.....	\$ 12.00	0.00
TILE SETTER.....	\$ 16.17	0.00
TRUCK DRIVER: 1/Single Axle Truck.....	\$ 14.95	5.23
TRUCK DRIVER: Dump Truck.....	\$ 12.39	1.18
TRUCK DRIVER: Flatbed Truck.....	\$ 19.65	8.57
TRUCK DRIVER: Semi-Trailer Truck.....	\$ 12.50	0.00
TRUCK DRIVER: Water Truck.....	\$ 12.00	4.11
WATERPROOFER.....	\$ 14.39	0.00

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

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is



like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts).

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

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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.

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## 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 Regional Office for the area in which the survey was conducted because those Regional Offices have 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 DECISION"

**GALVESTON COUNTY**  
**TEXAS CITY ANNEX FOUNDATION**  
**AND HVAC PROJECT**

**TECHNICAL SPECIFICATIONS**

June 25, 2021

Issue for Bid

**HUITT-ZOLLARS**

Huitt-Zollars, Inc.  
TBPE Firm Registration #F-761  
10350 Richmond Avenue, Suite 300  
Houston, Texas 77042  
291-496-0066  
HZ Project No. R307738.01

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SECTION 01 5639

TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the protection and trimming of trees that interfere with, or are affected by, execution of the Work, whether temporary or new construction.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- C. Certification: From a qualified Arborist that trees indicated to remain have been protected during construction according to recognized standards and that tree were promptly and properly treated and repaired when damaged.

1.4 QUALITY ASSURANCE

- A. Tree Service Qualifications: An experienced tree service firm that has successfully completed tree protection and trimming work similar to that required for this Project.
- B. Arborist Qualifications: An Arborist certified by the International Society of Arboriculture or licensed in the jurisdiction where project is located.
- C. Tree Pruning Standards: Comply with ANSI A300, "Trees, Shrubs, and Other Woody Plant Maintenance--Standard Practices," unless more stringent requirements are indicated.
- D. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

1. Before starting tree protection and trimming, meet with representatives of authorities having jurisdiction, Owner, City Arborist, consultants, and other concerned entities. Review tree protection and trimming procedures and responsibilities. Notify participants at least three working days before convening conference. Record discussions and agreements and furnish a copy to each participant.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch sieve and not more than 10 percent passing a 3/4-inch sieve.
- B. Topsoil: Fertile, friable, surface soil, containing natural loam and complying with ASTM D 5268. Provide topsoil that is free of stones larger than 1 inch in any dimension and free of other extraneous or toxic matter harmful to plant growth. Obtain topsoil only from well-drained sites where soil occurs in depth of 4 inches or more; do not obtain from bogs or marshes.
- C. Orange Vinyl Fence: Fabric shall be 48" height and constructed of orange plastic mesh containing ultraviolet stabilizers to prevent degradation, with maximum aperture openings of 4.5 square inches, and have minimal tensile strength of 250 pounds per foot in the longitudinal direction and 150 pounds per foot in the vertical direction.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Temporary Fencing: Install temporary fencing located as indicated or outside the drip line of trees to protect remaining vegetation from construction damage.
  1. Install 8-foot steel drive-in fence posts (13 gage) approximately 8 feet on center, along drip-line of trees.
  2. Insert steel drive-in posts a minimum of 3 feet into ground, leaving 5 feet above ground.
  3. Secure vinyl fence to posts.
- B. Protect tree root systems from damage due to noxious materials caused by runoff or spillage while mixing, placing, or storing construction materials. Protect root systems from flooding, eroding, or excessive wetting caused by dewatering operations.
- C. Do not store construction materials, debris, or excavated material within the drip line of remaining trees. Do not permit vehicles or foot traffic within the drip line; prevent soil compaction over root systems.
- D. Do not allow fires under or adjacent to remaining trees or other plants.

### 3.2 EXCAVATION

- A. Install shoring or other protective support systems to minimize sloping or benching of excavations.
- B. Do not excavate within drip line of trees, unless otherwise indicated.
- C. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots.
  - 1. Relocate roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and relocate them without breaking. If encountered immediately adjacent to location of new construction and relocation is not practical; cut roots approximately 3 inches back from new construction.
  - 2. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
- D. Where utility trenches are required within drip line of trees, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.
  - 1. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments; do not break or chop.

### 3.3 REGRADING

- A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond drip line of trees. Maintain existing grades within drip line of trees.
- B. Minor Fill: Where existing grade is 6 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.
- C. Moderate Fill: Where existing grade is more than 6 inches, but less than 12 inches, below elevation of finish grade, place drainage fill, filter fabric, and topsoil on existing grade as follows:
  - 1. Carefully place drainage fill against tree trunk approximately 2 inches above elevation of finish grade and extend not less than 18 inches from tree trunk on all sides. For balance of area within drip-line perimeter, place drainage fill up to 6 inches below elevation of grade.
  - 2. Place filter fabric with edges overlapping 6 inches minimum.
  - 3. Place fill layer of topsoil to finish grade. Do not compact drainage fill or topsoil. Hand grade to required finish elevations.

### 3.4 TREE PRUNING

- A. Prune remaining trees affected by temporary and new construction.



- B. Prune remaining trees to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by qualified Arborist.
- C. Pruning Standards: Prune trees according to ANSI A300 as follows:
  - 1. Type of Pruning: Crown cleaning.
  - 2. Type of Pruning: Crown thinning.
  - 3. Type of Pruning: Crown raising.
  - 4. Type of Pruning: Crown reduction.
  - 5. Type of Pruning: Vista pruning.
  - 6. Type of Pruning: Crown restoration.
- D. Cut branches with sharp pruning instruments; do not break or chop.
- E. Chip branches removed from trees. Spread chips where indicated or as directed by Landscape Architect with Owner's approval.

### 3.5 TREE REPAIR AND REPLACEMENT

- A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to written instructions of the qualified Arborist.
- B. Remove and replace dead and damaged trees that the qualified Arborist determines to be incapable of restoring to a normal growth pattern.
  - 1. There shall be no trees greater than 4 inches in caliper size removed without the consent of the Owner and Landscape Architect.
  - 2. Provide new trees of 2 inch caliper size and of a species selected by Landscape Architect when trees more than 4 inches in caliper size, measured 12 inches above grade, are required to be replaced.
- C. Aerate surface soil, compacted during construction, 10 feet beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch diameter holes a minimum of 12 inches deep at 24 inches o.c. Backfill holes with an equal mix of augered soil and sand.

### 3.6 DISPOSAL OF WASTE MATERIALS

- A. Burning is not permitted.
- B. Disposal: Remove excess excavated material, displaced trees, and excess chips from Owner's property.

END OF SECTION

SECTION 01 5780

CONTROL OF GROUND AND SURFACE WATER

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Dewatering, depressurizing, draining, and maintaining trenches, shaft excavations, structural excavations and foundation beds in stable condition, and controlling ground water conditions for tunnel excavations.
- B. Protecting work against surface runoff and rising floodwaters.
- C. Trapping suspended sediment in the discharge from the surface and ground water control systems.

1.2 MEASUREMENT AND PAYMENT

A. UNIT PRICES

- 1. Measurement for control of ground water, will be on either a lump sum basis or a linear foot basis for continuous installations of well points, eductor wells, or deep wells.
- 2. If not included in Bid Form, include the cost to control ground water in unit price for work requiring such controls.
- 3. No separate payment will be made for control of surface water. Include cost to control surface water in unit price for work requiring controls.

- B. Stipulated Price (Lump Sum) Contract. If the Contract is a Stipulated Price Contract, include payment for work under this section in the total Stipulated Price.

1.3 REFERENCES

- A. ASTM D 698 - Standard Test Methods for Laboratory Compaction of Soils Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600kN-m/m<sup>3</sup>))
- B. Federal Regulations, 29 CFR Part 1926, Standards-Excavation, Occupational Safety and Health Administration (OSHA)
- C. Storm Water Management Handbook for Construction Activities prepared by City of Houston, Harris County and Harris County Flood Control District.

1.4 DEFINITIONS

- A. Ground water control system: system used to dewater and depressurize water-bearing soil layers.

1. Dewatering: lowering the water table and intercepting seepage that would otherwise emerge from slopes or bottoms of excavations, or into tunnels and shafts; and disposing of removed water.  
Intent of dewatering is to increase stability of tunnel excavations and 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 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, necessary to prevent failure or heaving of excavation bottom or instability of tunnel excavations.
- 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 necessary to protect Work from any source of surface water.
- D. Monitoring facilities for ground water control system: includes piezometers, monitoring wells and flow meters for observing and recording flow rates.

#### 1.5 PERFORMANCE REQUIREMENTS

- A. Conduct subsurface investigations to identify groundwater conditions and to provide parameters for design, installation, and operation of groundwater control systems. Submit proposed method and spacing of readings for review prior to obtaining water level readings.
- B. Design ground water control system, compatible with requirements of Federal Regulations 29 CFR Part 1926 and Section 312260 - Trench Safety Systems to produce following results:
  1. Effectively reduce hydrostatic pressure affecting:
    - a. Excavations
    - b. Tunnel excavation, face stability or seepage into tunnels
  2. Develop 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 loss of fines, seepage, boils, quick condition, or softening of foundation strata
  5. Maintain stability of sides and bottom of excavations

- C. Provide ground water control systems that 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 other sources entering excavation. Excavation drainage may include placement of drainage materials, 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 settlement or resultant damage caused by 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, adjacent water wells, or potentially contaminated areas. Repair damage caused by ground water control systems or resulting from failure of system to protect property as required.
- H. Install an adequate number of piezometers installed at proper locations and depths, necessary to provide meaningful observations of conditions affecting excavation, adjacent structures and water wells.
- I. Install environmental monitoring wells at proper locations and depths necessary to provide adequate observations of hydrostatic conditions and possible contaminant transport from contamination sources into work area or ground water control system.

1.6 SUBMITTALS

- A. Conform to requirements of Section 013300 - Submittals Procedures.
- B. Submit Ground Water and Surface Water Control Plan for review by Project Manager prior to start of excavation work. Include the following:
  - 1. Results of subsurface investigations and description of extent and characteristics of water bearing layers subject to ground water control
  - 2. Names of equipment Suppliers and installation Subcontractors
  - 3. 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. Description of proposed monitoring facilities 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. 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 means.
  9. Surface water control and drainage installations.
  10. Proposed methods and locations for disposing of removed water.
- C. Submit following records upon completion of 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 weekly during control of ground and surface water 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

#### 1.7 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 necessary permits from agencies with jurisdiction over use of groundwater and matters affecting well installation, water discharge, and use of existing storm drains and natural water sources. Since review and permitting process may be lengthy, take early action to obtain required approvals.
- D. Monitor ground water discharge for contamination while performing pumping in vicinity of potentially contaminated sites.

PART 2 PRODUCTS

2.1 EQUIPMENT AND MATERIALS

- A. Select equipment and materials necessary to achieve desired results for dewatering. Selected equipment and materials are subject to review by Project Manager through submittals required in Paragraph 1.06, Submittals.
- B. Use experienced contractors, regularly engaged in ground water control system design, installation, and operation, to furnish and install and operate educators, well points, or deep wells, when needed
- C. Maintain equipment in good repair and operating condition.
- D. Keep sufficient standby equipment and materials available to ensure continuous operation, where required.
- E. Portable Sediment Tank System: Standard 55-gallon steel or plastic drums, free of hazardous material contamination.
  - 1. Shop or field fabricate tanks in series with main inlet pipe, inter-tank pipes and discharge pipes, using quantities sufficient to collect sediments from discharge water.

PART 3 EXECUTION

3.1 GROUND WATER CONTROL

- A. Perform necessary subsurface investigation 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 draw down characteristics. Present results in the Ground Water and Surface Water Control Plan. submittal
- B. Provide labor, material, equipment, techniques and methods to lower, control and handle ground water in manner compatible with construction methods and site conditions. Monitor effectiveness of 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 Project Manager in writing of changes made to accommodate field conditions and changes to Work. Provide revised drawings and calculations with notification.
- D. Provide continuous system operation, including nights, weekends, and holidays. Arrange appropriate backup if electrical power is primary energy source for dewatering system.
- E. Monitor operations to verify systems lower ground water piezometric levels at rate required to maintain dry excavation resulting in stable subgrade for subsequent construction operations.

- F. Depressurize zones where hydrostatic pressures in confined water bearing layers exist below excavations to eliminate risk of uplift or other instability of excavation or installed works. Define allowable piezometric elevations in the Ground Water and Surface Water Control Plan.
  - G. Removal of ground water control installations.
    - 1. Remove pumping system components and piping when ground water control is no longer required.
    - 2. Remove piezometers, including piezometers installed during design phase investigations and left for Contractor's use, upon completion of testing, as required in accordance with Part 3 of applicable specification.
    - 3. Remove monitoring wells when directed by Project Manager.
    - 4. Grout abandoned well and piezometer holes. Fill piping that is not removed with cement-bentonite grout or cement-sand grout.
  - H. During backfilling, maintain water level a minimum of 5 feet below prevailing level of backfill. Do not allow the water level to cause 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 hour after placement.
  - I. Provide uniform pipe diameter for each pipe drain run constructed for dewatering. Remove pipe drains when no longer required. If pipe removal is impractical, grout connections at 50-foot intervals and fill pipe with cement-bentonite grout or cement-sand grout after removal from service.
  - J. The extent of ground water control for structures with permanent perforated underground drainage systems may be reduced, for units designed to withstand hydrostatic uplift pressure. Provide a means to drain affected portions of underground systems, including standby equipment. Maintain drainage systems during construction operations.
  - K. Remove systems upon completion of construction or when dewatering and control of surface or ground water is no longer required.
  - L. Compact backfill to not less than 95 percent of maximum dry density in accordance with ASTM D 698.
  - M. Foundation Slab: Maintain saturation line at least 3 feet below lowest elevations where concrete is to be placed. Drain foundations in areas where concrete is to be placed before placing reinforcing steel. Keep free from water for 3 days after concrete is placed.
- 3.2 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 each eductor well or well point and discharge header to allow visual monitoring of discharge from each installation.

- B. Install sufficient piezometers or monitoring wells to show that trench or shaft excavations in water bearing materials are pre-drained 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 selected method of work.
  - C. Install piezometers or monitoring wells at least one week in advance of the start of associated excavation.
  - D. Dewatering may be omitted for portions of under drains or other excavations, where auger borings and piezometers or monitoring wells show that soil is pre-drained by existing systems and that ground water control plan criteria are satisfied.
  - E. Replace installations that produce noticeable amounts of sediments after development.
  - F. Provide additional ground water control installations, or change method of control if, ground water control plan does not provide satisfactory results based on performance criteria defined by plan and by specifications. Submit revised plan according to Paragraph 1.06B.
- 3.3 SEDIMENT TRAPS
- A. Install sediment tank as shown on approved plan.
  - B. Inspect daily and clean out tank when one-third of sediment tank is filled with sediment.
- 3.4 SEDIMENT SUMP PIT
- A. Install sediment sump pits as shown on approved plan.
  - B. Construct standpipe by perforating 12 inch to 24-inch diameter corrugated metal or PVC pipe.
  - C. Extend standpipe 12 inches to 18 inches above lip of pit.
  - D. Convey discharge of water pumped from standpipe to sediment trapping device.
  - E. Fill sites of sump pits, compact to density of surrounding soil and stabilize surface when construction is complete.
- 3.5 EXCAVATION DRAINAGE
- A. Use excavation drainage methods if well-drained conditions can be achieved. Excavation drainage may consist of layers of crushed stone and filter fabric, and sump pumping, in combination with sufficient ground water control wells to maintain stable excavation and backfill conditions.



3.6 MAINTENANCE AND OBSERVATION

- A. Conduct daily maintenance and observation of piezometers or monitoring wells while ground water control installations or excavation drainage is operating at the site, or water is seeping into tunnels, and maintain systems in good operating condition.
- B. Replace damaged and destroyed piezometers or monitoring wells with new piezometers or wells as necessary to meet observation schedules.
- 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 specified observations
- D. Remove and grout piezometers inside or outside of excavation area when ground water control operations are complete. Remove and grout monitoring wells when directed by Project Manager.

3.7 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. Record observations 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 Work is completed or piezometers or wells are removed, except when Project Manager determines more frequent monitoring and recording are required. Comply with Project Manager's direction for increased monitoring and recording and take measures necessary to ensure effective dewatering for intended purpose.

3.8 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. 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 agencies.

END OF SECTION

SECTION 03 1000

CONCRETE FORMWORK

PART 1 - GENERAL

1.1 RELATED SECTION

- A. Section 03300: Cast-in-Place Concrete for Structures.

1.2 MEASUREMENT AND PAYMENT

- A. No payment will be made for concrete formwork under this Section. Include payment in related items listed on the Unit Price Schedule.
- B. Measurement and payment is as noted on the Unit Price Schedule.

1.3 REFERENCE STANDARDS

- A. American Concrete Institute (ACI):  
347R, Guide to Formwork for Concrete
- B. American Society for Testing and Materials (ASTM):  
A 446, Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process  
A 525, General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip process

1.4 DESIGN REQUIREMENTS

- A. Design formwork for loads, lateral pressure, and allowable stresses outlined in ACI 347R and for design considerations, wind loads, allowable stresses, and other applicable code requirements.

1.5 SUBMITTALS

- A. Certifications, installation instructions, samples, and catalog data for:
  - 1. Form accessories.
  - 2. Form release material.

1.6 QUALITY ASSURANCE

- A. Tolerances for Formed Surfaces:
  - 1. Variation from plumb:
    - a. In lines and surfaces of piers and walls:
      - (1) In any 10 ft. of length: 1/4-in.
      - (2) Maximum for entire length: 1-in.
  - 2. Variation in cross sectional dimensions of beams and in thickness of slabs and walls: Minus 1/4-in., plus 1/2-in.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

#### A. Forms:

1. Comply with ACI 347R; confine concrete and shape it to required dimensions.
2. Construct forms with sufficient strength to withstand pressure resulting from placement and vibration of concrete and of sufficient rigidity to maintain specified tolerances.

#### B. Form Release Material: Field applied form release agent, sealer, or factory applied nonabsorptive liner, nonstaining type.

#### C. Form Accessories:

1. Use only commercial manufactured type form accessories partially or wholly embedded in concrete.
2. Do not use wire type manufactured for other purposes.
3. Use form ties constructed with removable ends or end fasteners to prevent spalling at face of concrete.

## PART 3 - EXECUTION

### 3.1 PREPARATION

#### A. Preparation of Form Surfaces:

1. Clean surfaces of forms and embedded materials of accumulated mortar, grout, and other foreign material before placing concrete.
2. Treat surfaces of forms as follows:
  - a. Before placing reinforcing steel, cover surfaces of forms with coating material to prevent absorption of moisture and prevent bond with concrete.
  - b. Do not allow excess form coating material to stand in puddles in forms.
  - c. Do not allow coating to come in contact with hardened concrete against which fresh concrete is to be placed.

#### B. Establish and maintain sufficient control points and bench marks for reference purposes to check tolerances until final completion and acceptance of project.

#### C. Regardless of tolerances listed, no portion of structure shall extend beyond legal boundary of project.

### 3.2 INSTALLATION OF FORMWORK

- A. Maximum deflection of facing materials reflected in concrete surfaces exposed to view: 1/240 of span between structural members.
- B. Construct formwork so concrete surfaces will conform to tolerance limits listed.
- C. Construct forms sufficiently tight to prevent loss of mortar from concrete.

- D. Place chamfer strips in corners of forms to produce beveled edges on permanently exposed surfaces.
- E. To maintain specified tolerances, camber formwork to compensate for anticipated deflections in formwork prior to hardening of concrete.
- F. Provide wedges or jacks to adjust shores and struts to take up settlement during concrete placing.
- G. Brace forms securely against lateral deflections.
- H. Form Accessories:
  - 1. Embedded portion of form ties shall terminate not less than 3/4-in. from formed faces of concrete to be permanently exposed.
  - 2. When formed surface of concrete is not to be permanently exposed, form ties may be cut off flush with formed surfaces.
- I. Construction Joints:
  - 1. Contact surface of form sheathing for flush surfaces exposed to view shall overlap hardened concrete in previous placement by not more than 1-in.
  - 2. Hold forms against hardened concrete to prevent offsets or loss of mortar at construction joint and to maintain true surface.
- J. Prior to concrete placement, fasten wedges used for final adjustment in position after final check.
- K. Anchor formwork to shores, other supporting surfaces, or members to prevent upward or lateral movement of any part of formwork system during concrete placement.
- L. Provide runways for moving equipment with struts or legs supported directly on formwork or structural member without resting on reinforcing steel.

### 3.3 REMOVAL OF FORMS

- A. Perform needed repairs or treatment required on sloping surfaces at once and follow with curing.
- B. Formwork for walls, sides of beams, and other parts not supporting weight of concrete may be removed as soon as concrete has hardened sufficiently to resist damage from removal operations.
- C. Shoring used to support weight of concrete in beams, slabs and other structural members shall remain in place until concrete has reached strength sufficient to carry weight and construction loads.
- D. Concrete strength when shores are removed shall not be less than 75 percent of 28 day strength.
- E. When shores and other vertical supports are so arranged that nonload-carrying form facing material may be removed without loosening or disturbing shores and supports, form facing material may be removed at earlier age.

- F. If forms are removed prior to seven (7) days after placement of concrete, cure concrete as specified in Section 033000.

END OF SECTION

SECTION 032000

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- A. American Concrete Institute (ACI):  
315, Details and Detailing of Concrete Reinforcement  
318, Building Code Requirements for Reinforced Concrete
- B. American Society for Testing and Materials (ASTM):  
A 615, Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
- C. Concrete Reinforcing Steel Institute (CRSI):  
Placing Reinforcing Bars

1.2 SUBMITTALS

- A. Shop Drawings: Show reinforcing bar configuration, bar numbers, spacing, and location, and splicing details.
- B. Test Reports: Submit copies of mill test reports.

1.3 QUALITY ASSURANCE

- A. Tolerances:
  - 1. Fabricating tolerances:
    - a. Sheared length: Plus or minus 1-in.
    - b. Depth of truss bars: Plus 0, minus 1/2-in.
    - c. Overall dimensions of stirrups and ties: Plus or minus 1/2-in.
    - d. Other bends: Plus or minus 1-in.
  - 2. Placing tolerances:
    - a. Clear distance to formed surfaces: Plus or minus 1/4-in.
    - b. Minimum spacing between bars: Plus or minus 1/4-in.
    - c. Top bars in slabs and beams:
      - (1) Members 8-in. deep or less: Plus or minus 1/4-in.
      - (2) Members more than 8-in. but not over 2 ft. deep: Plus or minus 1-in.
    - d. Crosswise of members: Spaced evenly within 2-in.
    - e. Lengthwise of member: Plus or minus 2-in.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

#### A. Reinforcing Bars:

1. ASTM A 615, Grade 60.
2. Bend test requirements: For bars size No. 3 through No. 6, base on 180 deg. bends of full size bars around pins with diameters as follows:
  - a. Bar Nos. 3, 4, and 5: 3-1/2 bar diameters.
  - b. Bar No. 6: 5 bar diameters.

### 2.2 FABRICATION

- #### A. Fabricate details of concrete reinforcement and accessories complying with ACI 315.

## PART 3 - EXECUTION

### 3.1 HANDLING AND PLACING

- A. Place reinforcing bars in accordance with CRSI "Placing Reinforcing Bars" and ACI 318, with provisions of ACI 318 governing.
- B. Move bars as necessary to avoid interference with other reinforcing steel, conduits, or embedded items.
- C. If bars are moved more than one bar diameter or enough to exceed tolerances, submit resulting arrangement of bars to Engineer for review.
- D. After fabrication, reinforcing bars shall be delivered to the Work properly identified in accordance with the approved shop drawings.
- E. Place reinforcement, at time of concrete placing, free of mud, oil, or other materials that adversely affect or reduce bond.
- F. Reinforcement with rust, mill scale, or both shall be considered satisfactory, provided minimum dimensions, including height of deformation, and weight of hand-wire-brushed test specimen are not less than ASTM A 615 requirements.
- G. Support reinforcement and fasten together to prevent displacement by construction loads of placing concrete.
- H. Use metal or plastic bar chairs and spacers to support reinforcement.
- I. Where concrete surface will be exposed to weather in finished structure, use noncorrosive or corrosion protected accessories within 1/2-in. of concrete surface.
- J. Bars having splices not shown on shop drawings will be rejected.
- K. Do not bend reinforcement after being embedded in hardened concrete.

END OF SECTION 032000

## SECTION 033000

## CAST-IN-PLACE CONCRETE FOR STRUCTURES

## PART 1 - GENERAL

## 1.1 REFERENCE STANDARDS

- A. American Concrete Institute (ACI):
  - 212.1R, Admixtures for Concrete
  - 212.2R, Use of Admixtures in Concrete
  - 302.1R, Concrete Floor and Slab Construction
  - 204R, Measuring, Mixing, Transporting, and Placing Concrete
  - 305R, Hot Weather Concreting
  - 306R, Cold Weather Concreting
  - 308, Standard Practice for Curing Concrete
  - 309R, Consolidation of Concrete
  
- B. American Society for Testing and Materials (ASTM):
  - A 307, Carbon Steel Bolts and Studs 60,000 psi Tensile Strength
  - A 36, Structural Steel
  - C 138, Unit Weight, Yield, and Air Content (Gravimetric) of Concrete
  - C 143, Slump of Portland Cement Concrete
  - C 150, Portland Cement
  - C 172, Sampling Freshly Mixed Concrete
  - C 173, Air Content of Freshly Mixed Concrete by the Volumetric Method
  - C 192, Making and Curing Concrete Test Specimens in the Laboratory
  - C 231, Air Content of Freshly Mixed Concrete by the Pressure Method
  - C 260, Air-Entraining Admixtures for Concrete
  - C 293, Flexural Strength of Concrete (Using Simple Beam with Center-Point Loading)
  - C 309, Liquid Membrane-Forming Compounds for Curing Concrete
  - C 31, Making and Curing Concrete Test Specimens in the Field
  - C 33, Concrete Aggregates
  - C 387, Packaged, Dry, Combined Materials for Mortar and Concrete
  - C 39, Compressive Strength of Cylindrical Concrete Specimens
  - C 494, Chemical Admixtures for Concrete
  - C 78, Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
  - C 920, Joint Sealant
  - C 94, Ready-Mixed Concrete
  - D 1751, Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
  - D 1752, Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
  - D 994, Preformed Expansion Joint Filler for Concrete (Bituminous Type)
  
- C. Concrete Plant Manufacturers Bureau (CPMB):
  - Concrete Plant Mixer Standards of Plant Mixer Manufacturers Division
  
- D. Corps of Engineers (COE):
  - CRD-C300, Handbook for Concrete and Cement
  - CRD-C621, Handbook for Concrete and Cement



- E. Federal Specifications (FS):  
FF-S-325, Shield, Expansion; Nail Expansion; and Nail, Drive Screw (Devices, Anchoring, Masonry)

## 1.2 MEASUREMENT AND PAYMENT

- A. Measurement and payment is as noted on the Unit Price Schedule.
- B. Refer to Section 01026 - Measurement and Payment for unit price procedures.

## 1.3 SUBMITTALS

- A. Product Data: Submit literature of proposed materials certifying compliance with specification requirements and curing procedures.
- B. Mill Reports: Furnish mill certificate with each shipment of cement showing chemistry and physical tests for autoclave soundness, heat of hydration, normal consistency false set, and time of set.
- C. Design Mix:
  - 1. Submit proposed design mix from job materials prepared by approved testing laboratory when concrete proportioning Method No. 1 is used (See Paragraph 2.3, C., 1).
  - 2. Submit test records when concrete proportioning Method No. 2 is used (See Paragraph 2.3, C., 2).
  - 3. Include following information in concrete mix design submittal:
    - a. Concrete supplier.
    - b. Design mix designation and location of concrete in work.
    - c. Method of proportioning.
    - d. Type and brand of cement.
    - e. Source of aggregate.
    - f. Sieve analysis of aggregate.
    - g. Type and brand of admixtures.
    - h. Strength curve relationship to water-cement ratios established by at least three points of curve with each point established by average of three cylinder breaks using job materials.
    - i. Coarse Aggregate Factor (C.A.F.)
    - j. Batch weights of ingredients.
    - k. Water-Cement ratio and cement content.
    - l. Air content.
    - m. Slump.
    - n. Seven day and 28 day strengths.
- D. Samples: Secure in accordance with ASTM C 172.
- E. Shop Drawings:
  - 1. Indicate location of tooled (contraction), construction, and expansion joints.
  - 2. Indicate location and size of anchor bolts, anchor plates and other similar concrete-embedded items on anchor bolt setting plan.
  - 3. Indicate placement sequence of concrete.

## 1.4 QUALITY ASSURANCE

- A. Owner's Quality Control Laboratory:
  - 1. Sample and test concrete ingredients.
  - 2. Mixes shall meet or exceed mix design strength requirements and use and finish requirements.

3. Review proposed mix design or design mix to meet or exceed mix design strength and consistency requirements as specified in "Concrete Mix Requirements" and "Concrete Proportioning".
4. Test production samples of materials at plants and stockpiles and at job site during course of work for compliance with specifications.
5. Conduct tests of concrete during construction in compliance with following procedures:
  - a. Strength test:
    - 1) Make specimens in field.
    - 2) Each test shall consist of four cylinders; two tested at seven days and two tested at 28 days.
    - 3) For each class of concrete, one test for each pour of 100 cubic yards shall be made; however, not less than one test for each day of concreting shall be made.
    - 4) When this schedule of testing proves less than five tests for given class of concrete, at least five randomly selected batches shall be tested; if fewer than five batches are used, each batch shall be tested.
    - 5) Additional tests may be required to justify removal of formwork.
    - 6) Specimens shall be secured in compliance with ASTM C 172, made and cured in compliance with ASTM C 31, and tested in compliance with ASTM C 39.
  - b. Slump test: Make one test for each strength test in compliance with ASTM C 143.
  - c. Air Content test: Make one test for each strength test in compliance with ASTM C 173 or ASTM C 231.
  - d. Report test results: Report test results to Owner and Contractor.
  - e. Maintain records: Maintain complete record of specimens; records shall include detailed location of each pour represented.
  - f. Determine temperature of concrete sample for each strength test.
  - g. Inspect concrete batching, mixing, and delivery operations.
  - h. Sample concrete at point of placement.
  - i. Indicate in report location specimens were taken, method stored and curing procedures.
6. Determine slump in accordance with ASTM C 143 of concrete sample for each strength test and when consistency of concrete appears to vary.
7. Determine air content of normal weight concrete for each strength test in accordance with ASTM C 138, ASTM C 173, or ASTM C 231.
8. Patching Core Holes:
  1. Fill core holes with SikaSet Roadway Patch, Sika Corporation, as per manufacturer's specification.

#### 1.5 HANDLING

- A. Storage:
  1. Store materials in accordance with ACI 304R.
  2. Store admixtures to avoid contamination, evaporation, or damage.
- B. Protection:
  1. During curing period, protect concrete from damaging mechanical disturbances, load stresses, shock, and vibration.
  2. Protect finished concrete surfaces from damage by construction equipment or materials.
  3. Protect from rain or running water.

## PART 2 - PRODUCTS

### 2.1 CONCRETE AND GROUT MATERIALS

- A. General:
  - 1. Fly ash:
    - a. Fly ash will not be used in concrete mixtures.
  - 2. Admixtures, other than air-entraining admixtures and water-reducing admixtures in compliance with ASTM C 494, shall not be used in concrete mixtures without prior review of material and proportioning by Owner.
- B. Cement: ASTM C 150, Type II.
- C. Concrete Admixtures:
  - 1. Acceptable manufacturers:
    - a. Master Builder.
    - b. Gifford-Hill and Company, Inc.
    - c. Sika Chemical Corp.
  - 2. Air-entraining admixtures: ASTM C 260.
  - 3. Water-reducing, normal set, retarding, and accelerating admixtures:
    - a. Concrete temperatures 80 deg. F. and below: ASTM C 494, Type A.
    - b. Concrete temperatures greater than 80 deg. F.: ASTM C 494, Type D.
    - c. Concrete temperatures 60 deg. F. and below: ASTM C 494, Type E, accelerating.
  - 4. Other admixtures: ASTM C 494.
- D. Water: Fresh, clean, and potable.
- E. Aggregates for Normal Weight Concrete: ASTM C 33.
- F. Anchor Bolts: ASTM A 307 coated with 2.5 mil shop primer.
- G. Anchor Plates: ASTM A 36 coated with 2.5 mil shop primer.
- H. Nonshrink Grout:
  - 1. Non-metallic, pre-mixed nonshrink grout complying with COE CRD-C621.
  - 2. Bleed-free at 25 sec. flow cone fluidity, COE CRD-C621.
  - 3. Acceptable products:
    - a. "Master Flow 713", Master Builders, Inc.
    - b. "Supreme Grout", Gifford-Hill and Co.
    - c. "Crystex", L and M Construction Chemicals, Inc.
    - d. "Sikagrout 212", Sika Corporation.
- I. Stud Anchors:
  - 1. Acceptable manufacturers:
    - a. Nelson Stud Welding Co.
    - b. Erico Products, Inc.
  - 2. Type with ceramic ferrules; compatible with arc-welding process.
- J. Expansion Bolts:
  - 1. Acceptable manufacturers:
    - a. Wej-it Corporation.
    - b. ITT Phillips Drill Company.
    - c. Hilti Fastener Company.
  - 2. Wedge type stainless steel, FS FF-S-325, Group II, Type 4, Class 1.

- K. Adhesive Type Waterstop:
  - 1. Preformed plastic.
  - 2. Acceptable product: "Synko-Flex", Synko-Flex Products Co.
  
- L. Curing Compound:
  - 1. Comply with COE CRD-C300.
  - 2. Unit moisture loss, g. per sq. cm. at 72 hr. shall not exceed 0.039.
  - 3. Acceptable products:
    - a. "Sealco 309", Gifford-Hill.
    - b. "Masterseal", Master Builders.
    - c. "Dress and Seal", L and M Construction Chemicals, Inc.
  
- M. Joint Sealant
  - 1. Two – component elastomeric chemical – cure polyurethane
  - 2. ASTM C920, Type M, Grade P

2.2 CONCRETE MIX REQUIREMENTS

- A. Strength: Base strength requirements on 28-day compressive strength.
  
- B. Mixture Limits:
  - 1. Air-entrainment of normal-weight concrete shall conform to content limits of Table I, as measured by ASTM C 138, ASTM C 173, and ASTM C 231:

TABLE I  
 TOTAL AIR CONTENT FOR VARIOUS SIZES OF COARSE  
 AGGREGATE FOR NORMAL WEIGHT CONCRETE

Nominal Max. Size of Coarse Aggregate	Size No. (ASTM C 33)	Total Air Content Percent by Volume
3/4	67	4-8
1	57	3.5-6.5

- 2. Grading for coarse aggregate shall not exceed limits for various size number designation in compliance with ASTM C 33 for various maximum nominal sizes.
- 3. Water used for mixing concrete, including water absorbed by aggregates and admixture, shall not contain more than 150 ppm of chloride ion.
  
- C. Slump:
  - 1. Proportion concrete to produce maximum slump of 4-in. or less.
  - 2. Tolerance of up to 1-in. above maximum shall be allowed for individual batches provided average for batches or most recent ten batches tested, whichever is fewer, does not exceed maximum limit.
  - 3. Concrete of lower than usual slump may be used provided properly placed and consolidated.
  - 4. Determine slump by ASTM C 143.
  
- D. Admixtures:
  - 1. Comply with ACI 212.1R and ACI 212.2R.
  - 2. Do not use calcium chloride.
  - 3. Use admixtures in accordance with manufacturers instructions.
  - 4. Use only admixtures in work used in establishing design mix.

5. Water-reducing admixtures, or other admixtures accepted by Owner, may be used to produce quality of concrete specified under prevailing placing conditions.

2.3 CONCRETE PROPORTIONING

A. General:

1. Proportion ingredients to produce mixture which will work readily into corners and angles of forms and around reinforcement under conditions of placement to be employed without excessive segregation of materials or excessive collection of free water on surface or excessive bleeding out of free water.
2. Proportion ingredients to produce mixture of required workability, placeability, durability, strength, and other specified properties.

B. Required Strength:

TABLE IA

Type of Construction	Minimum Compressive Strength psi. (28 days)	Total Air (Percent)	Minimum Cement Factor* (Bags/cu.yd.)	Maximum W/C Ratio* (Gals/bg)
Sidewalks and Curbs	3000	4.0 to 8.0	5.0	-
Prestressed Concrete Piling	Class H concrete per TxDOT Standard Specifications – Item 421, Hydraulic Cement Concrete			
Other Concrete Work	4000	4.0 to 8.0	5.5	6.40

\* In some instances, maximum water-cement ratios and minimum cement factors may not be compatible due to aggregate characteristics or weather conditions. Under these conditions, water reducing admixture may be introduced into mix. In hot weather, retarding admixture may be added to mix in accordance with manufacturer's recommendations.

C. Normal Weight Concrete: Establish mixture proportions to provide required properties for each class of concrete using one of the methods described below.

1. Method No. 1:
  - a. Using materials proposed for work, establish concrete proportions on basis of laboratory trial mixes.
  - b. Make at least three trial batches of at least three cylinders per batch at different water-cement ratios which will produce range of strengths within 1000 psi of that specified for each class of concrete for proposed work.
  - c. Make trial batches to produce maximum slump within plus or minus 0.75-in. and maximum allowable air content within plus or minus 0.5 percent.
  - d. Make and cure cylinders complying with ASTM C 192.
  - e. Test for strength at 28 days in accordance with ASTM C 39.
  - f. Use results of tests to plot curve showing relationship between water-cement ratio and compressive strength.

- g. For each class of concrete select design water- cement ratio from this curve for average compressive strength 1200 psi greater than specified compressive strength, except that water-cement ratio shall not exceed 6.6 gallons of water per sack (94 lb.) of cement.
- 2. Method No. 2:
  - a. Field test data for concrete made with similar ingredients in previous project may be used to establish mix design for each class of concrete.
  - b. Where production facility has record based on 30 consecutive strength tests that represent similar materials and conditions to those expected for each class of concrete, average compressive strength used as basis for selecting proportions shall exceed specified compressive design strength for each class by at least:
    - 1) 400 psi if standard deviation is less than 300 psi.
    - 2) 550 psi if standard deviation is 300 to 400 psi.
    - 3) 700 psi if standard deviation is 400 to 500 psi.
    - 4) 900 psi if standard deviation is 500 to 600 psi.
    - 5) 1200 psi if standard deviation is above 600 or unknown.
  - c. Strength test data used to determine standard deviation for each class for above requirement shall represent concrete produced to meet specified design compressive strengths within 1000 psi of that specified for proposed work.
  - d. For each class of concrete, select water-cement ratio based on Method 2 except that design water- cement ratio shall not exceed 6.6 gallons of water per sack (94 lb.) of cement.

#### 2.4 PRODUCTION OF CONCRETE

- A. Ready Mixed Concrete: Batch mix and transport in accordance with ASTM C 94.

### PART 3 - EXECUTION

#### 3.1 INSPECTION FOR CONCRETE PLACEMENT

- A. Inspect subgrade for conditions detrimental to work and for specified compacted density.
- B. Inspect formwork and reinforcing for compliance with specified tolerances.
- C. Do not proceed with work until unsatisfactory conditions are corrected.

#### 3.2 EMBEDDED ITEMS FOR CONCRETE

- A. Placing Miscellaneous Embedded Items:
  - 1. Place sleeves, inserts, anchors, and other embedded items prior to concreting.
  - 2. Coordinate placing of embedded items required by other trades prior to placing concrete.
  - 3. Position embedded items accurately and support against displacement.
  - 4. Temporarily fill voids in sleeves, inserts, and anchor slots with removable material to prevent entry of concrete into voids.

#### 3.3 PREPARATION FOR PLACING CONCRETE

- A. Remove hardened concrete and foreign materials from inner surfaces of conveying equipment.
- B. Remove snow, ice, and water from completed formwork.

- C. Verify that reinforcement is secured in place.
- D. Verify that expansion joint material, anchors, sleeves, and other embedded items are in place.
- E. Notify Owner and Engineer minimum of 24 hours before pour. If notifications are not made, Owner may stop placement of concrete.

### 3.4 PLACING CONCRETE

- A. Conveying:
  - 1. Comply with ASTM C 94.
  - 2. Handle concrete as rapidly as practicable by methods which will prevent segregation, loss of ingredient, or damage quality of concrete.
  - 3. Do not use conveying equipment that will restrict continuous placement of concrete.
  - 4. Use horizontal or sloped belt conveyors that will not cause segregation or loss of ingredients.
  - 5. Protect concrete against undue drying or rise in temperature.
  - 6. Do not allow mortar to adhere to return length of belt.
  - 7. Discharge runs longer than 20 ft. into hopper.
  - 8. Use metal or metal lined chutes with slope not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal.
  - 9. Chute more than 20 ft. long discharging into hoppers may be used.
- B. Pumping of Concrete:
  - 1. Design mix to produce pumpable concrete.
  - 2. Pneumatic conveying equipment shall meet requirements of ACI 304R.
  - 3. Slump in pumping or pneumatic conveying equipment: 2-in. maximum.
  - 4. Do not convey through pipe made of aluminum or aluminum alloy.
  - 5. Obtain approval of A/E to use pumped concrete before placing pumped concrete.
- C. Depositing:
  - 1. Comply with ACI 304R.
  - 2. Deposit concrete continuously without formation of seams or planes of weakness.
  - 3. If section cannot be placed continuously, provide construction joints.
  - 4. Do not start placing of concrete in supported elements until concrete previously placed is no longer plastic and has been in place two hours minimum.
- D. Segregation:
  - 1. Deposit concrete as nearly as practicable in final position to prevent segregation due to rehandling or flowing.
  - 2. Do not subject concrete to procedures which will cause segregation.
- E. Consolidation:
  - 1. Comply with ACI 309R.
  - 2. Consolidate concrete by vibration, spading, rodding, or forking.
  - 3. Thoroughly work around reinforcement, embedded items, and into corners of forms.
  - 4. Eliminate air or stone pockets which may cause honeycombing, pitting, or planes of weakness.
  - 5. Use internal vibrators with minimum frequency of 8000 vibrations per minute and sufficient amplitude to consolidate concrete effectively.
  - 6. Do not use vibrators to transport concrete within forms.
  - 7. Insert and withdraw vibrators at points approximately 18-in. apart.
  - 8. At each insertion, maintain duration from 5 to 15 sec. to consolidate concrete but not long enough to cause segregation.
  - 9. Keep spare vibrators on job site during concrete placing operations.

10. Where concrete is to have as-cast finish, bring full surface of mortar against form by vibration process and supplemented by spading to work coarse aggregate back from formed surface.
11. Use internal vibration in beams, girders, slabs, and along bulkheads of slabs on grade.

### 3.5 REPAIR OF CONCRETE SURFACE DEFECTS

- A. Preparation:
  1. Repair tie holes and surface defects immediately after form removal.
  2. Remove honeycombed and otherwise defective concrete down to sound concrete.
  3. If chipping is necessary, place edges perpendicular to surface or slightly undercut.
  4. No feathered edges will be permitted.
  5. Dampen patch minimum of 6-in. of surrounding area.
- B. Patching Mixture:
  1. Mix one part cement to 2-1/2 parts sand by damp loose volume.
  2. Match color of surrounding concrete as determined by trial patch.
  3. Add water only as necessary for handling and placing.
  4. Mix patching mortar in advance and allow to stand with frequent manipulation with trowel, without addition of water, until it has reached stiffest consistency that will permit placing.
- C. Patch Application:
  1. Apply patching mortar after bonding grout has lost sheen.
  2. Thoroughly consolidate mortar into place and strike off to leave patch slightly higher than surrounding surface.
  3. Leave undisturbed for one hour minimum before being finally finished.
- D. Fill tie holes solid with patching mortar after cleaning and dampening.

### 3.6 FINISHING CONCRETE SLABS

- A. Meet requirements of ACI 302.1R.
- B. Finishing Tolerances:
  1. True planes within 1/8-in. in 10 ft. as determined by 10 ft. straight edge placed on slab in any direction.
- C. Trowel Finish all Concrete Slab Surfaces:
  1. Float finish surface and trowel.
  2. Finished surface shall be free of trowel marks, uniform in texture and appearance, and planed to finishing tolerance.
  3. On surfaces intended to support floor coverings, remove defects which show through floor covering by grinding.

### 3.7 CURING CONCRETE

- A. General:
  1. Comply with ACI 308.
  2. After placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
  3. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration and hardening.



- B. Preservation of Moisture for Concrete Surfaces not in Contact with Forms:
1. Contractor's option:
    - a. Ponding or continuous sprinkling.
    - b. Absorptive mats or fabric kept continuously wet.
    - c. Sand kept continuously wet.
    - d. Continuous application of steam not exceeding 150 deg. F. or mist spray.
    - e. Curing compound:
      - 1) Do not use curing compound on floor slab which will receive floor covering or chemical resistant or epoxy coating.
      - 2) Apply in accordance with manufacturer's recommendations.
      - 3) Do not apply to surfaces to which additional concrete or resilient materials are to be bonded unless manufacturer certifies that compound will not prevent bond or positive means are taken to completely remove compound.
  2. Use curing compound on concrete surfaces where floor hardener is shown on Drawings.
- C. Curing Period: Continue curing for seven days minimum or when average compressive strength of job-cured cylinders has reached 70 percent of specified strength, moisture retention measures may be terminated.

END OF SECTION

SECTION 23 0500

MECHANICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

All work shall be in accordance with the General Conditions, Special Conditions, Instructions to Bidders, and other related to project documents as issued by the Owner or Owner's Representative. This and other parts of these Specifications are herewith made a part of all other sections of these Project Specifications and Contract Documents.

1.2 COORDINATION

- A. All work shall be in accordance with City, County and State Building, Plumbing, Fire Protection, and Mechanical Codes and with all state and national codes as they may apply to the project and to public safety.
- B. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for HVAC installations. Verify all dimensions by field measurements.
- C. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
- D. Coordinate requirements for access panels and doors for HVAC items requiring access that are concealed behind finished surfaces. Access panels and doors are specified in Division 08 Section "Access Doors and Frames."
- E. Coordinate the cutting and patching of building components to accommodate the installation of the various system equipment and materials.
- F. Coordinate the installation of the various system materials and equipment above ceilings with suspension system, light fixtures, and other installations.
- G. Coordinate the connection of the various systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide all required connections for each service.
- H. All materials, equipment and apparatus installed on the project shall be installed in strict accordance with the manufacturer's printed instructions. The manufacturer, or his authorized Representative, shall certify, in writing, to the Owner and Owner's Representative that the installation has been made in accordance with such printed requirements.
- I. Model numbers as may be specified or indicated on the Drawings are only for reference convenience. The Contractor, through the manufacturer, shall be responsible to confirm the correctness of all model numbers so as to meet the specific project requirements and minimum indicated performance data.
- J. It is the intent that the Contractor shall install complete and operable systems, fully tested, adjusted and ready for use.

- K. Materials and equipment shall have been carefully selected for the project. The Contractor is expected to furnish and install, where required, items as near as possible to those of the Drawings and Specifications.
- L. The Drawings accompanying these Specifications show the extent of the work and the general arrangement. The Drawings, however, are diagrammatic and exact coordinated layout of the various systems is the responsibility of the Contractor.
- M. The Contractor shall obtain all permits and pay all fees and charges to all local and other related agencies as required.
- N. Contractor shall coordinate the exact location of this work with the work of other trades prior to fabrication or installation of same. Verify all dimensions and elevations. Provide additional offsets and sections of material as may be required to meet the applicable job condition requirements. Coordinate with and review all related Contractor construction Drawings and Shop Drawings of all equipment suppliers prior to start of any work.
- O. It will be the responsibility of each Contractor to coordinate between his equipment suppliers and any subcontractor as to which devices are supplied with equipment, required wiring and voltages and other coordination items as related to a proper and operable installation.
- P. It is to be the responsibility of the Contractor to coordinate between his equipment suppliers and his temperature control subcontractor as to which control devices are supplied with equipment, required control pneumatics or wiring and voltages and other related coordination items, so as to insure a complete, proper, and operable installation.

### 1.3 GUARANTEE

- A. In entering into a contract covering this work, the Contractor accepts the Specifications and Contract Documents and guarantees that the work will be carried out in accordance with the requirements of the Specifications and Drawings or such authorized modifications as may be made in the Contract Documents. Contractor further guarantees that the workmanship and material will be of the best procurable and that none but experienced workers familiar with each particular class of work will be employed. The Contractor further guarantees to replace and make good at his own expense any defects which may develop, within one (1) year after final payment and acceptance by the Owner, due to faulty workmanship or material, upon receipt of written notification from the Owner.

### 1.4 QUALITY ASSURANCE

- A. Regulations and Standards.
  - 1. All equipment, apparatus, and systems shall be fabricated and installed in complete accordance with the Owner's fire insurance related rules and regulations, the Life Safety Code, Applicable Building, Mechanical, Plumbing, Fire and Energy Conservation Codes, and the latest (authority adopted) edition or revision of the following applicable regulations, standards, and codes:

AGA	American Natural Gas Association
AIA	American Institute of Architects
ANSI	American National Standard Institute
ARI	Air Conditioning and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
AMCA	Air Moving and Conditioning Association
MCAA	Mechanical Contractors Association of America, Inc.
MSSV	Manufacturer's Standardization Society of the Valve and Fitting Industry
NACE	National Association of Corrosion Engineers
NFPA	National Fire Protection Association
NEC	National Electric Code
OSHA	Occupational Safety and Health Administration
PDI	Plumbing and Drainage Institute
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association (1995)
UL	Underwriter's Laboratories, Inc.

2. Give all required notices so as to comply with, and meet, all inspections that are required by Federal, State, and Local authorities.
  3. It is not the intent herewith to modify, reduce, or change any rules, standards, regulations, or requirements that are applicable under local, state and federal codes, ordinances, or regulations of the various authorities having jurisdiction. Where the standards differ among the various authorities, the most rigid shall apply. Where the requirements called for in the Specifications exceed code requirements, these Specifications shall take precedence. Where the requirements within the Specifications of this division of work conflict with the hereinbefore referenced documents (including Division 1 requirements of these Specifications), the documents having the excess, or more rigid and higher cost requirements shall apply.
- B. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."
- C. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
  2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.
- D. Electrical Characteristics for HVAC Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

- E. In general, most wiring and conduit requirements are addressed either as a part of a packaged equipment assembly, within Division 26 of the Project Specifications, or within these Specifications. However, should an equipment component, panel, or system device need additional wiring and conduit so as to be complete, approved and fully operational, the Contractor who supplied the equipment component, panel or system device shall be responsible for the required wiring and conduit for same when it is not otherwise covered by the Project Specifications or Drawings. All wiring shall be done by State (and Local as required) licensed electricians.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Protect equipment and trim against damage and injury due to building materials, acid, tools, equipment and any causes incidental to construction. Cover the finished surface of each piece of equipment with building paper or similar protection. Replace all equipment damaged by any cause and any trim with marred or scratched finish at no cost to the Owner, upon receipt of written notification from the Owner's Representative.
- B. Where materials to be installed are being stored at or near the project during construction, arrange such materials so as to minimize the possibility of contamination, corrosion and damage. Keep ends of pipe, ductwork, equipment and specialties, properly closed during construction and installation to avoid the possibility of miscellaneous materials being placed in the openings.

#### 1.6 ROYALTIES AND PATENTS

- A. The Trade Contractor shall pay all royalties and license fees. He shall defend and shall indemnify and save the Owner and Owner's Representative harmless from any and all suits, demands or claims for infringement of any patent rights.
- B. The review by the Owner's Representative of any method of construction, invention, appliance, process, article, device or material of any kind shall be for its adequacy for the work, and shall not be an approval of the use thereof by the Contractor in violation of any patent or other rights of any third person.

#### 1.7 SPECIFICATIONS AND DRAWINGS

- A. These Specifications and Drawings are intended to describe and provide for a complete and finished project. They are intended to be complementary. All items of work called for by either shall be as binding as if called for by both. The work described shall be complete in every detail, notwithstanding the fact that every item necessarily involved is not particularly mentioned or shown.
- B. If the Bidder, Supplier, or Contractor sees anything to question, it must be brought to the attention of the Owner's Representative immediately.
- C. Minor Deviations. The Drawings accompanying these Specifications indicate, generally, the design and arrangement of equipment, apparatus, fixtures, accessories and piping necessary to complete the installation of the system. The exact location or arrangement of the apparatus and equipment, unless otherwise dimensioned, is subject to minor changes necessitated by field conditions and shall be required without additional cost to the Owner.

Measurements shall be verified by actual observation at the construction site. Each Trade Contractor shall be responsible for all of his work fitting into place in a satisfactory and workmanlike manner to the approval of the Owner's Representative.

- D. Provide all labor and materials necessary for the completion of the work described. Referenced codes and industry standards and methods shall apply when no other specifics are indicated. Bring questions relating to this paragraph to the attention of the Owner's Representative for resolution prior to the receipt of Bids.
- E. All Work indicated on Drawings, diagrams or details in part only are to continue throughout unless distinctly marked otherwise. The same applies to other parts of the project where merely a typical reference plan, diagram, or section of the drawing is complete. The balance is intended to be the same as the typical plan, section, or diagram as shown and is to be figured accordingly.
- F. The Specifications are divided into various sections and divisions only for the distinct purpose of facilitating the work. However, this Contractor will become responsible for furnishing all labor and materials necessary to complete the project as contemplated by the Drawings and Specifications. Any item mentioned under any heading of the Specifications must be supplied even though it is not called for again under the heading for the respective work.
- G. Should discrepancies occur within the Contract Documents, the more stringent and more costly approach shall apply for bidding purposes. The Contractor is to notify the Owner's Representative of discrepancies for clarification. Clarifications issued after the contract is awarded are to be incorporated by the Contractor at no additional costs and are to be reviewed by the Owner's Representative to determine if a reduction in cost is justified.

#### 1.8 TRADE CONTRACTORS, SUBCONTRACTORS AND SUPPLIERS

- A. The Trade Contractor is any person or organization who contracts to perform work for the Project. Wherever the word "Contractor" is used on the Drawings or in the Specifications, it shall be construed to mean the Trade Contractor applicable to the work requirements of these Specifications.
- B. A subcontractor is a person or organization who has a direct contract with a Trade Contractor to perform any of the Work at the site and includes all who furnish material worked to a special design in accordance with the Drawings and Specifications, but excludes suppliers or persons furnishing material not specially designed. Wherever the term "subcontractor" is encountered in the Contract Documents, it shall mean the subcontractor and/or his sub-subcontractors and/or his material suppliers.
- C. A sub-subcontractor is a person or organization who has a direct or indirect contract with a subcontractor to perform any of the Work at the project site or for the subject project.
- D. A material supplier is a person or organization who has a direct contract with a Trade Contractor to furnish material not specially designed.
- E. It is to be the responsibility of each Trade Contractor to be fully familiar with various local trade jurisdictional requirements and to engage the services of any other subcontractors as may be required within the various trades to complete all of the work as indicated upon the Drawings and within the Specifications. Only Trade Subcontractors with established knowledge and skills of their specific trade shall be used so that all work is performed in a complete, finished, and workmanship like manner.

1. Whenever any provisions of any section of the Specifications conflict with any agreements or regulations of any kind at any time in force among members of any Trade Associations, Unions, or Councils, which regulate or distinguish what work shall or shall not be included in the work of any particular trade, the Trade Contractor shall make all necessary efforts to reconcile any such conflict without delay, damage or cost to the Owner or Owner's Representative.
2. If the progress of the work is affected by any undue delay in furnishing or installing any items of material or equipment required under the contract because of a conflict involving any such agreement or regulation, the Owner's Representative may require that other material or equipment of equal kind and quality be provided at no additional cost to the Owner.
3. Any Trade Contractor, subcontractor, or material supplier not normally employing union labor shall make all provisions necessary to avoid any resulting disputes with labor unions and shall be responsible for any delays, damages or extra cost caused by employment of such non-union labor, except as otherwise governable by state or federal rules and regulations.
4. Each Trade Contractor shall pay for all applicable Federal, State and Local taxes on all materials, labor or services furnished by him, and all taxes arising out of his operations under the Contract Documents which may be imposed upon or collectable from the Owner or become a lien against his property. Such taxes shall include but not be limited to, Occupational, Sales, Use, Excise, Old Age Benefit and Unemployment Taxes, customs duties, and all income taxes and other taxes not in force or hereafter enacted prior to final acceptance of the work. The Trade Contractor shall assume all liability for the payment of and shall pay any unemployed benefits payable under any Federal or State law to individuals employed by him during the progress of the work covered by the Contract.

#### 1.9 OPERATIONAL AND MAINTENANCE INSTRUCTIONS

- A. All operational and maintenance instructions that are provided to various Owner-selected members of the facility engineering and/or maintenance staff are, at the same time presented, to be fully videoed by the Contractor so that all such sessions can be later reviewed by the Owner's staff on a retraining basis as needed. All such videos are to become the property of the Owner at the end of each applicable training period, with one copy of each also being supplied to the Owner's Representative for the Owner's Representative project files.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS/PRODUCTS/SUBMITTALS

- A. Under the Base Bid, no other manufacturers except those indicated on the Drawings or those listed within the sections of this Division, that are in turn able to comply with the contract document requirements and minimum standards of these Specifications, will be acceptable. In addition to specific required "Alternates," proposed substitutions, that may or may not be acceptable to the Owner, may be submitted by the Contractor only at the time of initial base bid submittal.

- B. Although design base models of various manufacturers may be indicated within the various schedules, it will be the responsibility of the various equipment manufacturers to verify the model selections so that all items of equipment comply with the minimum standards of performance that are indicated within the schedules, as well as the requirements within various sections of the Specifications under which the equipment is also specified.
- C. All submittals shall conform completely to the requirements of the Contract Documents, including all requirements set forth in the various Division 1 procedures.
- D. Shop Drawings are to be submitted on each item of specified or scheduled equipment, valves, specialties, insulation, fixtures, drains, controls and related accessories as indicated within the Specifications. All control submittals must include a typed sequence of control for each system.

## 2.2 ACCESS DOORS AND PANELS

- A. Unless otherwise indicated, each Trade Contractor is to locate and furnish all access doors required for non-accessible surfaces (such as ceilings, walls, chases, and similar locations), so that all fire dampers, volume dampers, valves, terminal boxes, coils, control devices, vents, and similar items, as well as items needing lubrication and inspection, are easily accessible for operation, inspection and maintenance. Access panels and doors for ceiling, walls, chases, etc. are to be installed by the Contractor. Each Trade Contractor, whose item or device the access panel door serves, shall bear the costs of the installation of the access panels or doors.
- B. Install equipment, materials and piping systems to provide required access for servicing, maintenance, and general inspection. Coordinate the final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow ample space for removal of all parts that require replacement or servicing. Piping systems shall not block service access of any nature, such as filter removal, equipment access panels, cleaning of tubes, and similar items.
- C. Requirements for access panel sizing or distance from provided access panel shall be as follows:
  - 1. Minimum of 16" x 16" size when the item requiring access is less than 18" (radius) from center of access panel.
  - 2. Minimum of 24" x 24" size when the item requiring access is less than 5'-0" and greater than 18" (radius) from center of access panel.
  - 3. Minimum of 36" x 24" size when the item requiring access is greater than 5'-0".
- D. Access doors in ductwork and plenums are to be provided as part of Ductwork Accessories.

## 2.3 SLEEVES

- A. This Contractor is to provide properly sized, secured and fire stopped sleeves for all of their piping systems, plumbing systems, fire protection systems, ductwork systems, and control systems conduits and tubes at all penetrations of walls, foundations, partitions, floors and roofs throughout the entire facility.



## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Provide all materials, labor, equipment, and services necessary for a complete and operable installation as specified and shown on the Drawings. The word "Provide" shall mean "Furnish and Install."
- B. Provide new material and equipment in strict accordance with these Specifications and the Project Drawings.
- C. At all times, take such precautions as are necessary to protect materials from damage. Close all pipe and duct openings to prevent obstructions and contamination.
- D. Pitch Pockets and Roof Penetrations.
  - 1. Provide pitch pockets, or special pre-fabricated penetration-type fittings for all pipes, ducts, flue pipes, etc. which pass through the roof. Such pre-fabricated fittings shall be as manufactured by Thycurb or approved equal.
  - 2. All such fittings shall be properly flashed and counter flashed to conform to the requirements of the roofing system, or as may be approved in writing by the Owner's Representative.
  - 3. No roof openings shall be left open overnight, but shall be provided with temporary covers until the installation is completed, and water tightness assured.

### 3.2 CUTTING AND PATCHING IN BUILDINGS

- A. Each Contractor is responsible for all costs associated with the necessary cutting and patching as required for the installation of his work, unless otherwise indicated.
- B. Patching is to be performed by the trade proper for each material to be patched. Patching shall leave premises and finishes in a complete and neat condition comparable to the original. Painting of patched surfaces to be by the proper painting trade of the Contractor, unless otherwise specifically indicated. Maintain the fire integrity of all walls, floors, ceilings, roof and partitions.
- C. The cutting and patching of components shall also include proper removal and legal disposal of selected materials, components and equipment.
- D. Refer to Division 26 Sections for requirements related to cutting and patching for installation of electrical equipment, components, and materials.
- E. Do not endanger or damage installed Work through procedures and processes of cutting and patching. NO STRUCTURAL MEMBER MAY BE CUT WITHOUT THE WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.
- F. Arrange for repairs required to restore other work, because of damage caused as a result of mechanical installations.
- G. No additional compensation will be authorized for cutting and patching Work that is necessitated by ill-timed, defective, or non-conforming installations.

### 3.3 ACCESSIBILITY

- A. Install equipment, materials and piping systems to provide required access for servicing, maintenance, and general inspection. Coordinate the final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow ample space for removal of all parts that require replacement or servicing.
- B. Piping systems shall not block service access of any nature, such as filter removal, equipment access panels, cleaning of tubes, and similar items.

### 3.4 CLEANING OF HVAC PIPING SYSTEMS

- A. At completion, thoroughly clean all grease, oil and dirt from all parts of the systems in a manner satisfactory to the Owner and Owner's Representative that will not damage any equipment or system components.
- B. During the cleaning, drain contaminated water in a manner acceptable to both local and EPA standards and as directed by the Owner's Representative or Owner.
- C. Examine and clean permanent type system strainers. Place start-up strainers between flanges ahead of each pump as recommended by the pump manufacturer and remove them after the system has been fully cleaned and flushed. Clean and prepare all equipment and systems for operation in accordance with industry standards and the manufacturer's recommendations.
- D. Any defects or damages that may have developed in the equipment and/or apparatus as a result of the cleaning process shall be made good and put in first class working order at no additional cost to the Owner's Representative or Owner.
- E. During the time the system is being cleaned, each Contractor is responsible for all equipment and apparatus provided under his contract. Provide clean replacement filters following all tests and adjustments.

### 3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.
- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- C. Install HVAC equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- D. Install equipment to allow right of way for piping installed at required slope.

### 3.6 PAINTING

- A. Painting of HVAC systems, equipment, and components is specified in Division 09 Sections "Interior Painting" and "Paints and Coatings."
- B. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

### 3.7 CONCRETE BASES

- A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project. Outdoor condensing units shall at a minimum be tied down to the concrete base
1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
  2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
  3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
  4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  5. Install anchor bolts to elevations required for proper attachment to supported equipment.
  6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
  7. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Division 03 Section "Cast-in-Place Concrete."

### 3.8 ERECTION OF METAL SUPPORTS AND ANCHORAGES

- A. Refer to Division 05 Section "Metal Fabrications" for structural steel.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor HVAC materials and equipment.
- C. Field Welding: Comply with AWS D1.1.

### 3.9 GROUTING

- A. Mix and install grout for HVAC equipment base bearing surfaces, pump and other equipment base plates, and anchors.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placement of grout.
- E. Place grout, completely filling equipment bases.
- F. Place grout on concrete bases and provide smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout.

END OF SECTION

SECTION 23 0513

COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on alternating-current power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

1.3 COORDINATION

- A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:
  1. Motor controllers.
  2. Torque, speed, and horsepower requirements of the load.
  3. Ratings and characteristics of supply circuit and required control sequence.
  4. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

- A. Comply with NEMA MG 1 unless otherwise indicated.
- B. Comply with IEEE 841 for severe-duty motors.

2.2 MOTOR CHARACTERISTICS

- A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.
- B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

## 2.3 POLYPHASE MOTORS

- A. Description: NEMA MG 1, Design B, medium induction motor.
- B. Efficiency: Premium efficient, as defined in NEMA MG 1.
- C. Service Factor: 1.15.
- D. Multispeed Motors: Variable torque.
  - 1. For motors with 2:1 speed ratio, consequent pole, single winding.
  - 2. For motors with other than 2:1 speed ratio, separate winding for each speed.
- E. Multispeed Motors: Separate winding for each speed.
- F. Rotor: Random-wound, squirrel cage.
- G. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.
- H. Temperature Rise: Match insulation rating.
- I. Insulation: Class F.
- J. Code Letter Designation:
  - 1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
  - 2. Motors Smaller Than 15 HP: Manufacturer's standard starting characteristic.
- K. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

## 2.4 ADDITIONAL REQUIREMENTS FOR POLYPHASE MOTORS

- A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.
- B. Motors Used with Variable-Frequency Controllers:
  - 1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width-modulated inverters.
  - 2. Premium-Efficient Motors: Class B temperature rise; Class F insulation.
  - 3. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
  - 4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.
- C. Severe-Duty Motors: Comply with IEEE 841, with 1.15 minimum service factor.

## 2.5 SINGLE-PHASE MOTORS

- A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:
  - 1. Permanent-split capacitor.
  - 2. Split phase.
  - 3. Capacitor start, inductor run.
  - 4. Capacitor start, capacitor run.
- B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.
- C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
- D. Motors 1/20 HP and Smaller: Shaded-pole type.
- E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

## SECTION 23 0553

### IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Equipment labels.
  - 2. Warning signs and labels.
  - 3. Warning tape.
  - 4. Pipe labels.
  - 5. Duct labels.
  - 6. Stencils.
  - 7. Valve tags.
  - 8. Warning tags.

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For color, letter style, and graphic representation required for each identification material and device.
- C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.
- D. Valve numbering scheme.
- E. Valve Schedules: For each piping system to include in maintenance manuals.

##### 1.4 COORDINATION

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.

## PART 2 - PRODUCTS

### 2.1 EQUIPMENT LABELS

#### A. Metal Labels for Equipment:

1. Material and Thickness: Brass, 0.032-inch or Stainless steel, 0.025-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
3. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
4. Fasteners: Stainless-steel rivets or self-tapping screws.
5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

#### B. Plastic Labels for Equipment:

1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
2. Letter Color: Black.
3. Background Color: White.
4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
7. Fasteners: Stainless-steel rivets or self-tapping screws.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

#### C. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.

#### D. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2- by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

### 2.2 WARNING SIGNS AND LABELS

#### A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.

#### B. Letter Color: Black.



- C. Background Color: White.
- D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- G. Fasteners: Stainless-steel rivets or self-tapping screws.
- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- I. Label Content: Include caution and warning information, plus emergency notification instructions.

### 2.3 WARNING TAPE

- A. Material: Vinyl.
- B. Minimum Thickness: 0.005 inch (0.12 mm).
- C. Letter, Pattern, and Background Color: As indicated for specific application under Part 3.
- D. Waterproof Adhesive Backing: Suitable for indoor or outdoor use.
- E. Maximum Temperature: 160 deg F (70 deg C).
- F. Minimum Width: **4 inches (100 mm)**.

### 2.4 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.
- B. Pretensioned Pipe Labels: Precoiled, semi rigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.
- C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent- adhesive backing.
- D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.
  - 1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
  - 2. Lettering Size: At least 1-1/2 inches high.

## 2.5 DUCT LABELS

- A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16-inch-thick, and having predrilled holes for attachment hardware.
- B. Letter Color: Blue.
- C. Background Color: White.
- D. Maximum Temperature: Able to withstand temperatures up to 160 deg. F.
- E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- G. Fasteners: Stainless-steel rivets or self-tapping screws.
- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- I. Duct Label Contents: Include identification of duct service using same designations or abbreviations as used on Drawings, duct size, and an arrow indicating flow direction.
  - 1. Flow-Direction Arrows: Integral with duct system service lettering to accommodate both directions or as separate unit on each duct label to indicate flow direction.
  - 2. Lettering Size: At least 1-1/2 inches high.

## 2.6 STENCILS

- A. Stencils: Prepared with letter sizes according to ASME A13.1 for piping; minimum letter height of 1-1/4 inches for ducts; and minimum letter height of 3/4 inch for access panel and door labels, equipment labels, and similar operational instructions.
  - 1. Stencil Material: Aluminum or Brass.
  - 2. Stencil Paint: Exterior, gloss, alkyd enamel black unless otherwise indicated. Paint may be in pressurized spray-can form.
  - 3. Identification Paint: Exterior, alkyd enamel in colors according to ASME A13.1 unless otherwise indicated.

## 2.7 VALVE TAGS

- A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.
  - 1. Tag Material: Brass, 0.032-inch or Stainless steel, 0.025-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
  - 2. Fasteners: Brass wire-link or beaded chain; or S-hook.

- B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

## 2.8 WARNING TAGS

- A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.

1. Size: 3 by 5-1/4 inches minimum.
2. Fasteners: Brass grommet and wire.
3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
4. Color: Yellow background with black lettering.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulates.

### 3.2 INSTALLATION, GENERAL REQUIREMENTS

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.
- D. Locate identifying devices so that they are readily visible from the point of normal approach.

### 3.3 INSTALLATION OF EQUIPMENT LABELS, WARNING SIGNS, AND LABELS

- A. Permanently fasten labels on each item of mechanical equipment.
- B. Sign and Label Colors:
1. **White letters on an ANSI Z535.1 safety-blue background.**
- C. Locate equipment labels where accessible and visible.
- D. Arc-Flash Warning Signs: Provide arc-flash warning signs on electrical disconnects and other equipment where arc-flash hazard exists, as indicated on Drawings, and in accordance with requirements of OSHA and NFPA 70E, **[and other applicable codes and standards]**.

### 3.4 INSTALLATION OF WARNING TAPE

- A. Warning Tape Color and Pattern: **Yellow background with black diagonal stripes.**
- B. Install warning tape on pipes and ducts, with cross-designated walkways providing less than 6 ft. (2 m) of clearance.
- C. Locate tape so as to be readily visible from the point of normal approach.

### 3.5 EQUIPMENT LABEL INSTALLATION

- A. Install or permanently fasten labels on each major item of mechanical equipment.
- B. Locate equipment labels where accessible and visible.

### 3.6 PIPE LABEL INSTALLATION

- A. Stenciled Pipe Label Option: Stenciled labels may be provided instead of manufactured pipe labels, at Installer's option. Install stenciled pipe labels, complying with ASME A13.1, on each piping system.
  - 1. Identification Paint: Use for contrasting background.
  - 2. Stencil Paint: Use for pipe marking.
- B. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
  - 1. Near each valve and control device.
  - 2. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
  - 3. At access doors, manholes, and similar access points that permit view of concealed piping.
  - 4. Near major equipment items and other points of origination and termination.
  - 5. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
  - 6. On piping above removable acoustical ceilings. Omit intermediately spaced labels.
- C. Pipe Label Color Schedule:
  - 1. Refrigerant Piping:
    - A. Background Color: Yellow.
    - B. Letter Color: Black.

### 3.7 DUCT LABEL INSTALLATION

- A. Install plastic-laminated or self-adhesive duct labels with permanent adhesive on air ducts in the following color codes:

1. Blue: For air supply and return ducts.
  2. Green: For exhaust and outside air ducts.
  3. ASME A13.1 Colors and Designs: For hazardous material exhaust.
- B. Stenciled Duct Label Option: Stenciled labels, showing service and flow direction, may be provided instead of plastic-laminated duct labels, at Installer's option, if lettering larger than 1 inch high is needed for proper identification because of distance from normal location of required identification.
- C. Locate labels near points where ducts enter into concealed spaces and at maximum intervals of 50 feet in each space where ducts are exposed or concealed by removable ceiling system.

### 3.8 VALVE-TAG INSTALLATION

- A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.
- B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:
1. Valve-Tag Size and Shape:
    - A. Refrigerant: 1-1/2 inches, round.
    - B. Gas: 1-1/2 inches round.
  2. Valve-Tag Color:
    - A. Refrigerant: Natural.
    - B. Gas: Natural.
  3. Letter Color:
    - A. Refrigerant: Black.
    - B. Gas: Black.

### 3.9 WARNING-TAG INSTALLATION

- A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION

SECTION 23 0593

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Testing, Adjusting, and Balancing of Air Systems:
  - a. Constant-volume air systems.
  - b. Variable-air-volume systems.
  - c. Multizone systems.
- 2. Testing, Adjusting, and Balancing of Hydronic Piping Systems:
  - a. Constant-flow hydronic systems.
- 3. Testing, adjusting, and balancing of existing HVAC systems and equipment.
- 4. Duct leakage tests verification.
- 5. Pipe leakage tests verification.
- 6. HVAC-control system verification.

1.3 DEFINITIONS

- A. AABC: Associated Air Balance Council.
- B. NEBB: National Environmental Balancing Bureau.
- C. TAB: Testing, adjusting, and balancing.
- D. TABB: Testing, Adjusting, and Balancing Bureau.
- E. TAB Specialist: An independent entity meeting qualifications to perform TAB work.
- F. TDH: Total dynamic head.
- G. UFAD: Underfloor air distribution.

#### 1.4 PREINSTALLATION MEETINGS

- A. TAB Conference: Conduct a TAB conference after approval of the TAB strategies and procedures plan, to develop a mutual understanding of the details. Provide a minimum of 14 days' advance notice of scheduled meeting time and location.
  - 1. Minimum Agenda Items:
    - a. The Contract Documents examination report.
    - b. The TAB plan.
    - c. Needs for coordination and cooperation of trades and subcontractors.
    - d. Proposed procedures for documentation and communication flow.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Within 30 days of Contractor's Notice to Proceed, submit documentation that the TAB specialist and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.
- B. Contract Documents Examination Report: Within 30 days of Contractor's Notice to Proceed, submit the Contract Documents review report, as specified in Part 3.
- C. Strategies and Procedures Plan: Within 60 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures, as specified in "Preparation" Article.
- D. System Readiness Checklists: Within 60 days of Contractor's Notice to Proceed, submit system readiness checklists, as specified in "Preparation" Article.
- E. Examination Report: Submit a summary report of the examination review required in "Examination" Article.
- F. Certified TAB reports.
- G. Sample report forms.
- H. Instrument calibration reports, to include the following:
  - 1. Instrument type and make.
  - 2. Serial number.
  - 3. Application.
  - 4. Dates of use.
  - 5. Dates of calibration.

#### 1.6 QUALITY ASSURANCE

- A. TAB Specialists Qualifications, Certified by AABC:
  - 1. TAB Field Supervisor: Employee of the TAB specialist and certified by AABC.
  - 2. TAB Technician: Employee of the TAB specialist and certified by AABC.

- B. TAB Specialists Qualifications, Certified by NEBB or TABB:
  - 1. TAB Field Supervisor: Employee of the TAB specialist and certified by NEBB or TABB.
  - 2. TAB Technician: Employee of the TAB specialist and certified by NEBB or TABB.
- C. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."
- D. Code and AHJ Compliance: TAB is required to comply with governing codes and requirements of authorities having jurisdiction.

#### 1.7 FIELD CONDITIONS

- A. Full Owner Occupancy: Owner will occupy the site and existing building during entire TAB period. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

#### PART 2 - PRODUCTS (Not Applicable)

#### PART 3 - EXECUTION

##### 3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems designs that may preclude proper TAB of systems and equipment.
- B. Examine installed systems for balancing devices, such as test ports, gauge cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.
- C. Examine the approved submittals for HVAC systems and equipment.
- D. Examine design data, including HVAC system descriptions, statements of design assumptions for environmental conditions and systems output, and statements of philosophies and assumptions about HVAC system and equipment controls.
- E. Examine ceiling plenums and underfloor air plenums used for HVAC to verify that they are properly separated from adjacent areas and sealed.
- F. Examine equipment performance data, including fan and pump curves.
  - 1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.



2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.
- G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- H. Examine test reports specified in individual system and equipment Sections.
- I. Examine HVAC equipment and verify that bearings are greased, belts are aligned and tight, filters are clean, and equipment with functioning controls is ready for operation.
- J. Examine terminal units, such as variable-air-volume boxes, and verify that they are accessible and their controls are connected and functioning.
- K. Examine temporary and permanent strainers. Verify that temporary strainer screens used during system cleaning and flushing have been removed and permanent strainer baskets are installed and clean.
- L. Examine control valves for proper installation for their intended function of isolating, throttling, diverting, or mixing fluid flows.
- M. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- N. Examine system pumps to ensure absence of entrained air in the suction piping.
- O. Examine operating safety interlocks and controls on HVAC equipment.
- P. Examine control dampers for proper installation for their intended function of isolating, throttling, diverting, or mixing air flows.
- Q. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

### 3.2 PREPARATION

- A. Prepare a TAB plan that includes the following:
  1. Equipment and systems to be tested.
  2. Strategies and step-by-step procedures for balancing the systems.
  3. Instrumentation to be used.
  4. Sample forms with specific identification for all equipment.
- B. Perform system-readiness checks of HVAC systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:
  1. Airside:
    - a. Verify that leakage and pressure tests on air distribution systems have been satisfactorily completed.

- b. Duct systems are complete with terminals installed.
  - c. Volume, smoke, and fire dampers are open and functional.
  - d. Clean filters are installed.
  - e. Fans are operating, free of vibration, and rotating in correct direction.
  - f. Variable-frequency controllers' startup is complete and safeties are verified.
  - g. Automatic temperature-control systems are operational.
  - h. Ceilings are installed.
  - i. Windows and doors are installed.
  - j. Suitable access to balancing devices and equipment is provided.
2. Hydronics:
- a. Verify leakage and pressure tests on water distribution systems have been satisfactorily completed.
  - b. Piping is complete with terminals installed.
  - c. Water treatment is complete.
  - d. Systems are flushed, filled, and air purged.
  - e. Strainers are pulled and cleaned.
  - f. Control valves are functioning in accordance with the sequence of operation.
  - g. Shutoff and balance valves have been verified to be 100 percent open.
  - h. Pumps are started and proper rotation is verified.
  - i. Pump gauge connections are installed directly at pump inlet and outlet flanges or in discharge and suction pipe prior to valves or strainers.
  - j. Variable-frequency controllers' startup is complete and safeties are verified.
  - k. Suitable access to balancing devices and equipment is provided.

### 3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system in accordance with the procedures contained in AABC's "National Standards for Total System Balance" NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and in this Section.
- B. Cut insulation, ducts, pipes, and equipment casings for installation of test probes to the minimum extent necessary for TAB procedures.
  - 1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
  - 2. Where holes for probes are required in piping or hydronic equipment, install pressure and temperature test plugs to seal systems.
  - 3. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish in accordance with Section 230713 "Duct Insulation," Section 230716 "HVAC Equipment Insulation," and Section 230719 "HVAC Piping Insulation."
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

### 3.4 TESTING, ADJUSTING, AND BALANCING OF HVAC EQUIPMENT

- A. Test, adjust, and balance HVAC equipment indicated on Drawings, including, but not limited to, the following:
  - 1. Motors.
  - 2. Pumps.
  - 3. Fans and ventilators.
  - 4. Boilers.
  - 5. Condensing units.
  - 6. Air-handling units.
  - 7. Coils.

### 3.5 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.
- B. Prepare schematic diagrams of systems' Record drawings duct layouts.
- C. For variable-air-volume systems, develop a plan to simulate diversity.
- D. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- E. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.
- F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- G. Verify that motor starters are equipped with properly sized thermal protection.
- H. Check dampers for proper position to achieve desired airflow path.
- I. Check for airflow blockages.
- J. Check condensate drains for proper connections and functioning.
- K. Check for proper sealing of air-handling-unit components.

### 3.6 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

- A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.
  - 1. Measure total airflow.
    - a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.

- b. Where duct conditions allow, measure airflow by main Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses close to the fan and prior to any outlets, to obtain total airflow.
    - c. Where duct conditions are unsuitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
  2. Measure fan static pressures as follows:
    - a. Measure static pressure directly at the fan outlet or through the flexible connection.
    - b. Measure static pressure directly at the fan inlet or through the flexible connection.
    - c. Measure static pressure across each component that makes up the air-handling system.
    - d. Report artificial loading of filters at the time static pressures are measured.
  3. Review Contractor-prepared shop drawings and Record drawings to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
  4. Obtain approval from Construction Manager for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in HVAC Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
  5. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload occurs. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.
- B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows.
  1. Measure airflow of submain and branch ducts.
  2. Adjust submain and branch duct volume dampers for specified airflow.
  3. Re-measure each submain and branch duct after all have been adjusted.
- C. Adjust air inlets and outlets for each space to indicated airflows.
  1. Set airflow patterns of adjustable outlets for proper distribution without drafts.
  2. Measure inlets and outlets airflow.
  3. Adjust each inlet and outlet for specified airflow.
  4. Re-measure each inlet and outlet after they have been adjusted.
- D. Verify final system conditions.
  1. Re-measure and confirm that minimum outdoor, return, and relief airflows are within design. Readjust to design if necessary.
  2. Re-measure and confirm that total airflow is within design.
  3. Re-measure all final fan operating data, speed, volts, amps, and static profile.
  4. Mark all final settings.
  5. Test system in economizer mode. Verify proper operation and adjust if necessary.
  6. Measure and record all operating data.
  7. Record final fan-performance data.

### 3.7 PROCEDURES FOR VARIABLE-AIR-VOLUME SYSTEMS

#### A. Adjust the variable-air-volume systems as follows:

1. Verify that the system static pressure sensor is located two-thirds of the distance down the duct from the fan discharge.
2. Verify that the system is under static pressure control.
3. Select the terminal unit that is most critical to the supply-fan airflow. Measure inlet static pressure, and adjust system static pressure control set point so the entering static pressure for the critical terminal unit is not less than the sum of the terminal-unit manufacturer's recommended minimum inlet static pressure plus the static pressure needed to overcome terminal-unit discharge system losses.
4. Calibrate and balance each terminal unit for maximum and minimum design airflow as follows:
  - a. Adjust controls so that terminal is calling for maximum airflow. Some controllers require starting with minimum airflow. Verify calibration procedure for specific project.
  - b. Measure airflow and adjust calibration factor as required for design maximum airflow. Record calibration factor.
  - c. When maximum airflow is correct, balance the air outlets downstream from terminal units.
  - d. Adjust controls so that terminal is calling for minimum airflow.
  - e. Measure airflow and adjust calibration factor as required for design minimum airflow. Record calibration factor. If no minimum calibration is available, note any deviation from design airflow.
  - f. On constant volume terminals, in critical areas where room pressure is to be maintained, verify that the airflow remains constant over the full range of full cooling to full heating. Note any deviation from design airflow or room pressure.
5. After terminals have been calibrated and balanced, test and adjust system for total airflow. Adjust fans to deliver total design airflows within the maximum allowable fan speed listed by fan manufacturer.
  - a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.
  - b. Set terminals for maximum airflow. If system design includes diversity, adjust terminals for maximum and minimum airflow, so that connected total matches fan selection and simulates actual load in the building.
  - c. Where duct conditions allow, measure airflow by main Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses close to the fan and prior to any outlets, to obtain total airflow.
  - d. Where duct conditions are unsuitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
6. Measure fan static pressures as follows:
  - a. Measure static pressure directly at the fan outlet or through the flexible connection.
  - b. Measure static pressure directly at the fan inlet or through the flexible connection.
  - c. Measure static pressure across each component that makes up the air-handling system.
  - d. Report any artificial loading of filters at the time static pressures are measured.

7. Set final return and outside airflow to the fan while operating at maximum return airflow and minimum outdoor airflow.
  - a. Balance the return-air ducts and inlets.
  - b. Verify that terminal units are meeting design airflow under system maximum flow.
8. Re-measure the inlet static pressure at the most critical terminal unit, and adjust the system static pressure set point to the most energy-efficient set point to maintain the optimum system static pressure. Record set point and give to controls Contractor.
9. Verify final system conditions as follows:
  - a. Re-measure and confirm that minimum outdoor, return, and relief airflows are within design. Readjust to match design if necessary.
  - b. Re-measure and confirm that total airflow is within design.
  - c. Re-measure final fan operating data, speed, volts, amps, and static profile.
  - d. Mark final settings.
  - e. Test system in economizer mode. Verify proper operation and adjust if necessary. Measure and record all operating data.
  - f. Verify tracking between supply and return fans.

### 3.8 PROCEDURES FOR MULTIZONE SYSTEMS

- A. Position the unit's automatic zone dampers for maximum flow through the cooling coil.
- B. The procedures for multizone systems will utilize the zone balancing dampers to achieve the indicated airflow within the zone.
- C. After balancing, place the unit's automatic zone dampers for maximum heating flow. Retest zone airflows and record any variances.
- D. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.
  1. Measure total airflow.
    - a. Set outside-air, return-air and relief-air dampers for proper position that simulates minimum outdoor air conditions.
    - b. Where duct conditions allow, measure airflow by main Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses close to the fan and prior to any outlets, to obtain total airflow.
    - c. Where duct conditions are unsuitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
  2. Measure fan static pressures as follows:
    - a. Measure static pressure directly at the fan outlet or through the flexible connection.
    - b. Measure static pressure directly at the fan inlet or through the flexible connection.
    - c. Measure static pressure across each component that makes up the air-handling system.
    - d. Report artificial loading of filters at the time static pressures are measured.

3. Review Record drawings to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
  4. Obtain approval from Construction Manager for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in HVAC Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
  5. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload occurs. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.
- E. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows.
1. Measure airflow of submain and branch ducts.
  2. Adjust submain and branch duct volume dampers for specified airflow.
  3. Re-measure each submain and branch duct after all have been adjusted.
- F. Adjust air inlets and outlets for each space to indicated airflows.
1. Set airflow patterns of adjustable outlets for proper distribution without drafts.
  2. Measure inlet and outlet airflow.
  3. Adjust each inlet and outlet for specified airflow.
  4. Re-measure each inlet and outlet after they have been adjusted.
- G. Verify final system conditions.
1. Re-measure and confirm that minimum outdoor, return, and relief airflows are within design. Readjust to match design if necessary.
  2. Re-measure and confirm that total airflow is within design.
  3. Re-measure all final fan operating data, speed, volts, amps, and static profile.
  4. Mark all final settings.
  5. Test system in economizer mode. Verify proper operation and adjust if necessary.
  6. Measure and record all operating data.
  7. Record final fan-performance data.
- 3.9 GENERAL PROCEDURES FOR HYDRONIC SYSTEMS
- A. Prepare test reports for pumps, coils, and other equipment. Obtain approved submittals and manufacturer-recommended testing procedures. Crosscheck the summation of required coil and equipment flow rates with pump design flow rate.
- B. Prepare schematic diagrams of systems' Record drawings piping layouts.
- C. In addition to requirements in "Preparation" Article, prepare hydronic systems for testing and balancing as follows:
1. Check expansion tank for proper setting.
  2. Check highest vent for adequate pressure.
  3. Check flow-control valves for proper position.

4. Locate start-stop and disconnect switches, electrical interlocks, and motor controllers.
5. Verify that motor controllers are equipped with properly sized thermal protection.
6. Check that air has been purged from the system.

- D. Measure and record upstream and downstream pressure of each piece of equipment.
- E. Measure and record upstream and downstream pressure of pressure-reducing valves.
- F. Check settings and operation of automatic temperature-control valves, self-contained control valves, and pressure-reducing valves. Record final settings.
1. Check settings and operation of each safety valve. Record settings.

### 3.10 PROCEDURES FOR CONSTANT-FLOW HYDRONIC SYSTEMS

- A. Adjust pumps to deliver total design flow.
1. Measure total water flow.
    - a. Position valves for full flow through coils.
    - b. Measure flow by main flow meter, if installed.
    - c. If main flow meter is not installed, determine flow by pump TDH or known equipment pressure drop.
  2. Measure pump TDH as follows:
    - a. Measure discharge pressure directly at the pump outlet flange or in discharge pipe prior to any valves.
    - b. Measure inlet pressure directly at the pump inlet flange or in suction pipe prior to any valves or strainers.
    - c. Convert pressure to head and correct for differences in gauge heights.
    - d. Verify pump impeller size by measuring the TDH with the discharge valve closed. Note the point on manufacturer's pump curve at zero flow, and verify that the pump has the intended impeller size.
    - e. With valves open, read pump TDH. Adjust pump discharge valve until design water flow is achieved. If excessive throttling is required to achieve desired flow, recommend pump impellers be trimmed to reduce excess throttling.
  3. Monitor motor performance during procedures, and do not operate motor in an overloaded condition.
- B. Adjust flow-measuring devices installed in mains and branches to design water flows.
1. Measure flow in main and branch pipes.
  2. Adjust main and branch balance valves for design flow.
  3. Re-measure each main and branch after all have been adjusted.
- C. Adjust flow-measuring devices installed at terminals for each space to design water flows.
1. Measure flow at terminals.
  2. Adjust each terminal to design flow.
  3. Re-measure each terminal after it is adjusted.



4. Position control valves to bypass the coil, and adjust the bypass valve to maintain design flow.
  5. Perform temperature tests after flows have been balanced.
- D. For systems with pressure-independent valves at terminals:
1. Measure differential pressure and verify that it is within manufacturer's specified range.
  2. Perform temperature tests after flows have been verified.
- E. For systems without pressure-independent valves or flow-measuring devices at terminals:
1. Measure and balance coils by either coil pressure drop or temperature method.
  2. If balanced by coil pressure drop, perform temperature tests after flows have been verified.
- F. Verify final system conditions as follows:
1. Re-measure and confirm that total water flow is within design.
  2. Re-measure final pumps' operating data, TDH, volts, amps, and static profile.
  3. Mark final settings.
- G. Verify that memory stops have been set.

### 3.11 PROCEDURES FOR MOTORS

- A. Motors 1/2 HP and Larger: Test at final balanced conditions and record the following data:
1. Manufacturer's name, model number, and serial number.
  2. Motor horsepower rating.
  3. Motor rpm.
  4. Phase and hertz.
  5. Nameplate and measured voltage, each phase.
  6. Nameplate and measured amperage, each phase.
  7. Starter size and thermal-protection-element rating.
  8. Service factor and frame size.
- B. Motors Driven by Variable-Frequency Controllers: Test manual bypass of controller to prove proper operation.

### 3.12 PROCEDURES FOR AIR-COOLED CONDENSING UNITS

- A. Verify proper rotation of fan(s).
- B. Measure and record entering- and leaving-air temperatures.
- C. Measure and record entering and leaving refrigerant pressures.
- D. Measure and record operating data of compressor(s), fan(s), and motors.

### 3.13 PROCEDURES FOR BOILERS

#### A. Hydronic Boilers:

1. Measure and record entering- and leaving-water temperatures.
2. Measure and record water flow.
3. Measure and record pressure drop.
4. Measure and Record relief valve(s) pressure setting.
5. Capacity: Calculate in Btu/h (kW) of heating output.
6. Fuel Consumption: If boiler fuel supply is equipped with flow meter, measure and record consumption.
7. Efficiency: Calculate operating efficiency for comparison to submitted equipment.
8. Fan, motor, and motor controller operating data.

### 3.14 DUCT LEAKAGE TESTS

- A. Witness the duct leakage testing performed by Installer.
- B. Verify that proper test methods are used and that leakage rates are within specified limits.
- C. Report deficiencies observed.

### 3.15 PIPE LEAKAGE TESTS

- A. Witness the pipe pressure testing performed by Installer.
- B. Verify that proper test methods are used and that leakage rates are within specified limits.
- C. Report deficiencies observed.

### 3.16 HVAC CONTROLS VERIFICATION

- A. In conjunction with system balancing, perform the following:
  1. Verify HVAC control system is operating within the design limitations.
  2. Confirm that the sequences of operation are in compliance with Contract Documents.
  3. Verify that controllers are calibrated and function as intended.
  4. Verify that controller set points are as indicated.
  5. Verify the operation of lockout or interlock systems.
  6. Verify the operation of valve and damper actuators.
  7. Verify that controlled devices are properly installed and connected to correct controller.
  8. Verify that controlled devices travel freely and are in position indicated by controller: open, closed, or modulating.
  9. Verify location and installation of sensors to ensure that they sense only intended temperature, humidity, or pressure.
- B. Reporting: Include a summary of verifications performed, remaining deficiencies, and variations from indicated conditions.

### 3.17 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

- A. Perform a preconstruction inspection of existing equipment that is to remain and be reused.
1. Measure and record the operating speed, airflow, and static pressure of each fan and equipment with fan(s).
  2. Measure and record flows, temperatures, and pressures of each piece of equipment in each hydronic system. Compare the values to design or nameplate information, where information is available.
  3. Measure motor voltage and amperage. Compare the values to motor nameplate information.
  4. Check the refrigerant charge.
  5. Check the condition of filters.
  6. Check the condition of coils.
  7. Check the operation of the drain pan and condensate-drain trap.
  8. Check bearings and other lubricated parts for proper lubrication.
  9. Report on the operating condition of the equipment and the results of the measurements taken. Report deficiencies.
- B. TAB After Construction: Before performing testing and balancing of renovated existing systems, inspect existing equipment that is to remain and be reused to verify that existing equipment has been cleaned and refurbished in accordance with renovation scope indicated by Contract Documents. Verify the following:
1. New filters are installed.
  2. Coils are clean and fins combed.
  3. Drain pans are clean.
  4. Fans are clean.
  5. Bearings and other parts are properly lubricated.
  6. Deficiencies noted in the preconstruction report are corrected.
- C. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.
1. Compare the indicated airflow of the renovated work to the measured fan airflows, and determine the new fan speed and the face velocity of filters and coils.
  2. Verify that the indicated airflows of the renovated work result in filter and coil face velocities and fan speeds that are within the acceptable limits defined by equipment manufacturer.
  3. If calculations increase or decrease the airflow rates and water flow rates by more than [5] percent, make equipment adjustments to achieve the calculated rates. If increase or decrease is [5] percent or less, equipment adjustments are not required.
  4. Balance each air outlet.

### 3.18 TOLERANCES

- A. Set HVAC system's airflow rates and water flow rates within the following tolerances:
1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent.
  2. Heating-Water Flow Rate: Plus or minus 5 percent.

- B. Maintaining pressure relationships as designed shall have priority over the tolerances specified above.

### 3.19 PROGRESS REPORTING

- A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for system-balancing devices. Recommend changes and additions to system-balancing devices, to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance-measuring and -balancing devices.
- B. Status Reports: Prepare monthly progress reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

### 3.20 FINAL REPORT

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.
  - 1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
  - 2. Include a list of instruments used for procedures, along with proof of calibration.
  - 3. Certify validity and accuracy of field data.
- B. Final Report Contents: In addition to certified field-report data, include the following:
  - 1. Pump curves.
  - 2. Fan curves.
  - 3. Manufacturers' test data.
  - 4. Field test reports prepared by system and equipment installers.
  - 5. Other information relative to equipment performance; do not include Shop Drawings and Product Data.
- C. General Report Data: In addition to form titles and entries, include the following data:
  - 1. Title page.
  - 2. Name and address of the TAB specialist.
  - 3. Project name.
  - 4. Project location.
  - 5. Architect's name and address.
  - 6. Engineer's name and address.
  - 7. Contractor's name and address.
  - 8. Report date.
  - 9. Signature of TAB supervisor who certifies the report.
  - 10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.

11. Summary of contents, including the following:
  - a. Indicated versus final performance.
  - b. Notable characteristics of systems.
  - c. Description of system operation sequence if it varies from the Contract Documents.
12. Nomenclature sheets for each item of equipment.
13. Data for terminal units, including manufacturer's name, type, size, and fittings.
14. Notes to explain why certain final data in the body of reports vary from indicated values.
15. Test conditions for fans performance forms, including the following:
  - a. Settings for outdoor-, return-, and exhaust-air dampers.
  - b. Conditions of filters.
  - c. Cooling coil, wet- and dry-bulb conditions.
  - d. Heating coil, dry-bulb conditions.
  - e. Face and bypass damper settings at coils.
  - f. Fan drive settings, including settings and percentage of maximum pitch diameter.
  - g. Variable-frequency controller settings for variable-air-volume systems.
  - h. Settings for pressure controller(s).
  - i. Other system operating conditions that affect performance.
16. Test conditions for pump performance forms, including the following:
  - a. Variable-frequency controller settings for variable-flow hydronic systems.
  - b. Settings for pressure controller(s).
  - c. Other system operating conditions that affect performance.
- D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:
  1. Quantities of outdoor, supply, return, and exhaust airflows.
  2. Water and steam flow rates.
  3. Duct, outlet, and inlet sizes.
  4. Pipe and valve sizes and locations.
  5. Terminal units.
  6. Balancing stations.
  7. Position of balancing devices.
- E. Air-Handling-Unit Test Reports: For air-handling units, include the following:
  1. Unit Data:
    - a. Unit identification.
    - b. Location.
    - c. Make and type.
    - d. Model number and unit size.
    - e. Manufacturer's serial number.
    - f. Unit arrangement and class.
    - g. Discharge arrangement.
    - h. Sheave make, size in inches (mm), and bore.
    - i. Center-to-center dimensions of sheave and amount of adjustments in inches (mm).
    - j. Number, make, and size of belts.
    - k. Number, type, and size of filters.

2. Motor Data:
  - a. Motor make, and frame type and size.
  - b. Horsepower and speed.
  - c. Volts, phase, and hertz.
  - d. Full-load amperage and service factor.
  - e. Sheave make, size in inches (mm), and bore.
  - f. Center-to-center dimensions of sheave and amount of adjustments in inches (mm).
  
3. Test Data (Indicated and Actual Values):
  - a. Total airflow rate in cfm (L/s).
  - b. Total system static pressure in inches wg (Pa).
  - c. Fan speed.
  - d. Inlet and discharge static pressure in inches wg (Pa).
  - e. For each filter bank, filter static-pressure differential in inches wg (Pa).
  - f. Preheat-coil static-pressure differential in inches wg (Pa).
  - g. Cooling-coil static-pressure differential in inches wg (Pa).
  - h. Heating-coil static-pressure differential in inches wg (Pa).
  - i. List for each internal component with pressure-drop, static-pressure differential in inches wg (Pa).
  - j. Outdoor airflow in cfm (L/s).
  - k. Return airflow in cfm (L/s).
  - l. Outdoor-air damper position.
  - m. Return-air damper position.
  - n. [Vortex damper position].

F. Apparatus-Coil Test Reports:

1. Coil Data:
  - a. System identification.
  - b. Location.
  - c. Coil type.
  - d. Number of rows.
  - e. Fin spacing in fins per inch (mm) o.c.
  - f. Make and model number.
  - g. Face area in sq. ft. (sq. m).
  - h. Tube size in NPS (DN).
  - i. Tube and fin materials.
  - j. Circuiting arrangement.
  
2. Test Data (Indicated and Actual Values):
  - a. Airflow rate in cfm (L/s).
  - b. Average face velocity in fpm (m/s).
  - c. Air pressure drop in inches wg (Pa).
  - d. Outdoor-air, wet- and dry-bulb temperatures in deg F (deg C).
  - e. Return-air, wet- and dry-bulb temperatures in deg F (deg C).
  - f. Entering-air, wet- and dry-bulb temperatures in deg F (deg C).
  - g. Leaving-air, wet- and dry-bulb temperatures in deg F (deg C).
  - h. Water flow rate in gpm (L/s).
  - i. Water pressure differential in feet of head or psig (kPa).

- j. Entering-water temperature in deg F (deg C).
  - k. Leaving-water temperature in deg F (deg C).
  - l. Refrigerant expansion valve and refrigerant types.
  - m. Refrigerant suction pressure in psig (kPa).
  - n. Refrigerant suction temperature in deg F (deg C).
- G. Fan Test Reports: For supply, return, and exhaust fans, include the following:
- 1. Fan Data:
    - a. System identification.
    - b. Location.
    - c. Make and type.
    - d. Model number and size.
    - e. Manufacturer's serial number.
    - f. Arrangement and class.
    - g. Sheave make, size in inches (mm), and bore.
    - h. Center-to-center dimensions of sheave and amount of adjustments in inches (mm).
  - 2. Motor Data:
    - a. Motor make, and frame type and size.
    - b. Horsepower and speed.
    - c. Volts, phase, and hertz.
    - d. Full-load amperage and service factor.
    - e. Sheave make, size in inches (mm), and bore.
    - f. Center-to-center dimensions of sheave and amount of adjustments in inches (mm).
    - g. Number, make, and size of belts.
  - 3. Test Data (Indicated and Actual Values):
    - a. Total airflow rate in cfm (L/s).
    - b. Total system static pressure in inches wg (Pa).
    - c. Fan speed.
    - d. Discharge static pressure in inches wg (Pa).
    - e. Suction static pressure in inches wg (Pa).
- H. System-Coil Reports: For reheat coils and water coils of terminal units, include the following:
- 1. Unit Data:
    - a. System and air-handling-unit identification.
    - b. Location and zone.
    - c. Room or riser served.
    - d. Coil make and size.
    - e. Flowmeter type.
  - 2. Test Data (Indicated and Actual Values):
    - a. Airflow rate in cfm (L/s).
    - b. Entering-water temperature in deg F (deg C).
    - c. Leaving-water temperature in deg F (deg C).
    - d. Water pressure drop in feet of head or psig (kPa).
    - e. Entering-air temperature in deg F (deg C).

- f. Leaving-air temperature in deg F (deg C).
- I. Pump Test Reports: Calculate impeller size by plotting the shutoff head on pump curves, and include the following:
  1. Unit Data:
    - a. Unit identification.
    - b. Location.
    - c. Service.
    - d. Make and size.
    - e. Model number and serial number.
    - f. Water flow rate in gpm (L/s).
    - g. Water pressure differential in feet of head or psig (kPa).
    - h. Required net positive suction head in feet of head or psig (kPa).
    - i. Pump speed.
    - j. Impeller diameter in inches (mm).
    - k. Motor make and frame size.
    - l. Motor horsepower and rpm.
    - m. Voltage at each connection.
    - n. Amperage for each phase.
    - o. Full-load amperage and service factor.
    - p. Seal type.
  2. Test Data (Indicated and Actual Values):
    - a. Static head in feet of head or psig (kPa).
    - b. Pump shutoff pressure in feet of head or psig (kPa).
    - c. Actual impeller size in inches (mm).
    - d. Full-open flow rate in gpm (L/s).
    - e. Full-open pressure in feet of head or psig (kPa).
    - f. Final discharge pressure in feet of head or psig (kPa).
    - g. Final suction pressure in feet of head or psig (kPa).
    - h. Final total pressure in feet of head or psig (kPa).
    - i. Final water flow rate in gpm (L/s).
    - j. Voltage at each connection.
    - k. Amperage for each phase.
- J. Instrument Calibration Reports:
  1. Report Data:
    - a. Instrument type and make.
    - b. Serial number.
    - c. Application.
    - d. Dates of use.
    - e. Dates of calibration.

### 3.21 VERIFICATION OF TAB REPORT

- A. The TAB specialist's test and balance engineer shall conduct the inspection in the presence of Construction Manager.



- B. Construction Manager shall randomly select measurements, documented in the final report, to be rechecked. Rechecking shall be limited to the lesser of either 10 percent of the total measurements recorded or the extent of measurements that can be accomplished in a normal 8-hour business day.
- C. If rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."
- D. If the number of "FAILED" measurements is greater than [10] percent of the total measurements checked during the final inspection, the TAB shall be considered incomplete and shall be rejected.
- E. If recheck measurements find the number of failed measurements noncompliant with requirements indicated, proceed as follows:
  - 1. TAB specialists shall recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes; resubmit the final report and request a second final inspection. All changes shall be tracked to show changes made to previous report.
  - 2. If the second final inspection also fails, Owner may pursue others Contract options to complete TAB work.
- F. Prepare test and inspection reports.

### 3.22 ADDITIONAL TESTS

- A. Within [90] days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.
- B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional TAB during near-peak summer and winter conditions.

END OF SECTION

SECTION 23 2300

REFRIGERANT PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Copper tube and fittings.
  - 2. Steel pipe and fittings.
  - 3. Valves and specialties.
  - 4. Refrigerants.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of valve, refrigerant piping, and refrigerant piping specialty.
- B. Shop Drawings:
  - 1. Show piping size and piping layout, including oil traps, double risers, specialties, and pipe and tube sizes to accommodate, as a minimum, equipment provided, elevation difference between compressor and evaporator, and length of piping to ensure proper operation and compliance with warranties of connected equipment.
  - 2. Show interface and spatial relationships between piping and equipment.
  - 3. Shop Drawing Scale: 1/4 inch equals 1 foot (1:50)

1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For refrigerant valves and piping specialties to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Comply with ASHRAE 15, "Safety Code for Refrigeration Systems."
- B. Comply with ASME B31.5, "Refrigeration Piping and Heat Transfer Components."

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Line Test Pressure for Refrigerant R-410A:
1. Suction Lines for Air-Conditioning Applications: 300 psig (2068 kPa).
  2. Suction Lines for Heat-Pump Applications: 535 psig (3689 kPa).
  3. Hot-Gas and Liquid Lines: 535 psig (3689 kPa).

### 2.2 COPPER TUBE AND FITTINGS

- A. Copper Tube: [ASTM B 88, Type K or L (ASTM B 88M, Type A or B)]
- B. Wrought-Copper Fittings, Solder-Joint: ASME B16.22.
- C. Wrought-Copper Fittings, Brazed-Joint: ASME B16.50.
- D. Wrought-Copper Unions: ASME B16.22.
- E. Solder Filler Metals: ASTM B 32. Use 95-5 tin antimony or alloy HB solder to join copper socket fittings on copper pipe.
- F. Brazing Filler Metals: AWS A5.8/A5.8M.
- G. Flexible Connectors:
1. Body: Tin-bronze bellows with woven, flexible, tinned-bronze-wire-reinforced protective jacket.
  2. End Connections: Socket ends.
  3. Offset Performance: Capable of minimum 3/4-inch (20-mm) misalignment in minimum 7-inch- (180-mm-) long assembly.
  4. Working Pressure Rating: Factory test at minimum 500 psig (3450 kPa).
  5. Maximum Operating Temperature: 250 deg F (121 deg C).
- H. Copper-Tube, Pressure-Seal-Joint Fittings for Refrigerant Piping:
1. Standard: UL 207; certified by UL for field installation. Certification as a UL-recognized component alone is unacceptable.
  2. Housing: Copper.
  3. O-Rings: HNBR or compatible with specific refrigerant.
  4. Tools: Manufacturer's approved special tools.
  5. Minimum Rated Pressure: 700 psig (48 bar).

## 2.3 VALVES AND SPECIALTIES

- A. Diaphragm Packless Valves:
1. Body and Bonnet: Forged brass or cast bronze; globe design with straight-through or angle pattern.
  2. Diaphragm: Phosphor bronze and stainless steel with stainless-steel spring.
  3. Operator: Rising stem and hand wheel.
  4. Seat: Nylon.
  5. End Connections: Socket, union, or flanged.
  6. Working Pressure Rating: 500 psig (3450 kPa).
  7. Maximum Operating Temperature: 275 deg F (135 deg C).
- B. Packed-Angle Valves:
1. Body and Bonnet: Forged brass or cast bronze.
  2. Packing: Molded stem, back seating, and replaceable under pressure.
  3. Operator: Rising stem.
  4. Seat: Nonrotating, self-aligning polytetrafluoroethylene.
  5. Seal Cap: Forged-brass or valox hex cap.
  6. End Connections: Socket, union, threaded, or flanged.
  7. Working Pressure Rating: 500 psig (3450 kPa).
  8. Maximum Operating Temperature: 275 deg F (135 deg C).
- C. Check Valves:
1. Body: Ductile iron, forged brass, or cast bronze; globe pattern.
  2. Bonnet: Bolted ductile iron, forged brass, or cast bronze; or brass hex plug.
  3. Piston: Removable polytetrafluoroethylene seat.
  4. Closing Spring: Stainless steel.
  5. End Connections: Socket, union, threaded, or flanged.
  6. Maximum Opening Pressure: 0.50 psig (3.4 kPa).
  7. Working Pressure Rating: 500 psig (3450 kPa).
  8. Maximum Operating Temperature: 275 deg F (135 deg C).
- D. Service Valves:
1. Body: Forged brass with brass cap including key end to remove core.
  2. Core: Removable ball-type check valve with stainless-steel spring.
  3. Seat: Polytetrafluoroethylene.
  4. End Connections: Copper spring.
  5. Working Pressure Rating: 500 psig (3450 kPa).
- E. Refrigerant Locking Caps:
1. Description: Locking-type, tamper-resistant, threaded caps to protect refrigerant charging ports from unauthorized refrigerant access and leakage.
  2. Refrigerant Identification: [Color-coded, refrigerant specific] [or] [Universal] design.
  3. Special Tool: For installing and unlocking.
- F. Solenoid Valves: Comply with AHRI 760 and UL 429; listed and labeled by a National Recognized Testing Laboratory (NRTL).
1. Body and Bonnet: Plated steel.
  2. Solenoid Tube, Plunger, Closing Spring, and Seat Orifice: Stainless steel.
  3. Seat: Polytetrafluoroethylene.
  4. End Connections: Threaded.

5. Electrical: Molded, watertight coil in NEMA 250 enclosure of type required by location with 1/2-inch (16-GRC) conduit adapter, and [24] [115] [208]-V ac coil.
  6. Working Pressure Rating: 400 psig (2760 kPa).
  7. Maximum Operating Temperature: 240 deg F (116 deg C).
- G. Thermostatic Expansion Valves: Comply with AHRI 750.
1. Body, Bonnet, and Seal Cap: Forged brass or steel.
  2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
  3. Packing and Gaskets: Non-asbestos.
  4. Capillary and Bulb: Copper tubing filled with refrigerant charge.
  5. Suction Temperature: 40 deg F (4.4 deg C)
  6. Superheat: Adjustable.
  7. Reverse-flow option (for heat-pump applications).
  8. End Connections: Socket, flare, or threaded union.
  9. Working Pressure Rating: 450 psig (3100 kPa).
- H. Hot-Gas Bypass Valves: Comply with UL 429; listed and labeled by an NRTL.
1. Body, Bonnet, and Seal Cap: Ductile iron or steel.
  2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
  3. Packing and Gaskets: Non-asbestos.
  4. Solenoid Tube, Plunger, Closing Spring, and Seat Orifice: Stainless steel.
  5. Seat: Polytetrafluoroethylene.
  6. Equalizer: External.
  7. Electrical: Molded, watertight coil in NEMA 250 enclosure of type required by location with 1/2-inch (16-GRC) conduit adapter and [24] [115] [208]-V ac coil.
  8. End Connections: Socket.
  9. Throttling Range: Maximum 5 psig (34 kPa).
  10. Working Pressure Rating: 500 psig (3450 kPa).
  11. Maximum Operating Temperature: 240 deg F (116 deg C).
- I. Straight-Type Strainers:
1. Body: Welded steel with corrosion-resistant coating.
  2. Screen: 100-mesh stainless steel.
  3. End Connections: Socket or flare.
  4. Working Pressure Rating: 500 psig (3450 kPa).
  5. Maximum Operating Temperature: 275 deg F (135 deg C).
- J. Angle-Type Strainers:
1. Body: Forged brass or cast bronze.
  2. Drain Plug: Brass hex plug.
  3. Screen: 100-mesh monel.
  4. End Connections: Socket or flare.
  5. Working Pressure Rating: 500 psig (3450 kPa).
  6. Maximum Operating Temperature: 275 deg F (135 deg C).
- K. Moisture/Liquid Indicators:
1. Body: Forged brass.
  2. Window: Replaceable, clear, fused glass window with indicating element protected by filter screen.
  3. Indicator: Color coded to show moisture content in parts per million (ppm).
  4. Minimum Moisture Indicator Sensitivity: Indicate moisture above 60 ppm.
  5. End Connections: Socket or flare.
  6. Working Pressure Rating: 500 psig (3450 kPa).
  7. Maximum Operating Temperature: 240 deg F (116 deg C).

- L. Replaceable-Core Filter Dryers: Comply with AHRI 730.
  - 1. Body and Cover: Painted-steel shell with ductile-iron cover, stainless-steel screws, and neoprene gaskets.
  - 2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
  - 3. Desiccant Media: Activated alumina, charcoal.
  - 4. End Connections: Socket.
  - 5. Access Ports: NPS 1/4 (DN 8) connections at entering and leaving sides for pressure differential measurement.
  - 6. Maximum Pressure Loss: 2 psig (14 kPa)
  - 7. Working Pressure Rating: 500 psig (3450 kPa).
  - 8. Maximum Operating Temperature: 240 deg F (116 deg C).
  
- M. Permanent Filter Dryers: Comply with AHRI 730.
  - 1. Body and Cover: Painted-steel shell.
  - 2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
  
  - 3. Desiccant Media: Activated alumina, charcoal.
  - 4. End Connections: Socket.
  - 5. Access Ports: NPS 1/4 (DN 8) connections at entering and leaving sides for pressure differential measurement.
  - 6. Maximum Pressure Loss: 2 psig (14 kPa)
  - 7. Working Pressure Rating: 500 psig (3450 kPa).
  - 8. Maximum Operating Temperature: 240 deg F (116 deg C).

## 2.4 REFRIGERANTS

- A. ASHRAE 34, R-410A: Pentafluoroethane/Difluoromethane.
  - 1. Manufacturers
    - a. Arkema, Inc.
    - b. DuPont Fluorochemicals
    - c. Honeywell

## PART 3 - EXECUTION

### 3.1 PIPING APPLICATIONS FOR REFRIGERANT R-410A

- A. Suction Lines: Copper, annealed-temper tubing and wrought-copper fittings with brazed or soldered joints.
  
- B. Hot-Gas and Liquid Lines
  - 1. If all tubing is not larger than NPS 5/8 (DN 18) Copper, Type L (B), annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
  - 2. If all tubing is not larger than NPS 1 (DN 25) Copper, Type K (A), annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
  - 3. If all tubing is not larger than NPS 1-1/4 (DN 32) Copper, Type K (A), Type L (B), drawn-temper tubing and wrought-copper fittings with 95-5 tin-antimony soldered joints.
  - 4. If all tubing is not larger than NPS 2 (DN 50) Copper, Type K (A), Type L (B), drawn-temper tubing and wrought-copper fittings with Alloy HB soldered joints.

C. Safety-Relief-Valve Discharge Piping:

1. If all tubing is not larger than NPS 5/8 (DN 18) Copper, Type L (B), annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
2. If all tubing is not larger than NPS 1 (DN 25) Copper, Type K (A), annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
3. If all tubing is not larger than NPS 1-1/4 (DN 32) Copper, Type K (A), Type L (B), drawn-temper tubing and wrought-copper fittings with 95-5 tin-antimony soldered joints.
4. If all tubing is not larger than NPS 2 (DN 50) Copper, Type K (A), Type L (B), drawn-temper tubing and wrought-copper fittings with Alloy HB soldered joints.

3.2 VALVE AND SPECIALTY APPLICATIONS

- A. Install diaphragm packless, packed-angle valves in suction and discharge lines of compressor.
- B. Install service valves for gauge taps at inlet and outlet of hot-gas bypass valves and strainers if they are not an integral part of valves and strainers.
- C. Install a check valve at the compressor discharge and a liquid accumulator at the compressor suction connection.
- D. Except as otherwise indicated, install diaphragm packless, packed-angle valves on inlet and outlet side of filter dryers.
- E. Install a full-size, three-valve bypass around filter dryers.
- F. Install solenoid valves upstream from each expansion valve and hot-gas bypass valve. Install solenoid valves in horizontal lines with coil at top.
- G. Install thermostatic expansion valves as close as possible to distributors on evaporators.
  1. Install valve so diaphragm case is warmer than bulb.
  2. Secure bulb to clean, straight, horizontal section of suction line using two bulb straps. Do not mount bulb in a trap or at bottom of the line.
  3. If external equalizer lines are required, make connection where it will reflect suction-line pressure at bulb location.
- H. Install safety relief valves where required by 2010 ASME Boiler and Pressure Vessel Code. Pipe safety-relief-valve discharge line to outside according to ASHRAE 15.
- I. Install moisture/liquid indicators in liquid line at the inlet of the thermostatic expansion valve or at the inlet of the evaporator coil capillary tube.
- J. Install strainers upstream from and adjacent to the following unless they are furnished as an integral assembly for the device being protected:
  1. Solenoid valves.
  2. Thermostatic expansion valves.
  3. Hot-gas bypass valves.
  4. Compressor.

- K. Install filter dryers in liquid line between compressor and thermostatic expansion valve.
- L. Install flexible connectors at compressors.
- M. Provide refrigerant locking caps on refrigerant charging ports that are located outdoors unless otherwise protected from unauthorized access by a means acceptable to the authority having jurisdiction.

### 3.3 INSTALLATION OF PIPING, GENERAL

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems; indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Shop Drawings.
- B. Install refrigerant piping according to ASHRAE 15.
- C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping adjacent to machines to allow service and maintenance.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Select system components with pressure rating equal to or greater than system operating pressure.
- J. Refer to Section 230923 "Direct Digital Control (DDC) System for HVAC" and Section 230993.11 "Sequence of Operations for HVAC DDC" for solenoid valve controllers, control wiring, and sequence of operation.
- K. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings.
- L. Arrange piping to allow inspection and service of refrigeration equipment. Install valves and specialties in accessible locations to allow for service and inspection. Install access doors or panels as specified in Section 083113 "Access Doors and Frames" if valves or equipment requiring maintenance is concealed behind finished surfaces.
- M. Install refrigerant piping in protective conduit where installed belowground.
- N. Install refrigerant piping in rigid or flexible conduit in locations where exposed to mechanical injury.



- O. Slope refrigerant piping as follows:
  - 1. Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor.
  - 2. Install horizontal suction lines with a uniform slope downward to compressor.
  - 3. Install traps and double risers to entrain oil in vertical runs.
  - 4. Liquid lines may be installed level.
- P. When brazing or soldering, remove solenoid-valve coils and sight glasses; also remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb.
- Q. Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation installation.
- R. Identify refrigerant piping and valves according to Section 230553 "Identification for HVAC Piping and Equipment."

### 3.4 PIPE JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Soldered Joints: Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook."
- D. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."
  - 1. Use Type BCuP (copper-phosphorus) alloy for joining copper socket fittings with copper pipe.
  - 2. Use Type BA<sub>g</sub> (cadmium-free silver) alloy for joining copper with bronze or steel.

### 3.5 INSTALLATION OF HANGERS AND SUPPORTS

- A. Install the following pipe attachments:
  - 1. Adjustable steel clevis hangers for individual horizontal runs less than 20 feet (6 m) long.
  - 2. Roller hangers and spring hangers for individual horizontal runs 20 feet (6 m) or longer.
  - 3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet (6 m) or longer, supported on a trapeze.
  - 4. Spring hangers to support vertical runs.
  - 5. Copper-clad hangers and supports for hangers and supports in direct contact with copper pipe.
- B. Install hangers for copper tubing, with maximum horizontal spacing and minimum rod diameters, to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- C. Support horizontal piping within 12 inches (300 mm) of each fitting.

- D. Support vertical runs of copper tubing to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

### 3.6 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
  - 1. Comply with ASME B31.5, Chapter VI.
  - 2. Test refrigerant piping, specialties, and receivers. Isolate compressor, condenser, evaporator, and safety devices from test pressure if they are not rated above the test pressure.
  - 3. Test high- and low-pressure side piping of each system separately at not less than the pressures indicated in "Performance Requirements" Article.
    - a. Fill system with nitrogen to the required test pressure.
    - b. System shall maintain test pressure at the manifold gage throughout duration of test.
    - c. Test joints and fittings with electronic leak detector or by brushing a small amount of soap and glycerin solution over joints.
    - d. Remake leaking joints using new materials, and retest until satisfactory results are achieved.
- B. Prepare test and inspection reports.

### 3.7 SYSTEM CHARGING

- A. Charge system using the following procedures:
  - 1. Install core in filter dryers after leak test but before evacuation.
  - 2. Evacuate entire refrigerant system with a vacuum pump to 500 micrometers (67 Pa). If vacuum holds for 12 hours, system is ready for charging.
  - 3. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig (14 kPa).
  - 4. Charge system with a new filter-dryer core in charging line.

### 3.8 ADJUSTING

- A. Adjust thermostatic expansion valve to obtain proper evaporator superheat.
- B. Adjust high- and low-pressure switch settings to avoid short cycling in response to fluctuating suction pressure.
- C. Adjust set-point temperature of air-conditioning or chilled-water controllers to the system design temperature.
- D. Perform the following adjustments before operating the refrigeration system, according to manufacturer's written instructions:
  - 1. Open shutoff valves in condenser water circuit.
  - 2. Verify that compressor oil level is correct.
  - 3. Open compressor suction and discharge valves.

4. Open refrigerant valves except bypass valves that are used for other purposes.
  5. Check open compressor-motor alignment and verify lubrication for motors and bearings.
- E. Replace core of replaceable filter dryer after system has been adjusted and after design flow rates and pressures are established.

END OF SECTION 232300

SECTION 23 7313.16

INDOOR, SEMI-CUSTOM AIR-HANDLING UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes insulated, double-wall-casing, indoor, semi-custom air-handling units that are factory assembled using multiple section components, including the following:
  - 1. Casings.
  - 2. Fans, drives, and motors.
  - 3. Coils.
  - 4. Air filtration.
  - 5. Dampers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each air-handling unit.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
  - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
  - 3. Include unit dimensions and weight.
  - 4. Include cabinet material, metal thickness, finishes, insulation, and accessories.
  - 5. Fans:
    - a. Include certified fan-performance curves with system operating conditions indicated.
    - b. Include certified fan-sound power ratings.
    - c. Include fan construction and accessories.
    - d. Include motor ratings, electrical characteristics, and motor accessories.
  - 6. Include certified coil-performance ratings with system operating conditions indicated.
  - 7. Include filters with performance characteristics.
- B. Shop Drawings: For each type and configuration of indoor, semi-custom air handling unit.
  - 1. Include plans, elevations, sections, and mounting attachment details.

2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Detail fabrication and assembly of indoor, semi-custom air-handling units, as well as procedures and diagrams.
4. Include diagrams for power, signal, and control wiring.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Floor plans and other details, or BIM model, drawn to scale, showing the items described in this Section, and coordinated with all building trades.
- B. Source quality-control reports.
- C. Startup service reports.
- D. Field quality-control reports.
- E. Sample Warranty: For manufacturer's warranty.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For air-handling units to include in emergency, operation, and maintenance manuals.

#### 1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  1. Filters: [One] set(s) for each air-handling unit.
  2. Gaskets: [One] set(s) for each access door.

#### 1.7 WARRANTY

- A. Warranty: Manufacturer agrees to repair or replace components of indoor, semi-custom air-handling units that fail in materials or workmanship within specified warranty period.
  1. Warranty Period: Three year(s) from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

- B. NFPA Compliance: Comply with NFPA 90A for design, fabrication, and installation of air-handling units and components.
- C. ASHRAE 62.1 Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
- D. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."
- E. Structural Performance: Casing panels shall be self-supporting and capable of withstanding positive/negative [8-inch wg (2000 Pa)] of internal static pressure, without exceeding a midpoint deflection of [0.0042 inch/inch (0.0042 mm/mm)] of panel span.
- F. Casing Leakage Performance: ASHRAE 111, Class 6 leakage or better at plus or minus 8 inch wg (2000 Pa).

## 2.2 CAPACITIES AND CHARACTERISTICS – SEE MECHANICAL DRAWINGS

## 2.3 MANUFACTURERS

- A. Carrier
- B. Daikin Applied
- C. Trane
- D. York

## 2.4 UNIT CASINGS

- A. Frame: Modular and providing overall structural integrity without reliance on casing panels for structural support.
- B. Base Rail:
  - 1. Material: Galvanized steel.
  - 2. Height: 6 inches (150 mm).
- C. Casing Joints: Hermetically sealed at each corner and around entire perimeter.
- D. Double-Wall Construction:
  - 1. Outside Casing Wall:
    - a. Material, Galvanized Steel: Minimum 18 gauge (1.3 mm) thick.
    - b. Factory Finish: Provide manufacturer's standard finish.
  - 2. Inside Casing Wall:
    - a. Material, Galvanized Steel: Solid, minimum 18 gauge (1.3 mm) thick.

E. Casing Insulation:

1. Materials: Glass-fiber blanket or board insulation, Type I or Type II ASTM C1071 Injected polyurethane foam insulation Glass-fiber insulation layered over injected foam in perforated interior casing sections to meet specified acoustic requirements.
2. Casing Panel R-Value: Minimum R-13.
3. Insulation Thickness: 2 inches (50 mm).
4. Thermal Break: Provide continuity of insulation with no through-casing metal in casing walls, floors, or roofs of air-handling unit.

F. Static-Pressure Classifications:

1. For Unit Sections Upstream of Fans: Minus 4-inch wg (1000 Pa).
2. For Unit Sections Downstream and Including Fans: 4-inch wg (1000 Pa).

G. Panels, Doors, and Windows:

1. Panels:

- a. Fabrication: Formed and reinforced, double-wall and insulated panels of same materials and thicknesses as casing.
- b. Fasteners: Two or more camlock type for panel lift-out operation. Arrangement shall allow panels to be opened against airflow
- c. Gasket: Neoprene, applied around entire perimeters of panel frames.
- d. Size: Large enough to allow unobstructed access for inspection and maintenance of air-handling unit's internal components. At least 18 inches (450 mm) wide by full height of unit casing up to a maximum height of 60 inches (1500 mm).

2. Doors:

- a. Fabrication: Formed and reinforced, double-wall and insulated panels of same materials and thicknesses as casing.
- b. Hinges: A minimum of two ball-bearing hinges or stainless-steel piano hinge and two wedge-lever latches, operable from inside and outside. Arrange doors to be opened against airflow. Provide safety latch retainers on doors so that doors do not open uncontrollably.
- c. Gasket: Neoprene, applied around entire perimeters of panel frames.
- d. Size: Large enough to allow for unobstructed access for inspection and maintenance of air-handling unit's internal components. At least 18 inches (450 mm) wide by full height of unit casing up to a maximum height of 60 inches (1500 mm)

3. Locations and Applications:

- a. Fan Section: Doors Panels.
- b. Coil Section: Doors Panels.
- c. Filter Section: Doors Panels large enough to allow periodic removal and installation of filters.

H. Condensate Drain Pans:

1. Construction:
  - a. Single-wall, stainless-steel sheet.
2. Drain Connection:
  - a. Located at lowest point of pan and sized to prevent overflow. Terminate with threaded nipple on one end of pan.
  - b. Minimum Connection Size: NPS 1 (DN 25).

2.5 FAN, DRIVE, AND MOTOR SECTION

- A. Fan and Drive Assemblies: Statically and dynamically balanced and designed for continuous operation at maximum-rated fan speed and motor horsepower.
- B. Fans: Centrifugal, galvanized steel; mounted on solid-steel shaft.
  1. Shafts: With field-adjustable alignment.
    - a. Turned, ground, and polished hot-rolled steel with keyway.
  2. Shaft Bearings:
    - a. Prelubricated and Sealed, Ball Bearings: Self-aligning, pillow-block type with an L-50 rated life of 200,000 hours according to ABMA 9.
    - b. Grease-Lubricated, Tapered-Roller Bearings: Self-aligning, pillow-block type with double-locking collars and two-piece, cast-iron housing and an L-50 rated life of 200,000 hours according to ABMA 11.
    - c. Grease-Lubricated Bearings: Self-aligning, pillow-block-type, ball or roller bearings with adapter mount and two-piece, cast-iron housing and an L-50 rated life of 200,000.
  3. Housings: Formed- and reinforced-steel panels to form curved scroll housings with shaped cutoff and spun-metal inlet bell.
    - a. Bracing: Steel angle or channel supports for mounting and supporting fan scroll, wheel, motor, and accessories.
  4. Housings, Plenum Fans: Steel frame and panel; fabricated without fan scroll and volute housing. Provide inlet screens for Type SWSI fans.
  5. Plenum Fan Arrays: Contained Uncontained as defined in AHRI 430. Steel or aluminum frame with inlet cone and structural framing around each fan built into an array of multiple fans. Provide backdraft motorized dampers at each fan to prevent short circuiting of flow if one fan is not operating.
  6. Backward-Inclined, Centrifugal Fan Wheels: Construction with curved inlet flange, backplate, backward-inclined blades welded or riveted to flange and backplate; [steel] hub riveted to backplate and fastened to shaft with setscrews.



7. Forward-Curved, Centrifugal Fan Wheels: Inlet flange, backplate, and shallow blades with inlet and tip curved forward in direction of airflow and mechanically fastened to flange and backplate; [steel] hub swaged to backplate and fastened to shaft with setscrews.
8. Airfoil, Centrifugal Fan Wheels (Plenum Fan Wheels): Smooth-curved inlet flange, backplate, and hollow die-formed airfoil-shaped blades continuously welded at tip flange and backplate; steel hub riveted to backplate and fastened to shaft with setscrews.
9. Mounting: For internal vibration isolation. Factory-mount fans with manufacturer's standard restrained vibration isolation mounting devices having a minimum static deflection of 1 inch (25 mm).
10. Shaft Lubrication Lines: Extended to a location outside the casing.

C. Drive, Direct: Factory-mounted, direct drive.

D. Motors:

1. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
2. Enclosure Type: Open, dripproof Totally enclosed, fan cooled
3. Enclosure Materials: Cast iron.
4. Efficiency: Premium Efficient motors as defined in NEMA MG 1.
5. Mount unit-mounted disconnect switches on [exterior] of unit.

## 2.6 COIL SECTION

A. General Requirements for Coil Section:

1. Comply with AHRI 410.
2. Fabricate coil section to allow removal and replacement of coil for maintenance and to allow in-place access for service and maintenance of coil(s).
3. For multizone units, provide air deflectors and air baffles to balance airflow across coils.
4. Coils shall not act as structural component of unit.
5. Hot-Water Coils: Continuous circuit Self-draining Cleanable.
  - a. Piping Connections: Threaded, same end of coil.
  - b. Tube Material: Copper.
  - c. Fin Type: Plate.
  - d. Fin Material: Aluminum.
  - e. Fin Spacing: Maximum 12 fins per inch (mm).
  - f. Fin and Tube Joint: Silver brazed.
  - g. Headers:
    - 1) Cast iron with cleaning plugs and drain and air vent tappings extended to exterior of unit.
    - 2) Seamless copper tube with brazed joints, prime coated.
    - 3) Fabricated steel, with brazed joints, prime coated.
    - 4) Provide insulated cover to conceal exposed outside casings of headers.
  - h. Coil Working-Pressure Ratings: 200 psig (1380 kPa).
  - i. Coating: Corrosion-resistant coating.

B. Cooling Coils:

1. Refrigerant Coil:

- a. Tubes: [Copper].
- b. Fins:
  - 1) Material: Aluminum.
  - 2) Fin Spacing: Maximum 12 fins per inch (mm).
- c. Fin and Tube Joints: Mechanical bond.
- d. Headers: Seamless-copper headers with brazed connections.
- e. Frames: Galvanized steel.
- f. Coatings: Corrosion-resistant coating.
- g. Ratings: Designed, tested, and rated according to ASHRAE 33 and AHRI 410.
  - 1) Working Pressure: Minimum 300 psig (2070 kPa).

2.7 AIR FILTRATION SECTION

A. Panel Filters:

1. Description: Flat, non-pleated Pleated factory-fabricated, self-supported, disposable air filters with holding frames.
2. Filter Unit Class: UL 900.
3. Media: Interlaced glass, synthetic or cotton fibers coated with nonflammable adhesive.
4. Filter-Media Frame: Beverage board with perforated metal retainer, or metal grid, on outlet side.

B. Side-Access Filter Mounting Frames:

1. Particulate Air Filter Frames: Match inner casing and outer casing material, and insulation thickness. Galvanized steel track.
  - a. Prefilters: Incorporate an integral [2-inch- (50-mm-)] thick track with same access as primary filter.
  - b. Sealing: Incorporate positive-sealing device to ensure seal between gasketed material on channels to seal top and bottom of filter cartridge frames to prevent bypass of unfiltered air.

2.8 DAMPERS

- A. Zone Dampers: Two single-blade, galvanized-steel dampers offset 90 degrees from each other on steel operating rod rotating in sintered bronze or nylon bearings mounted in a single galvanized-steel frame. Provide blade gaskets and edge seals, and mechanically fasten blades to operating rod.

B. Electronic Damper Operators:

1. Direct-coupled type designed for minimum 60,000 full-stroke cycles at rated torque.

2. Electronic damper position indicator shall have visual scale indicating percent of travel and 2- to 10-V dc, feedback signal.
3. Operator Motors:
  - a. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
  - b. Size to operate with sufficient reserve power to provide smooth modulating action or two-position action.
  - c. Permanent Split-Capacitor or Shaded-Pole Type: Gear trains completely oil immersed and sealed. Equip spring-return motors with integral spiral-spring mechanism in housings designed for easy removal for service or adjustment of limit switches, auxiliary switches, or feedback potentiometer.
4. Nonspring-Return Motors for Dampers Larger Than 25 Sq. Ft. (2.3 sq. m): Size for running torque of 150 in. x lbf (16.9 N x m) and breakaway torque of 300 in. x lbf (33.9 N x m).
5. Spring-Return Motors for Dampers Larger Than 25 Sq. Ft. (2.3 sq. m): Size for running and breakaway torque of 150 in. x lbf (16.9 N x m).
6. Size dampers for running torque calculated as follows:
  - a. Parallel-Blade Damper with Edge Seals: 7 inch-lb/sq. ft. (86.8 kg-cm/sq. m) of damper.
  - b. Opposed-Blade Damper with Edge Seals: 5 inch-lb/sq. ft. (62 kg-cm/sq. m) of damper.
  - c. Parallel-Blade Damper without Edge Seals: 4 inch-lb/sq. ft. (49.6 kg-cm/sq. m) of damper.
  - d. Opposed-Blade Damper without Edge Seals: 3 inch-lb/sq. ft. (37.2 kg-cm/sq. m) of damper.
  - e. Dampers with 2- to 3-Inch wg (500 to 750 Pa) of Pressure Drop or Face Velocities of 1000 to 2500 fpm (5 to 13 m/s): Increase running torque by 1.5.
  - f. Dampers with 3- to 4-Inch wg (750 to 1000 Pa) of Pressure Drop or Face Velocities of 2500 to 3000 fpm (13 to 15 m/s): Increase running torque by 2.0.
7. Coupling: V-bolt and V-shaped, toothed cradle.
8. Overload Protection: Electronic overload or digital rotation-sensing circuitry.
9. Fail-Safe Operation: Mechanical, spring-return mechanism with external, manual gear release on nonspring-return actuators.
10. Proportional Signal: 2- to 10-V dc or 4 to 20 mA, and 2- to 10-V dc position feedback signal.
11. Temperature Rating: Minus 22 to plus 122 deg F (Minus 30 to plus 50 deg C) 40 to 104 deg F (5 to 40 deg C).
12. Run Time: 12 seconds open, 5 seconds closed.

## 2.9 MATERIALS

### A. Steel:

1. ASTM A36/A36M for carbon structural steel.
2. ASTM A568/A568M for steel sheet.

- B. Stainless Steel:
  - 1. Manufacturer's standard grade for casing.
  - 2. Manufacturer's standard type, ASTM A240/A240M for bare steel exposed to airstream or moisture.
- C. Galvanized Steel: ASTM A653/A653M.
- D. Aluminum: ASTM B 09 (ASTM B209M).
- E. Corrosion-Resistant Coating: Coat with a corrosion-resistant coating capable of withstanding a [3000] -hour salt-spray test according to ASTM B117.
  - 1. Standards:
    - a. ASTM B117 for salt spray.
    - b. ASTM D2794 for minimum impact resistance of 100 in-lb (11.3 N-m).
    - c. ASTM B3359 for cross hatch adhesion of 5B.
  - 2. Application: Immersion Spray.
  - 3. Thickness: 1 mil (0.025 mm).
  - 4. Gloss: Minimum gloss of 60 on a 60-degree meter.

#### 2.10 SOURCE QUALITY CONTROL

- A. AHRI 430 Certification: Test, rate, and label air-handling units and their components in accordance with AHRI 430.
- B. Fan Energy Index (FEI): Test in accordance with AMCA 210 and rate in accordance with AMCA 99, AMCA 207, and AMCA 208.
- C. Fan Operating Limits: Classify fans in accordance with AMCA 99, Section 14.
- D. Water Coils: Factory tested to 300 psig (2070 kPa) according to AHRI 410 and ASHRAE 33.
- E. Refrigerant Coils: Factory tested to minimum 450-psig (3105-kPa) internal pressure and to minimum 300-psig (2070-kPa) internal pressure while underwater, according to AHRI 410 and ASHRAE 33.
- F. Witnessed Casing Leakage Tests:
  - 1. Pay for all expenses, for one representative designated by Owner, to travel to the factory to witness cabinet air-leakage testing on the specific assembled unit(s) prior to release for delivery to Project site.
  - 2. If the unit(s) does not meet specified leakage requirements, perform factory modifications and retest. Do not release unit for shipment until tested leakage is measured to be within specified leakage and leakage testing report has been accepted by Owner's designated representative.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine casing insulation materials and filter media before air-handling unit installation. Reject insulation materials and filter media that are wet, moisture damaged, or mold damaged.
- C. Examine roughing-in for steam, hydronic, and condensate drainage piping systems and electrical services to verify actual locations of connections before installation.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Equipment Mounting:
  - 1. Install air-handling units on cast-in-place concrete equipment bases. Coordinate sizes and locations of concrete bases with actual equipment provided.
- B. Arrange installation of units to provide access space around air-handling units for service and maintenance.
- C. Do not operate fan system until filters (temporary or permanent) are in place. Replace temporary filters used during construction and testing, with new, clean filters.

3.3 PIPING CONNECTIONS

- A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Where installing piping adjacent to air-handling unit, allow for service and maintenance.
- C. Connect piping to air-handling units mounted on vibration isolators with flexible connectors.
- D. Connect condensate drain pans using NPS 1-1/4 (DN 32), ASTM B88, Type M (ASTM B88M, Type C) copper tubing. Extend to nearest equipment or floor drain. Construct deep trap at connection to drain pan and install cleanouts at changes in direction.

3.4 ELECTRICAL CONNECTIONS

- A. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- B. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

- C. Install electrical devices furnished by manufacturer, but not factory mounted, according to NFPA 70 and NECA 1.
- D. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.
  - 1. Nameplate shall be laminated acrylic or melamine plastic signs with a black background and engraved white letters at least 1/2 inch (13 mm) high.

### 3.5 CONTROL CONNECTIONS

- A. Install control and electrical power wiring to field-mounted control devices.
- B. Connect control wiring according to Section 260523 "Control-Voltage Electrical Power Cables."

### 3.6 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
  - 1. Complete installation and startup checks according to manufacturer's written instructions.
  - 2. Verify that shipping, blocking, and bracing are removed.
  - 3. Verify that unit is secure on mountings and supporting devices and that connections to piping, ducts, and electrical systems are complete. Verify that proper thermal-overload protection is installed in motors, controllers, and switches.
  - 4. Verify proper motor rotation direction, free fan wheel rotation, and smooth bearing operations. Reconnect fan drive system, align belts, and install belt guards.
  - 5. Verify that bearings, pulleys, belts, and other moving parts are lubricated with factory-recommended lubricants.
  - 6. Verify that zone dampers fully open and close for each zone.
  - 7. Verify that face-and-bypass dampers provide full face flow.
  - 8. Verify that outdoor- and return-air mixing dampers open and close, and maintain minimum outdoor-air setting.
  - 9. Comb coil fins for parallel orientation.
  - 10. Verify that proper thermal-overload protection is installed for electric coils.
  - 11. Install new, clean filters.
  - 12. Verify that manual and automatic volume control and fire and smoke dampers in connected duct systems are in fully open position.
- B. Starting procedures for air-handling units include the following:
  - 1. Energize motor; verify proper operation of motor, drive system, and fan wheel. Adjust fan to indicated rpm. Replace fan and motor pulleys as required to achieve design conditions.
  - 2. Measure and record motor electrical values for voltage and amperage.
  - 3. Manually operate dampers from fully closed to fully open position and record fan performance.

### 3.7 ADJUSTING

- A. Adjust damper linkages for proper damper operation.

- B. Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC" for air-handling system testing, adjusting, and balancing.
- C. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

### 3.8 CLEANING

- A. After completing system installation and testing, adjusting, and balancing air-handling unit and air-distribution systems and after completing startup service, clean air-handling units internally to remove foreign material and construction dirt and dust. Clean fan wheels, cabinets, dampers, coils, and filter housings, and install new, clean filters.

### 3.9 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- B. Air-handling unit or components will be considered defective if unit or components do not pass tests and inspections.
- C. Prepare test and inspection reports.

### 3.10 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain air-handling units.

END OF SECTION

SECTION 26 0519

LOW-VOLTAGE ELECTRICAL CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
  - 1. Building wires and cables rated 600 V and less.
  - 2. Connectors, splices, and terminations rated 600 V and less.

1.3 DEFINITIONS

Retain terms that remain after this Section has been edited for a project.

- A. VFC: Variable frequency controller.
- B. NETA: InterNational Electrical Testing Association

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.

Retain "Field quality-control reports" Paragraph below if Contractor is responsible for field quality-control testing and inspecting.

- B. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Member company of NETA or an NRTL.
  - 1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.



## PART 2 - PRODUCTS

### 2.1 CONDUCTORS AND CABLES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

Retain "Basis-of-Design Product" Paragraph and list of manufacturers below to identify a specific product or a comparable product from manufacturers listed. Retain option and delete insert note if manufacturer's name and model number are indicated on Drawings.

1. Alcan Products Corporation; Alcan Cable Division.
  2. Alpha Wire.
  3. Belden Inc.
  4. Encore Wire Corporation.
  5. General Cable Technologies Corporation.
  6. Southwire Incorporated.
- B. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.
- C. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-2-THWN-2.
- D. Multiconductor Cable: Comply with NEMA WC 70/ICEA S-95-658 for metal-clad cable, Type MC with ground wire.
- E. VFC Cable:
1. Comply with UL 1277, UL 1685, and NFPA 70 for Type TC-ER cable.
  2. Type TC-ER with oversized crosslinked polyethylene insulation, spiral-wrapped foil plus 85 percent coverage braided shields and insulated full-size ground wire, and sunlight- and oil-resistant outer PVC jacket.

### 2.2 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

### 2.3 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.

## PART 3 - EXECUTION

### 3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Services: Copper. Stranded.

- B. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- C. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger, except VFC cable, which shall be extra flexible stranded.

### 3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Type THHN-2/THWN-2, single conductors in raceway.
- B. Exposed Feeders: Type THHN-2/THWN-2, single conductors in raceway.
- C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN-2/THWN-2, single conductors in raceway.
- D. Exposed Branch Circuits, Including in Crawlspace: Type THHN-2/THWN-2, single conductors in raceway or Metal-clad cable.
- E. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-2/THWN-2, single conductors in raceway or Metal-clad cable, Type MC.
- F. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-2/THWN-2, single conductors in raceway.
- G. VFC Output Circuits: Type TC-ER cable with braided shield.

### 3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
- B. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for electrical systems" prior to pulling conductors and cables.
- C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

### 3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

- B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

Retain subparagraph below if aluminum conductors are specified.

- C. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches (300 mm) of slack.

### 3.5 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 260553 "Electrical Identification."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

### 3.6 FIRESTOPPING

- A. Apply listed firestopping materials to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Use fire stopping systems approved by the Authority Having Jurisdiction.

### 3.7 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
  - 1. After installing conductors and cables and before electrical circuitry has been energized, test service and feeder conductors for compliance with requirements.
  - 2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification (ATS) "INSPECTION AND TEST PROCEDURES." Certify compliance with test parameters.
- B. Test and Inspection Reports: Prepare a written report to record the following:
  - 1. Procedures used.
  - 2. Results that comply with requirements.
  - 3. Results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
- C. Cables will be considered defective if they do not pass tests and inspections.

END OF SECTION

SECTION 26 0526

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes grounding and bonding systems and equipment.

Retain one or more subparagraphs below for special grounding applications.

- 1. Underground distribution grounding.
- 2. Ground bonding common with lightning protection system.
- 3. Foundation steel electrodes.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1.4 INFORMATIONAL SUBMITTALS

- A. As-Built Data: Plans showing dimensioned as-built locations of grounding features specified in "Field Quality Control" Article, including the following:
  - 1. Grounding arrangements and connections for separately derived systems.
- B. Qualification Data: For testing agency and testing agency's field supervisor.
- C. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For grounding to include in emergency, operation, and maintenance manuals.
  - 1. In addition to items specified in Section 01782 "Operation and Maintenance Data," include the following:
    - a. Instructions for periodic testing and inspection of grounding features at grounding connections for separately derived systems based on NETA MTS.

- 1) Tests shall determine if ground-resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if values do not.
- 2) Include recommended testing intervals.

## 1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Member company of NETA or an NRTL.
  1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with UL 467 for grounding and bonding materials and equipment.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  1. Burndy; Part of Hubbell Electrical Systems.
  2. Dossert; AFL Telecommunications LLC.
  3. ERICO International Corporation.
  4. Fushi Copperweld Inc.
  5. Galvan Industries, Inc.; Electrical Products Division, LLC.
  6. Harger Lightning and Grounding.
  7. ILSCO.
  8. O-Z/Gedney; A Brand of the EGS Electrical Group.
  9. Robbins Lightning, Inc.
  10. Siemens Power Transmission & Distribution, Inc.

### 2.2 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

### 2.3 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
  1. Solid Conductors: ASTM B 3.
  2. Stranded Conductors: ASTM B 8.

3. Tinned Conductors: ASTM B 33.

Sizes and types of conductors in four subparagraphs below are typical examples. 28-kcmil bonding cable in "Bonding Cable" Subparagraph below is slightly larger than No. 6 AWG.

4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.

## 2.4 CONNECTORS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- D. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless exothermic-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

## PART 3 - EXECUTION

### 3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 10 AWG and smaller, and stranded conductors for No. 8 AWG and larger unless otherwise indicated.
- B. Conductor Terminations and Connections:
  1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
  2. Connections to Structural Steel: Welded connectors.

### 3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits. Grounding conductors shall be routed within the same raceways as the circuit conductors.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:

Retain applicable subparagraphs below.

1. Feeders and branch circuits.

2. Lighting circuits.
3. Receptacle circuits.
4. Single-phase motor and appliance branch circuits.
5. Three-phase motor and appliance branch circuits.
6. Flexible raceway runs.
7. Armored and metal-clad cable runs.

- C. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.
- D. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.

### 3.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Bonding Common with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.
- C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
  2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
  3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection above grade is required, use a bolted clamp. All connections below grade shall be exothermic-welded.
- D. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install tinned bonding jumper to bond across flexible duct connections to achieve continuity.
- E. Grounding for Steel Building Structure: Install a driven ground rod at base of each corner column and at intermediate exterior columns at distances not more than 60 feet (18 m) apart.

### 3.4 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal. Make tests at ground rods before any conductors are connected.
  - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
  - b. Perform tests by fall-of-potential method according to IEEE 81.
- C. Grounding system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.
- E. Report measured ground resistances that exceed the following values:
  1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.
- F. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION



SECTION 26 0553

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
  - 1. Identification for raceways.
  - 2. Identification of power cables.
  - 3. Identification for conductors.
  - 4. Warning labels and signs.
  - 5. Instruction signs.
  - 6. Equipment identification labels.
  - 7. Miscellaneous identification products.

1.3 ACTION SUBMITTALS

- A. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

1.4 QUALITY ASSURANCE

- A. Comply with ANSI A13.1.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.5 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- C. Coordinate installation of identifying devices with location of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

## PART 2 - PRODUCTS

### 2.1 POWER AND CONTROL RACEWAY IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.
- B. Colors for Raceways Carrying Circuits at 600 V or Less:
  - 1. Black letters on a white field.
  - 2. Legend: Indicate voltage.
- C. Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing ends of legend label.
- D. Snap-Around Labels for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- E. Snap-Around, Color-Coding Bands for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches (50 mm) long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- F. Tape and Stencil for Raceways Carrying Circuits More Than 600 V: 4-inch- (100-mm-) wide black stripes on 10-inch (250-mm) centers diagonally over orange background that extends full length of raceway or duct and is 12 inches (300 mm) wide. Stop stripes at legends.

### 2.2 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each cable size.
- B. Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing ends of legend label.
- C. Self-Adhesive, Self-Laminating Polyester Labels: Preprinted, 3-mil- (0.08-mm-) thick flexible label with acrylic pressure-sensitive adhesive that provides a clear, weather- and chemical-resistant, self-laminating, protective shield over the legend. Labels sized to fit the cable diameter such that the clear shield overlaps the entire printed legend.

- D. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tube with machine-printed identification label. Sized to suit diameter of and shrinks to fit firmly around cable it identifies. Full shrink recovery at a maximum of 200 deg F (93 deg C). Comply with UL 224.
- E. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch (50 by 50 by 1.3 mm), with stamped legend, punched for use with self-locking cable tie fastener.
- F. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of cable it identifies and to stay in place by gripping action.
- G. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches (50 mm) long, with diameter sized to suit diameter of cable it identifies and to stay in place by gripping action.

### 2.3 CONDUCTOR IDENTIFICATION MATERIALS

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide.
- B. Self-Adhesive, Self-Laminating Polyester Labels: Preprinted, 3-mil- (0.08-mm-) thick flexible label with acrylic pressure-sensitive adhesive that provides a clear, weather- and chemical-resistant, self-laminating, protective shield over the legend. Labels sized to fit the conductor diameter such that the clear shield overlaps the entire printed legend.
- C. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of conductor it identifies and to stay in place by gripping action.
- D. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve with diameter sized to suit diameter of conductor it identifies and to stay in place by gripping action.
- E. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tube with machine-printed identification label. Sized to suit diameter of and shrinks to fit firmly around conductor it identifies. Full shrink recovery at a maximum of 200 deg F (93 deg C). Comply with UL 224.
- F. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

### 2.4 EQUIPMENT IDENTIFICATION LABELS

- A. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).

### 2.5 CABLE TIES

- A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.
  - 1. Minimum Width: 3/16 inch (5 mm).
  - 2. Tensile Strength at 73 deg F (23 deg C), According to ASTM D 638: 12,000 psi (82.7 MPa).

3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
4. Color: Black except where used for color-coding.

B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch (5 mm).
2. Tensile Strength at 73 deg F (23 deg C), According to ASTM D 638: 12,000 psi (82.7 MPa).
3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
4. Color: Black.

C. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.

1. Minimum Width: 3/16 inch (5 mm).
2. Tensile Strength at 73 deg F (23 deg C), According to ASTM D 638: 7000 psi (48.2 MPa).
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F (Minus 46 to plus 140 deg C).
5. Color: Black.

## 2.6 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
- F. Attach plastic raceway and cable labels that are not self-adhesive type with clear vinyl tape with adhesive appropriate to the location and substrate.

- G. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot (15-m) maximum intervals in straight runs, and at 25-foot (7.6-m) maximum intervals in congested areas.
- H. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:
  - 1. Outdoors: UV-stabilized nylon.
  - 2. In Spaces Handling Environmental Air: Plenum rated.

### 3.2 IDENTIFICATION SCHEDULE

- A. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:
  - 1. Emergency Power.
  - 2. Power.
  - 3. UPS.
- B. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase. Verify with authority having jurisdiction prior to ordering conductors.
  - 1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder, and branch-circuit conductors.
    - a. Color shall be factory applied for conductor sizes No. 8 AWG and smaller or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
    - b. Colors for 208/120-V Circuits:
      - 1) Phase A: Black.
      - 2) Phase B: Red.
      - 3) Phase C: Blue.
    - c. Colors for 480/277-V Circuits:
      - 1) Phase A: Brown.
      - 2) Phase B: Orange.
      - 3) Phase C: Yellow.
    - d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- C. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.
- D. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
  2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
  3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.
- E. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards or other equipment in finished spaces.
- F. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive warning labels.
1. Comply with 29 CFR 1910.145.
  2. Identify system voltage with black letters on an orange background.
  3. Apply to exterior of door, cover, or other access.
- G. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
- H. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
1. Labeling Instructions:
    - a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.
    - b. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
    - c. Fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.
  2. Equipment to Be Labeled:
    - a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be engraved, laminated acrylic or melamine label.
    - b. Enclosures and electrical cabinets.
    - c. Access doors and panels for concealed electrical items.
    - d. Transformers: Label that includes tag designation shown on Drawings for the transformer, feeder, and panelboards or equipment supplied by the secondary.
    - e. Emergency system boxes and enclosures.
    - f. Dedicated equipment receptacles: indicate circuit ID and equipment served.
    - g. Enclosed switches.

- h. Enclosed circuit breakers.
- i. Enclosed controllers.
- j. Variable-speed controllers.
- k. Contactors.

END OF SECTION

SECTION 26 2816

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
  - 1. Fusible switches.
  - 2. Nonfusible switches.
  - 3. Enclosures.

1.3 DEFINITIONS

- A. NC: Normally closed.
- B. NO: Normally open.
- C. SPDT: Single pole, double throw.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of enclosed switch, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
  - 1. Enclosure types and details for types other than NEMA 250, Type 1.
  - 2. Current and voltage ratings.
  - 3. Short-circuit current ratings (interrupting and withstand, as appropriate).

Retain first subparagraph below if using series rating of overcurrent protective devices.

- 4. Include evidence of NRTL listing for series rating of installed devices.
- B. Shop Drawings: For enclosed switches. Include plans, elevations, sections, details, and attachments to other work.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Field quality-control reports.
  - 1. Test procedures used.
  - 2. Test results that comply with requirements.



3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

C. Manufacturer's field service report.

#### 1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For enclosed switches to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 01782 "Operation and Maintenance Data," include the following:

1. Manufacturer's written instructions for testing and adjusting enclosed switches.

#### 1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: Member company of NETA or an NRTL.

1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

B. Source Limitations: Obtain enclosed switches, components, and accessories from single source from single manufacturer.

C. Product Selection for Restricted Space: Drawings indicate the general location for switches. Provide products which will fit in the allocated space. Ensure that required working space clearances are maintained.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

E. Comply with NFPA 70.

#### 1.8 PROJECT CONDITIONS

A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:

1. Ambient Temperature: Not less than minus 22 deg F (minus 30 deg C) and not exceeding 104 deg F (40 deg C).

#### 1.9 COORDINATION

A. Coordinate layout and installation of switches and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

## PART 2 - PRODUCTS

### 2.1 FUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
  2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
  3. Siemens Energy & Automation, Inc.
  4. Square D; a brand of Schneider Electric.
- B. Type HD, Heavy Duty, Single Throw, 240 or 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate indicated fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
  2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
  3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
  4. Hookstick Handle: Allows use of a hookstick to operate the handle.
  5. Lugs: Mechanical type, suitable for number, size, and conductor material.

### 2.2 NONFUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
  2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
  3. Siemens Energy & Automation, Inc.
  4. Square D; a brand of Schneider Electric.
- B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
  2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.

## 2.3 ENCLOSURES

- A. Enclosed Switches: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.
  - 1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
  - 2. Outdoor Locations: NEMA 250, Type 3R.
  - 3. Wet or Damp, Indoor Locations: NEMA 250, Type 3R.
  - 4. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine elements and surfaces to receive enclosed switches for compliance with installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Install individual wall-mounted switches with top of enclosures at uniform height unless otherwise indicated. Maximum height to top of enclosure shall be 6'-8" above finished floor.
- B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- C. Comply with NECA 1.

### 3.3 IDENTIFICATION

- A. Comply with requirements in Section 16075 "Electrical Identification."
  - 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
  - 2. Label each enclosure with engraved metal or laminated-plastic nameplate.

### 3.4 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
  - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Acceptance Testing Preparation:
  - 1. Test insulation resistance for each enclosed switch, component, connecting supply, and feeder circuit.

2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
3. Perform the following infrared scan tests and inspections and prepare reports:
  - a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each enclosed switch. Remove front panels so joints and connections are accessible to portable scanner.
  - b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each enclosed switch 11 months after date of Substantial Completion.
  - c. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

D. Enclosed switches will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies enclosed switches and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

### 3.5 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

END OF SECTION

SECTION 31 2260

TRENCH SAFETY SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Trench safety system for the construction of trench excavations.
- B. Trench safety system for excavations which fall under provisions of State and Federal trench safety laws.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Prices:
  - 1. Measurement for trench safety systems used on trench excavations is on a linear foot basis measured along the centerline of the trench, including manholes and other line structures.
- B. Stipulated Price (Lump Sum). If the Contract is a Stipulated Price Contract, payment for work in this Section is included in the total Stipulated Price.

1.3 DEFINITIONS

- A. A trench shall be 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 will apply to larger open excavations if the erection of structures or other installations limits the space between the excavation slope and these installations to dimensions equivalent of a trench as defined.
- C. Trench Safety Systems include but are not limited to sloping, sheeting, trench boxes or trench shields, sheet piling, cribbing, bracing, shoring, dewatering or diversion of water to provide adequate drainage.
- D. Trench Safety Program is the safety procedures governing the presence and activities of individuals working in and around trench excavations.

1.4 SUBMITTALS

- A. 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.

- B. Construction and shop drawings containing deviations from OSHA standards or special designs shall be sealed by a licensed Engineer retained and paid by Contractor.
- C. Review of the safety program by the City Engineer will only be in regard to compliance with this specification and will not constitute approval by the City Engineer nor relieve Contractor of obligations under State and Federal trench safety laws.
- D. Submit certification that trench safety system will not be subjected to loads exceeding those which the system was designed to withstand according to the available construction and geotechnical information.

#### 1.5 REGULATORY REQUIREMENTS

- A. Install and maintain trench safety systems in accordance with the detail specifications set out in 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. The sections that are incorporated into these specifications by reference include Sections 1926-650 through 1926-652.
- B. A reproduction 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 City projects. The City 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. 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. Trench Safety Geotechnical Information: Geotechnical information obtained for use in design of the trench safety system.

#### 1.6 INDEMNIFICATION

- A. Contractor shall indemnify and hold harmless the City, its employees and agents, from any and all damages, costs (including, without limitation, legal fees, court costs, and the cost of investigation), judgements 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 City in case the City 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

3.1 INSTALLATION

- A. Install and maintain trench safety systems in accordance with provisions of OSHA 29CFR.
- B. Install specially designed trench safety systems in accordance with the Contractor's trench excavation safety program for the locations and conditions identified in the program.
- C. A competent person, as identified in the Contractor's Trench Safety Program, shall verify that trench boxes and other premanufactured systems are certified for the actual installation conditions.

3.2 INSPECTION

- A. Contractor, or Contractor's independently retained consultant, shall make daily inspections 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 the necessary precautions have been taken by Contractor to safeguard personnel entering the trench.
- C. Maintain a permanent record of daily inspections.

3.3 FIELD QUALITY CONTROL

- A. Contractor shall verify specific applicability of the selected or specially designed trench safety systems to each field condition encountered on the project.

END OF SECTION

SECTION 31 2922

SODDING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Restoration of existing lawn areas disturbed by construction shall be by installation of new sod.
- B. Planting of sod within areas designated on Drawings for purpose of surface stabilization, channel stabilization or vegetation buffer strips.
- C. Sod is defined as blocks, squares, strips of turfgrass, and adhering soil used for vegetative planting. To be placed edge to edge for complete coverage.
- D. Lawn is defined as ground covered with fine textured grass kept neatly mowed.

1.2 MEASUREMENT AND PAYMENT

- A. No separate payment will be made under this section. Include cost of such work in conformance with the Bid Proposal.

1.3 SUBMITTALS

- A. Conform to requirements of Section 013300 - Submittal Procedures.

1.4 QUALITY ASSURANCE

- A. Sod only when weather and soil conditions are deemed by Project Manager to be suitable for proper placement.
- B. Water and fertilize new sod.
- C. Guarantee sod to be growing 30 days after substantial completion.
- D. Maintenance Period:
  - 1. Begin maintenance immediately after each section of grass sod is installed and continue for 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. Install disease control within guidelines set forth by Structural Pest Control Board of the State of Texas.
- E. Notify Project Manager 10 days before end of maintenance period for inspection.



PART 2 PRODUCTS

2.1 SOD

- A. Species: Bermuda (Cynodon Dactylon), Buffalo (Buchloe Dactyloides), or St. Augustine (Stenotaphrum Secundatum) Gulf Coast variety to match existing sod.
- 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.
- C. Size: 12 inch wide strips, uniformly 2 inches thick with clean-cut edges.
- D. Sod is to be supplied and maintained in healthy condition as evidenced by grass being normal green color.

2.2 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.

2.3 WEED AND INSECT TREATMENT

- A. Provide acceptable treatment to protect sod from weed and insect infestation. Submit treatment method to Project Manager for approval. Install insect and disease control within guidelines set forth by Structural Pest Control Board of the State of Texas.

2.4 WATER

- A. Potable, available on-site through Contractor's water trucks. Contractor may use City of Houston hydrants when water use is measured through Contractor's meter. Do not use private resident's water.

2.5 BANK SAND

- A. Free of clay lumps, roots, grass, salt or other foreign material.

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify that soil placement and compaction have been satisfactorily completed. Verify that soil is within allowable range of moisture content.
- B. Top soil 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 rate of 25 pounds per 1000 square feet. 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.

### 3.2 APPLICATION

- A. Full Sodding: Lay sod with closely fitted joints leaving no voids and with ends of sod strips staggered. Lay sod within 24 hours of harvesting.
- B. On slopes 2:1 and steeper, lay sod perpendicular to slope and secure every row with wooden pegs at maximum 2 feet on center. Drive pegs flush with soil portion of sod.
- C. Prior to placing sod, on slopes 3:1 or where indicated, place Hold/Gro or Roll Lite or equal over topsoil. Securely anchor in place with posts sunk firmly into ground at maximum 16 feet on center along pitch of slope and equal to width of wire mesh horizontally across slopes.
- D. After sod is laid, irrigate thoroughly to secure 6-inch minimum penetration into soil below sod.
- E. 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 Project Manager for approval, prior to construction.

### 3.3 MAINTENANCE

- A. Watering:
  - 1. Water lawn areas once a day with minimum 1/2 inch water for 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 afternoon or at night 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. Do not remove more than one-half of grass leaf surface.
4. Mow sodded areas requiring mowing within 1 month after installation with light-weight rotary type mower. Mow sod only when dry and not in saturated or soft condition.
5. Remove grass clippings during or immediately after mowing.

C. Fertilizer and Pest Control:

1. Evenly spread fertilizer composite at rate of 40 pounds per 5000 square feet or as recommended by manufacturer. Do not place fertilizer until 2 weeks after placement of sod.
2. Restore bare or thin areas by topdressing with 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.

- D. Restrict all traffic from sodded areas until sod is established or for minimum 10 days during growing season. Use wood lath and plastic tape to cordon sodded areas. Maintain tape and lath throughout for minimum 30 days during growing season.

3.4 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 other Contractor material and equipment from project site at termination of establishment period.
- C. Dispose of unused materials and rubbish in accordance with Section 017418 – Waste Material Handling, Testing and Disposal.

END OF SECTION

SECTION 32 1313

CONCRETE PAVEMENT

PART 1 GENERAL

1.1 DESCRIPTION

- A. This item shall consist of a pavement of Portland cement concrete with reinforcement. The pavement shall be as shown on the drawings, and may or may not include monolithic curbs. The pavement includes driveways.
- B. The pavement shall be constructed as herein specified on the prepared subgrade or other base course in conformity with the thickness and typical cross sections shown on the drawings, and to the lines and grades established by the Engineer. All materials shall be provided from an approved Texas Department of Transportation (TxDOT) supplier and it shall be the responsibility of the Contractor to provide certification that such approval has been met. In addition, other tests or approvals may be required at the discretion of the Engineer.
- C. Contractor shall conform to the specification stated in this section unless stated on the drawings.

1.2 MATERIALS

- A. Standard mix design shall contain minimum five and one-half (5 ½) sacks (94 pounds per sack) of cementitious material per cubic yard and achieve a minimum compressive strength of 3,500 psi at 28 days, with the addition of fly ash, as necessary.
- B. High Early Strength Concrete shall contain seven (7) sacks of Portland cement per cubic yard and may be produced from either Type I, Type II, or Type III Portland cement with other chemical admixtures.
- C. Rapid Setting High Early Strength Concrete Mix also contains 7 sacks of Portland cement per cubic yard, with other chemical admixtures and its applications are designed for early opening of the concrete road pavement to traffic within less than 24 hours after completing the pour and finish, and shall meet the approval of the Design Engineer.
- D. An accelerating agent (Type C), conforming to ASTM C494, "Specification for Chemical Admixtures for Concrete" may be used. All chemical admixtures shall be used in accordance with the manufacturer's recommendations.

- E. The use of fly ash is acceptable and when used, the mix design shall contain five and one-half (5½) sacks of cementitious material per cubic yard with a fly ash content of not more than 25% by weight, and will achieve a minimum compressive strength of 3,500 psi at 28 days. The contractor shall confirm in writing that the use of fly ash will not interfere with the performance of the owner's products and materials that will be in contact with the concrete. It is recommended that the percent of fly ash by weight be reduced to a maximum of 20% during cold weather concreting (average ambient temperature, over a 24-hour period after placement, less than 50°F). Fly ash shall be Class C or Class F, conforming to the requirements of ASTM C618, "Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete".

Fly ash shall have a minimum combined Oxide content of 50% or 70% for Class C or Class F respectively. Do not use Class C fly ash in sulfate-resistant (Type II cement) concrete.

- F. Concrete shall be composed of Portland cement, water, chemical admixtures and coarse and fine aggregates, as outlined below:
1. Portland cement shall meet the requirements of ASTM C150, "Specification for Portland Cement". Unless otherwise permitted or required, cement shall be Type I, Type II, or Type III.
  2. Mixing water for concrete shall conform to the requirements of ASTM C94, "Specification for Ready-Mixed Concrete".
  3. Chemical admixtures shall conform to the following specifications:
    - a. Air-entraining admixtures shall conform to the requirements of ASTM C260, "Specification for Air-Entraining Admixtures for Concrete".
    - b. Chemical admixtures shall conform to the requirements of ASTM C494, "Specification for Chemical Admixtures for Concrete".
- G. Aggregates shall conform to ASTM C33, "Standard Specifications for Concrete Aggregates".
- H. Coarse aggregate shall consist of durable particles of gravel, crushed stone, or combinations thereof, free from frozen material or injurious amounts of salt, alkali, vegetable matter, or other objectionable material either free or as an adherent coating, and its quality shall be reasonably uniform throughout. It shall contain not more than 0.25 percent by weight of clay lumps and not more than 1.0 percent by weight of laminated and/or friable particles. When tested by ASTM C136, "Sieve Analysis of Fine and Coarse Aggregates" and C117, "Mineral Aggregates by Washing", it shall meet the following grading requirements:

TABLE I  
 COARSE AGGREGATE GRADATION

	% Retained by Wt.		
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%

The loss by decantation shall be a maximum of one percent (1%).

- I. Fine aggregate shall consist of clean, hard, durable and uncoated particles of natural or manufactured sand or a combination thereof, with or without mineral filler. It shall be free from frozen material, or injurious amounts of salt, alkali, vegetable matter or other objectionable material and it shall contain not more than 0.5 percent, by weight, of clay lumps. When subjected to the color test for organic impurities, ASTM C40 "Standard Test Method for Organic Impurities in Fine Aggregates for Concrete", the fine aggregate shall not show a color darker than the standard.
  
- J. Unless otherwise specified, fine aggregate shall meet the following grading requirements:

TABLE II  
 FINE AGGREGATE GRADATION

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%

- K. Fine aggregate shall be subjected to ASTM D2419, "Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate". The sand equivalent shall be not less than 80.
  
- L. Mineral filler shall consist of stone dust, clean crushed sand or other approved inert material.
  
- M. Unless otherwise designated on the drawings, or herein, all bar reinforcement shall be deformed and shall conform to ASTM A615, "Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement", Grade 60, open hearth, basic oxygen or electric furnace new billet steel. The use of Grade 40 is permissible for bars that must be bent.

The use of prefabricated deformed steel bar mats, conforming to ASTM A184, "Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement", is not permitted.

- N. Boards for expansion joint filler shall be 3/4-inch finished thickness. The material for the boards shall consist of Class A redwood or composite material as approved by the Engineer. The joint filler shall meet the requirements of ASTM D545, "Standard Test Methods for Preformed Expansion Joint Fillers for Concrete Construction (Non-Extruding and Resilient Types)" and ASTM D1751, "Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-Extruding and Resilient Bituminous Types)." Joint sealant shall be Type II or III and shall meet the requirements of ASTM D6690, "Standard Specifications—for Joint and Crack Sealants, Hot- Applied for Concrete and Asphalt Pavements." Joint sealant for expansion joints shall be installed one-quarter inch ( $\frac{1}{4}$ " ) below the top of pavement elevation. Prefabricated expansion joints may be used with approval by the Engineer.
- O. Load transmission devices shall consist of an eighteen-inch (18") smooth dowel placed equidistance through the center of the expansion joint and a locking device to hold the dowel parallel to the pavement grade and parallel to the longitudinal direction of the pavement.
- P. The dowels shall be three-fourths inch ( $\frac{3}{4}$ " ) in diameter for a pavement thickness of six inches (6"). The dowels shall be one inch (1") in diameter for pavement thickness of seven inches (7") or eight inches (8"). The dowels shall be one and one-quarter inch ( $1\frac{1}{4}$ " ) in diameter for pavement thickness of nine inches (9") or more. All dowels shall be smooth and may be sheared or saw cut to the desired length.
- Q. The locking device shall be steel plate type (flat or wing), or a synthetic type of sleeve with the locking device being an integral part of the sleeve. If a metal plate-locking device is used on the dowel, a plastic sleeve with a complete closed end must be placed over the dowel on one side of the expansion joint. The synthetic type of sleeve with locking device satisfies this requirement.
- R. Tie bars are to be of the same diameter and spacing as the reinforcing steel being used in the pavement, and shall be thirty inches (30") minimum in length. Type III - adhesives meeting the requirements of TxDOT specification MS-6100 "Epoxies and Adhesives" shall be used for installing drilled-in reinforcing steel and dowels, into the existing concrete pavements.

### 1.3 STORAGE OF MATERIALS

- A. Cement shall be stored in well ventilated weathertight buildings, bins, or silos which shall exclude moisture and contaminants.
- B. Aggregate stockpiles shall be arranged and used in such a manner as to avoid contamination, with other materials or with other sizes of like aggregates. To ensure that this condition is met, any test for determining conformance to requirements for cleanliness and grading shall be performed on samples secured in accordance with ASTM D75, "Practice for Sampling Aggregates".

Frozen or partially frozen aggregates shall not be used. Unless otherwise authorized by the Engineer, all aggregate shall be stockpiled at least 24-hours prior to use, to reduce free moisture content.

- C. Chemical admixtures shall be stored in such a manner as to avoid contamination, evaporation, or damage. For those used in the form of suspensions or non-stable solutions, agitating equipment shall be provided to assure thorough distribution of the ingredients. Liquid admixtures shall be protected from freezing and from temperature changes which would adversely affect their characteristics.

1.4 PROPORTIONING OF CONCRETE

- A. Concrete for all parts of the work shall be of the specified quality, capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by this item and the contract documents.
- B. The specified compressive strength of the concrete, for each portion of the structure, shall be as designated in the contract documents. Strength requirements shall be based on the 28-day and 7-day compressive strength, respectively.

1.5 CONCRETE CLASIFICATION

- A. Concrete shall be classified as shown by Table No. 3.

TABLE 3 - Concrete Classification

Class	Nominal Coarse Aggregate	Cement Sacks Per C.Y.	Minimum 28-day Compressive Strength(f'c) (psi)	Minimum 7-day Compressive Strength(f'c) (psi)	Water - Cement Ratio, by		
					Non-Air Conc. Max	Entr. Min. -	Air Entr. Conc. Min. - Max
	1-1/2"	7	4,000	2,800	0.42 - 0.48		0.38 - 0.40
	3/4"	7	4,000	2,800	0.48 - 0.55		0.43 - 0.49
	1-1/2"	6	3,500	2,400	0.49 - 0.56		0.44 - 0.52
	3/4"	6	3,500	2,400	0.56 - 0.64		0.50 - 0.58
	1-1/2"	5.5	3,000	2,100	0.53 - 0.61		0.48 - 0.56
	3/4"	5.5	3,000	2,100	0.61 - 0.70		0.54 - 0.63
	1-1/2"	5	2,500	1,750	0.59 - 0.67		0.53 - 0.62

\*Other nominal maximum aggregate sizes will be allowed, based on the thickness of section or spacing of reinforcing bar, or other criteria, as approved by the Design Engineer.



1.6 SELECTION OF PROPORTIONS

- A. Proportions of materials for concrete shall be established to provide:
- B. Workability and consistency to permit concrete to be worked readily into forms and around reinforcement under conditions of placement to be employed without segregation or excessive bleeding.
- C. Strength requirements in accordance with Table 3.
- D. Resistance to special exposure as required by the Engineer and as specified in the contract documents or in Special Provisions.
- E. Unless otherwise permitted, the concrete mix design shall be proportioned to provide a slump between 1 and 6 inches. A slump range of 1" to 3½" shall be used for concrete laid with a slip form paver, while vibrated concrete shall have a slump range of 2½" to 6", when tested in accordance with ASTM C143, "Standard Test Method for Slump of Hydraulic Cement Concrete". A slump test will be made for each sample of concrete obtained, or when slumps appear to be outside specification requirements. The Engineer may reject any concrete shown to be outside of these requirements.
- F. The allowable air-content for moderate exposures is:
  - 1-1/2" aggregate (No. 2) - 2.5 - 4.5 percent
  - 3/4" aggregate (No. 5) - 3.5 - 5.0 percent
- G. All concrete pavement shall have a minimum design compressive strength of 3,500 psi at twenty-eight (28) days. A minimum of four (4) test cylinders shall be made for each one hundred and fifty (150) cubic yards, or portion thereof, placed each day. Samples shall be taken in accordance with ASTM C172, "Standard Practice for Sampling Freshly Mixed Concrete" and molded and cured in accordance with ASTM C31, "Standard Practice for Making and Curing Concrete Test Specimens in the Field".
- H. All test specimens shall be prepared in accordance with ASTM C617, "Standard Practice for Capping Cylindrical Concrete Specimens" and tested in accordance with ASTM C39, "Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens". Two (2) specimens shall be tested at seven (7) days and two (2) specimens shall be tested at twenty-eight (28) days. The acceptance test results shall be the average of the two specimens tested for each age interval. If one specimen in a test age indicates evidence of improper sampling, handling, molding or testing, it shall be discarded and the strength of the remaining specimen shall be considered the test result. Should both specimens in a test interval show any of the aforementioned defects, the Engineer may request that cores be taken in the affected area.
- I. Additional test specimens may be required due to concrete placing conditions and due to use of high strength concrete. No extra compensation shall be allowed for materials and work involved in fulfilling these requirements.

1.7 EQUIPMENT

- A. All equipment necessary for the construction of concrete pavement shall be on the job and shall have been approved by the Engineer as to condition, before the Contractor will be permitted to begin construction operations on which the equipment is to be used.
- B. A template or other approved method, for checking the contour of the subgrade shall be provided and operated by the Contractor. The template shall rest upon the side forms and shall be of such strength and rigidity that under a test made by changing the support to the center, it shall not show a deflection of more than one-half inch (1/2"). It shall be provided with accurately adjustable rods projecting downward to the subgrade at 1-foot intervals and these rods shall be adjusted to the required cross-section of the bottom of the slab, when the template is resting upon the side forms.
- C. Side forms shall be of metal of approved cross section. The preferred depth of the form shall be equal to the required edge thickness of the pavement. Forms with depths greater or less than the required edge thickness of the pavement will be permitted, provided the difference between the form depth and the edge thickness is not greater than 1-inch, and further provided that forms of a depth, less than the pavement edge are brought to the required edge thickness by securely attaching wood or metal strips, of approved section, to the bottom of the form, or by grouting under the form.
- D. The length of form sections shall be not less than ten feet (10') 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 100-foot radius or less.
- E. Forms shall be of 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, the impact and vibration of the finishing machine. The forms shall be free from warp, bends or kinks and shall be sufficiently true to provide a reasonable straight edge on the concrete and the top of each form section, when tested with a straight edge, shall conform to the requirements specified for the surface of the completed pavement. Sufficient forms shall be provided for satisfactory prosecution of the work.
- F. A minimum of two hand vibrators is required at the jobsite when placing concrete. A hand vibrator shall be used around all load transfer devices and intersections where screeds or slip form pavers cannot be operated.
- G. Pavement shall be finished by machine, except as hereinafter provided. Placement shall be the Contractor's responsibility and shall be based upon equipment sequences utilized in accordance with the recommendations and practices of ACI 304R, "Guide for Measuring, Mixing, Transporting, and Placing Concrete", and with the approval of the Engineer.

- H. The Contractor shall furnish and maintain at least two standard 10-foot steel or aluminum straight edges.
  - I. Where applicable, the Contractor shall furnish a sufficient number of bridges equipped to ride on the forms and span the pavement for finishing operations and for the installation and finishing of joints and center strips. All necessary finishing and edging tools shall be furnished as may be required to complete the pavement in accordance with the drawings.
- 1.8 SLIP FORM PAVER
- A. Slip form pavers are allowed.
- 1.9 SUBGRADE AND FORMS
- A. The subgrade shall be excavated as required, all unstable or otherwise objectionable material removed, and all holes, ruts, and depressions filled with approved material, as per Item 205 "Subgrade". Rolling and sprinkling shall be performed when, and to the extent directed, and the roadbed shall be completed to or above the drawings of the typical sections shown on plans and the lines and grades established by the Engineer. Material excavated in the preparation of the subgrade shall be utilized in the construction of adjacent shoulders and slopes, and any additional material required for the completion of the sections shall be secured from sources indicated on plans or designated by the Engineer. Drainage of the roadbed shall be maintained at all times.
  - B. The subgrade shall be finished to the exact section of the bottom of the pavement as shown on plans, and tested with the approved template operated and maintained by the Contractor. The subgrade shall be maintained in a smooth, compacted condition, in conformity with the required section and established grade until the pavement is placed, and shall be kept thoroughly wetted down sufficiently in advance of placing any pavement to insure its being in a firm and moist condition for at least 2 inches below the prepared surface.
  - C. Sufficient subgrade shall always be prepared in advance to insure satisfactory prosecution of the work. No equipment or hauling shall be permitted on the prepared subgrade, except on special permission of the Engineer, which will be granted only in exceptional cases and only where a suitable protection in the form of two- ply timber mats or other approved material is provided.
  - D. The subgrade under the forms shall be firm and cut true to grade so that each form section when placed will be firmly in contact for its whole length and base width, and exactly at the established grade. Any subgrade under the forms below established grade shall be corrected, using suitable material, placed, sprinkled and rolled as directed. Forms shall be staked with at least three pins for each ten-foot section. A pin shall be placed at each side of every joint. Form sections shall be tightly joined and keyed to prevent relative displacement. Forms shall be cleaned and oiled each time they are used.

- E. Forms shall be set for a sufficient distance in advance of the point where concrete is being placed to permit a finished and approved subgrade length of not less than 300 feet ahead of concrete placement, or as approved by the Engineer. Conformity of the grade and alignment of forms shall be checked immediately prior to placing concrete and all necessary corrections made by the Contractor. Where any form has been disturbed or any subgrade becomes unstable, the form shall be reset and rechecked. In exceptional cases, the Engineer may require suitable stakes driven to the grade of the bottom of the forms to afford additional support. Sufficient stability of forms to support the equipment operated thereon and to withstand its vibration without springing or settlement shall be required. If forms settle over one-eighth inch (1/8") under finishing operation, paving operations shall be stopped and the forms shall be reset to line and grade.
- F. Forms shall remain in place for not less than 8 hours after the concrete has been placed. They shall be carefully removed in such a manner that little or no damage will be done to the edge of the pavement. Any damage resulting from this operation shall be immediately repaired. After the forms have been removed, the ends of all joints shall be cleaned, and any honeycombed areas pointed up with an approved mortar.
- G. Immediately after pointing is complete, the form trench shall be filled with earth from the shoulders in such manner as to shed water from rainfall or curing away from the edge of the pavement. On completion of the required curing, the subgrade or shoulders adjacent to the pavement shall be placed in condition to maintain drainage.

#### 1.10 REINFORCING STEEL AND JOINT ASSEMBLIES

- A. All reinforcing steel, tie bars and load transmission units used in accordance with plan provisions meeting the requirements of Item 440, "Reinforcing Steel", shall be accurately placed and secured in position in accordance with the details shown on drawings.
- B. Reinforcing bars shall be secured on alternating intersections and splices. The tie bars shall be installed in required position by the method and device shown on drawings, or by approved method and device equivalent thereto. Bar coatings required by plans, and of material specified, shall be completed and the bars and coating shall be free of rust, dirt or other foreign matter at the time of installation in the concrete.
- C. Reinforcing bars shall be supported on bar chairs or other approved devices placed on maximum thirty-six inches (36") center each way, and placed so that the reinforcing bar is located at the centerline of the concrete.

- D. Where plans require an assembly of parts at pavement joints, the assembly shall be completed, placed at required location and elevation, and all parts rigidly secured in required position by the method and devices shown on plans, or by approved method and devices equivalent thereto. Dowel bars shall be accurately installed in joint assemblies in accordance with drawings, each parallel to the pavement, and shall be rigidly secured in required position by such means (as shown on plans, or approved equivalent thereto) that will prevent their displacement during placing and finishing of the concrete. The assembled units comprising the load transmission devices shall be accurately installed in joint assemblies in accordance with plans, each unit vertical with its length perpendicular to the centerline of the pavement, and all units shall be rigidly secured in required position by such means (as shown on drawings, or approved equivalent thereof) that will prevent their displacement during placing and finishing of the concrete. Leader boards, joint filler and other material used for forming joints shall be accurately notched to receive each load transmission unit. All load transmission units shall be free of rust and clean when installed in the concrete.

#### 1.11 CONCRETE PLACING

- A. Except by specific written authorization of the Engineer, concrete shall not be placed when the ambient temperature is below 40°F and falling. Concrete may be placed when the ambient temperature is above 35°F and rising, the ambient temperature being taken in the shade and away from artificial heat.
- B. The Contractor shall have available a sufficient supply of approved cotton mats, polyethylene sheeting or other approved covering materials to immediately protect concrete if the air temperature falls to 32 F, or below, before concrete has been in place for less than four (4) hours. Such protection shall remain in place during the period the temperature continues below 32°F, or for a period of not more than five (5) days. Neither salt nor other chemical admixtures shall be added to the concrete to prevent freezing. The Contractor shall be responsible for the quality and strength of concrete under cold weather conditions and any concrete damaged by freezing shall be removed and replaced at the Contractor's expense.
- C. The temperature of the concrete shall at no time exceed 100°F.
- D. When the concrete reaches a temperature of 85°F, retarders shall be introduced into the mixture and shall continue to be used until the concrete reaches a temperature of 95°F.
- E. After 95°F and through 100°F, a plasticizer shall be introduced into the mixture. After 95°F, ice may be used to control temperature, in lieu of a plasticizer.

- F. For concrete between temperatures of 85°F through 95°F, the slump shall be as specified in Item 360. For concrete with temperatures greater than 95° F, slumps shall be as specified by the Engineer.
- G. The amount of retarder or plasticizer, introduced into a mixture, shall be in accordance with the manufacturer's recommendations. See section 360.2, Materials, for requirements of admixtures.
- H. No concrete shall be used if the concrete has developed initial set, or which is not in place within 1-1/2 hours after the initial water has been added.
- I. Pouring concrete during inclement weather, which would adversely affect the quality and/or finish of the concrete pavement does not relieve the contractor from his responsibility to provide a pavement that complies with the specification.

#### 1.12 JOINTS

- A. All transverse and longitudinal joints in the pavement shall be of the type or the alternate type shown on the drawings, shall be constructed at required locations, on required alignment in the required relationship to tie bars and joint assemblies and in accordance with the details shown on the drawings.
- B. Normally, the stoppage of the placement of concrete shall be scheduled to occur at proposed expansion joints, or at proposed longitudinal joints located between traffic lanes. If it becomes necessary to stop the placement of concrete at an unscheduled location due to unforeseen circumstances, the stoppage may occur at a proposed contraction joint, or at other locations with the approval of the Engineer. The following provisions shall govern for each type of joint at which the placing of concrete is stopped:
  - C. When the placing of concrete is stopped at any expansion joint, the complete jointed assembly shall be installed and rigidly secured in required position as shown on plans. A bulkhead of sufficient cross sectional areas to prevent deflection, to receive the load transmission units or dowels, as the case may be, and shaped accurately to the cross section of the pavement shall be provided and installed as a back-up for the joint filler and rigidly secured in required position to permit accurate finishing of the concrete up to the joint. After the concrete has been finished to the joint, formation of the joint seal space and finishing of the joint shall be executed as specified herein and in accordance with plan requirements. The back-up bulkhead shall remain in place until immediately prior to the time when concrete placing is resumed, when it shall then carefully be removed in such manner that no element of the joint assembly will be disturbed. The exposed portions of the joint assembly shall be free of adherent concrete, dirt or other material at the time placing of concrete is resumed.

- D. All contraction and longitudinal joints that are not at the edge or end of a pour shall be saw cut. Metal or fiber strips placed in the uncured concrete will not be permitted. Where sawed joints are permitted by the Engineer, they shall be sawed as soon as sawing can be accomplished, without damage to the pavement, and as directed by the Engineer. Once sawing has commenced, it shall be continued until completed. The saw cut shall be made with one pass of the concrete saw. Sawing must be accomplished even in rain or cold weather. All sawing must be completed within twenty-four hours of the concrete pavement placement. Should the sawing for any day's placement fail to be completed within forty-eight hours; the following concrete placement shall be limited to the amount that was sawed on time. The limitation shall continue until the sawing crew demonstrates it can handle a larger volume of sawing.
- E. The sawed cut shall be a minimum of 1/4-inch width and have a depth of one-fourth the thickness of the pavement. After sawcutting, the joint shall be sealed with joint sealer, in accordance with the instructions supplied by the manufacturer of the joint sealant.
- F. Unless otherwise specified, transverse sawed control joints shall be constructed at twenty-foot (20') intervals measured along the longitudinal axis of the roadway, or as directed by the Engineer.
- G. When placing of concrete is stopped at a longitudinal joint, all applicable provisions of Section 360.7 shall apply in addition to the following requirements:
- H. The face of the bulkhead at the joint shall be grooved or recessed as necessary to provide the required spaces for the top and bottom breaker strips as shown on plans. The bulkhead shall be either drilled or notched to receive the tie bars. Tie bars shall be secured in required position by use of adequate transverse bracing and vertical supports meeting the approval of the Engineer.
- I. When placing of concrete is stopped at a contraction joint, all applicable provisions of Section 360.7 shall apply, in addition to the following requirements:
- J. The face of the bulkhead adjoining the slab end shall be notched and grooved to fit the exposed half-screen of the joint assembly and shall be shaped to form the slab end at the center of joint as shown on plans. The half-width of joint seal-space may be formed by a strip of required section placed and removed in accordance with drawing requirements for construction of transverse contraction joints. The Contractor shall have available a bulkhead shaped to the section of the pavement, and of a section to form a key not less than 1 inch in depth and 2 inches in height at the center of depth of the pavement. This bulkhead must be drilled to permit the continuation of all longitudinal reinforcing steel through the construction joint, and shall be of sufficient section and strength to prevent deflection.

- K. Concrete shall be placed and finished to this bulkhead. Any concrete remaining on the subgrade ahead shall be removed and disposed of as directed. When placing of concrete is resumed before the concrete has set to the extent that the concrete will stand on removal of the bulkhead, the new concrete shall be rodded, and the key in the first concrete must be carefully preserved. An edge created by a construction joint of this type shall have a joint seal space and shall be sealed as required for construction joints.
- L. Transverse expansion joints shall be formed perpendicular to the centerline and surface of the pavement, and shall be constructed in accordance with the sequence of operations shown on drawings. After the transverse finishing machine and before the longitudinal finishing machine has passed over the joint, the contractor shall test the joint filler for correctness of position and make any required adjustment in position of the filler, and shall install the joint seal space form in accordance with plans. After removal at the joint seal form as required by plans, the joint seal space above the joint filler shall be thoroughly cleaned and the concrete faces of the joint seal space shall be left true to line and section throughout the entire length of the joint. On completion of curing of the pavement, the joint sealing filler of the type specified shall be placed in accordance with drawings.
- M. The faces of the joint seal space shall be clean and surface dry at the time joint sealing filler is placed. On completion of the joint seal, the pavement adjacent to the joint shall be left free of joint sealing material.

#### 1.13 FINISHING

- A. All finishing shall be in accordance with ACI 325.6R, "Texturing Concrete Pavements".
- B. The Engineer shall approve the straight edge. The surface shall not vary from the straight edge by more than one-sixteenth inch (1/16") per foot from the nearest point of contact, and in no case shall the maximum ordinate from a ten-foot straight-edge to the pavement be greater than one-eighth inch (1/8"). Any high spots causing a departure from the straight edge in excess of that specified shall be ground down by the Contractor to meet the surface test requirements, when required by the Engineer.

#### 1.14 CURING

- A. The Contractor shall prevent surface drying of the pavement before application of curing system by means that may include water fogging, use of wind screens or the use of evaporation retardants. He shall provide for protection of freshly laid concrete against pitting and washing from rain, by having on the job at the time and place of pouring, sufficient canvas and/or waterproof covering material to protect all placed concrete.



- B. Liquid Membrane. Liquid membrane curing shall be used as per Item 526, "Membrane Curing".
- C. Additional Curing Methods. Other methods meeting the requirements of ACI 308R, "Standard Practice for Curing Concrete" must be submitted by the Contractor in writing prior to concrete placement and approved by the Engineer.

#### 1.15 PROTECTION OF PAVEMENT

- A. The Contractor shall erect and maintain the barricades required by the plans, and such other barricades and approved devices as will exclude public traffic and traffic of his employees and agents from the newly placed pavement for the periods of time hereinafter prescribed. Portions of the roadway, or crossings of the roadbed required to be maintained open for use by traffic, shall not be obstructed by the above-required barricades. Crossings of the pavement required by plans, or by construction sequence, during the period prior to opening to traffic as herein specified, shall be provided with an adequate and substantial bridge, approved by the Engineer.
- B. Cracked pavement shall be cored by the Owner any time after the 28- day cure time is complete. The location of these cores shall be selected by the Engineer. Pavement that has developed full depth cracks (greater than  $t/4$  inch depth, where  $t$  = thickness of pavement) may, at the Owner's option, be left in place and repaired by the epoxy injection method. Otherwise the cracked pavement shall be removed and replaced.
- C. There shall be no additional payment for repairs or replacement. Basis of removal for cracked pavement shall be determined by the engineer and the extent of this pavement removal shall be based on the crack pattern and number of cracks in each panel. If the cracks are wide spread (vertically or horizontally) or close to expansion joint or control joint, and over a large area of 12' wide panel, then entire panel shall be removed and replaced as determined by the Engineer.
- D. Surface cracks  $t/4$  inches and less in depth may be repaired by the epoxy injection method at no cost to the County.
- E. Prior to epoxy injection, the Contractor shall submit to the County for approval, the injection method to be used. The Contractor shall furnish a minimum of two-year warranty when utilizing the epoxy injection method.
- F. New pavement sections shall be closed to all traffic, both PUBLIC and CONSTRUCTION, until the concrete has attained a compressive strength of twenty-seven hundred (2700) psi. If the Contractor or the Owner desires to open the new pavement section to traffic early, an additional set of test cylinders must be requested for an early test. If the early test indicates that the minimum compressive strength requirement has been met, and if all other requirements of this specification have been met, the pavement section can be opened to traffic. If the Contractor requests the early test, the Contractor will pay the cost.

If the Owner requests the early test, the Owner will pay the cost. Such opening of a new pavement section, to PUBLIC or CONSTRUCTION traffic, shall in no manner relieve the Contractor from his responsibility of the work.

- G. On those sections of pavement to be opened to PUBLIC traffic, the pavement shall be thoroughly cleaned, stable material shall be placed, graded, and compacted against the pavement edge or curb unless specified otherwise, joints shall be sealed and cured, and all required traffic control work shall be performed for the safety of the traffic.
- H. The Engineer may require the opening of pavement to traffic prior to the minimum strength specified above under conditions of emergency, which in his opinion, require such action in the interest of the public. In no case shall the Engineer order opening of the pavement to traffic within less than 72 hours after the last concrete in the sections is placed unless an approved high strength concrete was used. The Contractor shall remove any curing mats, place earth against the pavement edges, and perform other work involved in providing for the safety of traffic as required by the Engineer in ordering emergency opening. Orders for emergency opening of the pavement to traffic will be issued by the Engineer in writing.

#### 1.16 BACKFILLING BEHIND CURBS AND IN ESPLANADES

- A. The Contractor is required to backfill behind all curbs and within the esplanade, after completion of the paving operation. The backfill material shall be on-site material having the prior approval of the Engineer. No separate payment shall be made for backfilling behind curbs and in esplanades, but it shall be considered incidental to this item.

#### 1.17 DEFICIENT PAVEMENT THICKNESS.

- A. It is the intent of this specification that the pavement be constructed in strict conformity with the thickness and typical sections shown on plans. Where any pavement is found not so constructed, the following rules relative to adjustment of payment for acceptable pavement and to replacement of faulty pavement shall govern.
- B. The Engineer will check the thickness in accordance with the dimensions shown on the plans. The Engineer will perform 1 thickness test consisting of 1 reading at approximately the center of each alternate lane every 500 feet or fraction thereof. Core where directed in accordance with ASTM C- 174, "Standard Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores." Verify deficiencies of more than 0.2 inch from plan thickness and to determine the limits of deficiencies of more than 0.75 inch from plan thickness. Fill core holes using a concrete mixture and method approved by the Engineer.
- C. Thickness Deficiencies Greater than 0.2 inch. When any depth test measured in accordance with ASTM C-174, is deficient by more than 0.2 inch from the plan thickness take an additional coring at that location to verify the measurement.

- D. If the core is deficient by more than 0.2 inch but not more than 0.75 inch from the plan thickness, take 2 additional cores from the unit (500 foot length) at intervals of at least 150 feet and at locations selected by the Engineer, and determine the thickness of the unit for payment purposes by averaging the thickness of the 3 cores. (See Table for "Deficient Pavement Thickness price Adjustment Factor").
- E. Thickness Deficiencies Greater than 0.75 inch. If a core is deficient by more than 0.75 inch, take additional cores at 10 foot intervals in each direction parallel to the boundary of the deficient area. The Engineer will evaluate any area of pavement found deficient in thickness by more than 0.75 inch. As directed, the Contractor shall remove and replace the deficient areas with concrete pavement of thickness shown on the plans, without additional compensation.
- F. Pavement Units for Payment Adjustment. Limits for applying a payment adjustment for deficient pavement thickness from 0.20 inch to not more than 0.75 inch are 500 feet of pavement in each lane. Lane width will be shown on typical sections and pavement design standards.
- G. For greater than 0.75 inch deficient thickness, the limits for requiring removal will be defined by coring as determined by the Engineer. The remaining portion of the unit determined to be less than 0.75 inch deficient will be subject to the payment adjustment based on the average core thickness at each end of the 10 foot interval investigation as determined by the Engineer.
- H. Shoulders will be measured for thickness unless otherwise shown on the plans. Shoulders 6 feet wide or wider will be considered as lanes. Shoulders less than 6 feet wide will be considered part of the adjacent lane.
- I. Limits for applying payment adjustment for deficient pavement thickness for ramps, widenings, acceleration and deceleration lanes, and other miscellaneous areas are 500 feet in length. Areas less than 500 feet in length will be individually evaluated for payment adjustment based on the plan area.
- J. See Table for Deficient Pavement Thickness Price Adjustment Factor.

<b>Deficient Pavement Thickness Deficiency in Thickness Determined by Cores in Inches</b>	<b>Price Adjustment Factor Proportional Part Contract Price Allowed</b>
0.00 to 0.20	100 Percent
0.21 to 0.30	80 Percent
0.31 to 0.40	72 Percent
0.41 to 0.50	68 Percent
0.51 to 0.75	57 Percent
Over 0.75	Remove and Replace

- K. Any area found deficient in thickness by more than 0.75 inch shall be removed and replaced, at the Contractor's entire expense, with concrete of the thickness shown on drawings.

- L. No additional payment over the contract unit price will be made for any pavements of a thickness exceeding that required on drawings and planing of concrete pavement shall not be allowed.

1.18 NON-CONFORMING CONCRETE

- A. Any concrete deemed non-conforming, which in the opinion of the Engineer is unsatisfactory, shall be removed and replaced at the expense of the Contractor.

1.19 QUALITY ASSURANCE

- A. The Testing Laboratory's representative will sample concrete delivered to the site in accordance with ASTM C172 and will mold four specimens for each 150 cubic yards. Each time a set of specimens is molded, the slump will be determined in accordance with ASTM C143 and the air content in accordance with ASTM C173, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method" or C231 "Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method". Concrete cores, if required, shall be tested in accordance with ASTM C174 (9 point procedure) and ASTM C39.

1.20 MEASUREMENT AND PAYMENT

- A. No separate payment will be made under this section. Include cost of such work in conformance with the bid proposal.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 32 2221

REMOVING EXISTING PAVEMENTS, STRUCTURES, WOOD, AND DEMOLITION DEBRIS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removing concrete paving, asphaltic concrete pavement, brick pavement and base courses.
- B. Removing concrete curbs, concrete curbs and gutters, sidewalks and driveways.
- C. Removing pipe culverts, sewers, and sewer leads.
- D. Removing waterlines and water services lines including asbestos cement pipe per OSHA guidelines.
- E. Removing existing inlets and manholes.
- F. Removing and disposing of pre-stressed concrete beams and drill shafts.
- G. Removing miscellaneous structures of concrete or masonry.
- H. Removing existing bridge.
- I. Removing existing wood and demolition debris.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Prices.
  - 1. No separate payment will be made under this section. Include cost of such work in conformance with the Bid Proposal.
- B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

1.3 REGULATORY REQUIREMENTS

- A. Conform to applicable codes for disposal of debris.
- B. Coordinate removal work with utility companies.
- C. For removal of asbestos containing materials, or material that could potentially contain asbestos, comply with applicable provisions of OSHA 29 CFR 1926.1101 – Asbestos, OSHA 29 CFR 1926.32 – General Safety and Health Provisions, and EPA 40 CFR 61 Subpart M – National Emission Standard for Asbestos.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 PREPARATION

- A. Obtain advance approval from Project Manager for dimensions and limits of removal work.
- B. Identify known utilities below grade. Stake and flag locations.
- C. For removal of asbestos-containing materials, or materials that could potentially contain asbestos, comply with the following:
  - 1. Crew members must be trained in accordance with OSHA 29 CFR 1926.1101 – Asbestos.
  - 2. Conduct negative exposure assessment to demonstrate asbestos exposure below permissible exposure limit (PEL) in accordance with OSHA 29 CFR 1926.1101 – Asbestos and EPA 40 CFR 763 – Asbestos.
  - 3. If negative exposure assessment not conducted, or if results are above PEL, provide respiratory protection in accordance with Paragraph 3.02 of this Section.

3.2 PROTECTION

- A. Protect following from damage or displacement:
  - 1. Adjacent public and private property.
  - 2. Trees, plants, and other landscape features designated to remain.
  - 3. Utilities designated to remain.
  - 4. Pavement and utility structures designated to remain.
  - 5. Bench marks, monuments, and existing structures designated to remain.
- B. When required, provide respiratory protection in accordance with OSHA 29 CFR 1910.134 – Respiratory Protection, and National Institute of Occupational Safety and Health (NIOSH).

3.3 REMOVALS

- A. Remove pavements and structures by methods that will not damage underground utilities. Do not use 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 to minimum depth of 2 inches.
- D. When street and driveway saw cut location is greater than one-half of pavement lane width, remove pavement for full lane width or to nearest longitudinal joint as directed by Project Manager.
- E. Remove sidewalks and curbs to nearest existing dummy, expansion, or construction joint.
- F. Where existing end of pipe culvert or end of sewer is to remain, install 8-inch-thick masonry plug in pipe end prior to backfill in accordance with requirements of Section 332318 - Excavation and Backfill for Structures.
- G. Labeling of Asbestos Cement (AC) Pipe:
  - 1. Label leak-tight container with warning statement of hazardous asbestos content in accordance with OSHA 29 CFR 1926.1101 and as noted below.
  - 2. Label waste material with following warning:  
  
DANGER  
CONTAINS ASBESTOS FIBERS  
MAY CAUSE CANCER  
CAUSES DAMAGE TO LUNGS  
DO NOT BREATHE DUST  
AVOID CREATING DUST
  - 3. Neatly print labels in letters of sufficient size and contrast so label is easily visible and legible.

### 3.4 BACKFILL

- A. Backfill of removal areas shall be in accordance with requirements of Section 0-Excavation and Backfill for Structures.

### 3.5 DISPOSAL

- A. Inlet frames, grates, and plates; and manhole frames and covers, may remain City property. Disposal shall be in accordance with requirements of Section 015760 - Waste Material Disposal.
- B. Remove from site, debris resulting from work under this section in accordance with requirements of Section 015760 - Waste Material Disposal.
- C. For asbestos-containing materials:
  - 1. Comply with 40 CFR Part 61 and 30 TAC Sections 330.137(b) for Industrial Class 1 waste.
  - 2. Inspect load to ensure correct packaging and labeling.

3. Line vehicles with two layers of 6-mil polyethylene sheeting.
4. Remove asbestos-containing waste from site daily.

END OF SECTION



SECTION 322775

CONCRETE SIDEWALKS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Reinforced concrete sidewalks.
- B. Wheelchair ramps.
- C. Reinforced slope paving.

1.2 MEASUREMENT AND PAYMENT

- A. Unit No separate payment will be made under this section. Include cost of such work in conformance with the Bid Proposal.

1.3 REFERENCES

- A. ASTM C 31 - Standard Practice for Making and Curing Concrete Test Specimens in Field.
- B. ASTM C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- C. ASTM C 42 - Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
- D. ASTM C 138 - Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.
- E. ASTM C 143 - Standard Test Method for Slump of Hydraulic Cement Concrete.
- F. ASTM C 172 - Standard Practice for Sampling Freshly Mixed Concrete.
- G. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
- H. Texas Accessibility Standards of Architectural Barriers Act, Article 9102, Texas Civil Statutes.

1.4 SUBMITTALS

- A. Conform to requirements of Section 013300 - Submittal Procedures.
- B. Submit certified testing results and certificates of compliance.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Concrete: Conform to material and proportion requirements for concrete of Section 321313 - Concrete Pavement.
- B. Reinforcing Steel: Conform to material requirements of Section 321313 - Concrete Pavement for reinforcing steel. Use No. 3 reinforcing bars.
- C. Preformed Expansion Joint Material: Conform to material requirements for preformed expansion joint material.
- D. Expansion Joint Filler: Conform to material requirements for expansion joint material.
- E. Forms: Use straight, unwarped wood or metal forms with nominal depth equal to or greater than proposed sidewalk thickness. The use of 2 inch by 4 inch lumber as forms will not be allowed.
- F. Sand Bed: Conform to material requirements for bank run sand of Section 332320 - Utility Backfill Materials.
- G. Sodding: Conform to material requirements for sodding of Section 312922- Sodding.

PART 3 EXECUTION

3.1 REPLACEMENT

- A. Replace sidewalks and slope paving which are removed or damaged during construction with thickness and width equivalent to one removed or damaged, unless otherwise shown on Drawings. Finish surface (exposed aggregate, brick pavers, etc.) to match existing sidewalk.
- B. Provide replaced and new sidewalks with wheelchair ramps when sidewalk intersects curb at street or driveway.

3.2 PREPARATION

- A. Identify and protect utilities which are to remain.
- B. Protect living trees, other plant growth, and features designated to remain.
- C. Excavate subgrade 6 inches beyond outside lines of sidewalk. Shape to line, grade and cross section. For soils with plasticity index above 40 percent, stabilize soil with lime in accordance with Section 322336 – Lime-Stabilized Subgrade. Compact subgrade to minimum of 90 percent maximum dry density at optimum to 3 percent above optimum moisture content, as determined by ASTM D 698.

- D. Immediately after subgrade is prepared, cover with compacted sand bed to depth as shown on Drawings. Lay concrete when sand is moist but not saturated.

### 3.3 PLACEMENT

- A. Setting Forms: Straight, unwarped wood or metal forms with nominal depth equal to or greater than proposed sidewalk thickness. Use of 2 by 4's as forms will not be allowed. Securely stake forms to line and grade. Maintain position during concrete placement.
- B. Reinforcement:
  - 1. Install reinforcing bars.
  - 2. Install reinforcing steel as shown on the drawings. Lay longitudinal bars in walk continuously, except through expansion joints.
  - 3. Use sufficient number of chairs to support reinforcement in manner to maintain reinforcement in center of slab vertically during placement.
  - 4. Drill dowels into existing paving, sidewalk and driveways, secure with epoxy, and provide headers as required.
  - 5. Use sufficient number of chairs for steel reinforcement bars to maintain position of bars within allowable tolerances. Place reinforcement as shown on Drawings. In plane of steel parallel to nearest surface of concrete, bars shall not vary from plan placement by more than 1/12 of spacing between bars. In plane of steel perpendicular to nearest surface of concrete, bars shall not vary from plan placement by more than 1/4 inch.
- E. Place concrete in forms to specified depth and tamp thoroughly with "jitterbug" tamp, or other acceptable method. Bring mortar to surface.
- F. Strike off to smooth finish with wood strike board. Finish smoothly with wood hand float. Brush across sidewalk lightly with fine-haired brush.
- G. Unless otherwise indicated on Drawings, mark off sidewalk joints 1/8 inch deep, at spacing equal to width of walk. Use joint tool equal in width to edging tool.
- H. Finish edges with tool having 1/4 inch radius.
- I. After concrete has set sufficiently, refill space along sides of sidewalk to one-inch from top of walk with suitable material. Tamp until firm and solid, place sod as applicable. Dispose of excess material in accordance with Section 015760 - Waste Material Handling, Testing and Disposal. Repair driveways and parking lots damaged by sidewalk excavation in accordance with Section 322951 - Pavement Repair and Restoration.

3.4 FIELD QUALITY CONTROL

- A. Testing will be performed under provisions of under provisions of Section 014540 – Testing Laboratory Services and 014520 – Inspection Services.
- B. Compressive Strength Test Specimens: Four test specimens for compressive strength test will be made in accordance with ASTM C 31 for each 30 cubic yards or less of sidewalk that is placed in one day. Two specimens will be tested at 7 days. Remaining two specimens will be tested at 28 days. Specimens will be tested in accordance with ASTM C 39. Minimum compressive strength: 3000 psi at 7 days and 3500 psi at 28 days.
- C. Yield test for cement content per cubic yard of concrete will be made in accordance with ASTM C 138. When cement content is found to be less than that specified per cubic yard, reduce batch weights until amount of cement per cubic yard of concrete conforms to requirements.
- D. If the Contractor places concrete without notifying the laboratory, the Owner will have the concrete tested by means of core test as specified in ASTM C 42. When concrete does not meet specification, cost of test will be deducted from payment.
- E. Sampling of fresh concrete shall be in accordance with ASTM C 172.
- F. Take slump tests when cylinders are made and when concrete slump appears excessive.
- G. Concrete shall be acceptable when average of two 28 day compression tests is equal to or greater than minimum 28 day strength specified.
- H. If either of two tests on field samples is less than average of two tests by more than 10 percent, that entire test shall be considered erratic and not indicative of concrete strength. Core samples will be required of in-place concrete in question.
- I. If 28 day laboratory test indicates that concrete of low strength has been placed, test concrete in question by taking cores as directed by Project Manager. Take and test at least three representative cores as specified in ASTM C 42 and deduct cost from payment due.

3.5 NONCONFORMING CONCRETE

- A. Remove and replace areas that fail compressive strength tests, with concrete of thickness shown on Drawings.
- B. Replace nonconforming sections at no additional cost to Owner.

3.6 PROTECTION

- A. Maintain newly place concrete in good condition until completion of Work.
- B. Replace damaged areas.

END OF SECTION

SECTION 32 2951

PAVEMENT REPAIR AND RESTORATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Repairing and replacing streets, highways, and other pavements as required per street cut ordinance that have been cut, broken, or damaged due to utility excavation.

1.2 MEASUREMENT AND PAYMENT

- A. No separate payment will be made under this section. Include cost of such work in conformance with the Bid Proposal.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Subgrade:
  - 1. Provide backfill material as required by applicable excavation and fill sections.
  - 2. Provide material for stabilization as required by applicable portions of Section 322741 - Lime Stabilized Subgrade , and Section 323213 - Cement Stabilized Subgrade.
- B. Base: Provide base material as required by applicable portions of Section 322712 - Cement Stabilized Base Course.
- C. Pavement: Provide paving materials as required by applicable portions of Section 321313- Concrete Pavement, and Section 322771 - Curb, Curb and Gutter, and Headers, and Section 322775 - Concrete Sidewalks.

PART 3 EXECUTION

3.1 PREPARATION

- A. Notify Owner prior to commencement of excavation in pavement for which an Excavation in Public Way permits has been obtained. Follow directions contained in the permit.
- B. Saw cut pavement 18 inches wider than width of trench needed to install utilities unless otherwise indicated on Drawings.

- C. When removing pavement to existing deformed metal strip (i.e. dummy joint), saw cut pavement minimum 2 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 remain from 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 existing pavement where no reinforcement is found or is broken due to construction activities. Unless otherwise directed by Project Manager, provide No. 6 bars 24 inches long, drilled and embedded 8 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 and earthwork as required to tie proposed pavement to existing pavement when unable to dowel new pavement into existing pavement.

### 3.2 INSTALLATION

- A. Parking Areas, Service Drives, Driveways, and Sidewalks: Replace with material equal to or better than existing or as indicated on 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 Drawings. Curbs and curbs and gutters shall match existing.
- C. Where existing pavement consists of concrete pavement with asphaltic surfacing, resurface with minimum 2 inch depth asphaltic pavement.
- D. Repair state highway and county crossings in accordance with TxDOT permit or county requirements as appropriate and within 1 week after utility work is installed.

### 3.3 WASTE MATERIAL DISPOSAL

- A. Dispose of waste material in accordance with requirements of Section 015760 - Waste Material Handling, Testing and Disposal.

### 3.4 PROTECTION

- A. Maintain pavement in good condition until completion of Work.
- B. Replace pavement damaged by Contractor's operations at no cost to Owner.

END OF SECTION

SECTION 32 8000

IRRIGATION

PART 1 - GENERAL

- 1.01 RELATED DOCUMENTS: The Drawings, Division 0 and Division 1 apply to the work under this Section.
- 1.02 SCOPE:
- A. Work Included:
- Furnishing and installing a complete irrigation system.
  - Trenching and backfill.
  - Furnishing and installing backflow prevention device.
  - Furnishing and installing sleeves for irrigation pipe and wire in
  - Conduit for remote control valves where indicated.
  - Inspections and tests.
- B. Related Work in Other Sections:
- 1.03 INTENT OF THE DRAWINGS: All piping shown on the drawings are essentially diagrammatic for installation purposes. Locations of all, valves, piping, wiring, etc., shall be established by the Contractor at the time of construction. Spacing of the sprinkler heads and locations of quick coupling valves shall be exceeded only with permission of Texas City.
- 1.04 QUALITY ASSURANCE:
- A. Requirements of Regulatory Agencies:
1. All work and materials shall be in full accordance with latest rules and regulations of safety orders of Division of Industrial Safety; the Uniform Plumbing Code and other applicable laws or regulations, including Texas City Plumbing Code.
  2. Nothing in these Drawings or Specifications is to be construed to permit work not conforming to these codes. Should the Contract Documents be at variance with the aforementioned rules and regulations, notify Landscape Architect and get his instructions before proceeding with the work affected.
- B. Testing:
1. Verification of existing static water pressure before any irrigation is to begin.
  2. Coordinate with local water authority of requirements of having new or existing backflow prevention device tested.
  3. Preliminary review of completed installation will be made by Landscape Architect prior to backfilling of trenches and during hydrostatic testing.

1.05 SUBMITTALS:

- A. Furnish required copies of manufacturer's literature, certifications, and operating instructions for the complete list of materials, for the following items:
1. Irrigation Controller.
  2. Backflow Prevention Device (IF NEEDED)
  3. Controller Grounding Plate
  4. Flow Sensor
  4. Ball Valves.
  5. Pipe and Fittings.
  6. Remote Control (Station) Valves / Master Valve
  7. Valve Boxes.
  8. Rain & Freeze Sensor Technology
  9. Drip Tubing / Drip Headers / Drip Line Flush Valve / Air Relief Valve
  10. Wiring
- B. Substitutions:
1. Specific reference to manufacturers' names and products specified in this Section are used as standards, but this implies no right to substitute other material or methods without written approval of the Landscape Architect.
  2. Installation of any approved substitution is Contractor's responsibility. Any changes required for installation of any approved substitution must be made to the satisfaction of Landscape Architect and without additional cost to Texas City.
  3. Approval by Landscape Architect of substituted equipment and/or dimensional drawings does not waive these requirements.
- C. Record Irrigation Drawings: Contractor shall furnish Record Drawings of the complete irrigation system in accordance with the General and Special Conditions. Construction drawings shall be on the construction site at all times while the irrigation system is being installed. Contractor shall make a daily record of all work installed during each day. Actual location of valves and quick couplers and all irrigation and drainage piping shall be shown on the prints by dimensions from easily identified permanent features, such as buildings, curbs, fences, walks or property lines. Drawings shall show approved substitutions, if any, of material including manufacturer's name, and catalogue number. The drawings shall be to scale and all indications shall be neat.



All information noted on the print shall scanned or copied by Contractor and all indications shall be recorded in a neat, orderly way. The record drawing shall be turned over to the Landscape Architect at or before the Final Acceptance of the project.

1.06 JOB CONDITIONS:

- A. Contractor shall acquaint himself with all site conditions. Should utilities or other work not shown on the plans be found during excavations, Contractor shall promptly notify Landscape Architect for instructions as to further action. Failure to do so will make Contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities not shown on plans.
- B. Contractor shall take necessary precautions to protect site conditions. Should damage be incurred, this Contractor shall repair damage to its original condition or furnish and install equal replacement at his expense.
- C. Contractor is responsible for insuring that system operates in an efficient manner, head to head coverage performance is critical in reaching final acceptance. Field changes will need to be factored, and reflected in as-built/record drawings delivered at final close out.

1.07 FINAL ACCEPTANCE: Work under this Section will be accepted by Landscape Architect upon satisfactory completion of all work. Upon Final Acceptance, City of Hope and Continuum Development Group, LLC will assume responsibility for maintenance of the work. Said assumption does not relieve Contractor of obligations under Warranty.

1.08 WARRANTY:

- A. In addition to manufacturer's warranty's or warranties, Contractor shall warrant all work for one year from the date of Final Acceptance against defects in material, equipment and workmanship. Warranty shall also cover repair of damage to any part of the premises resulting from leaks or other defects in materials, equipment and workmanship to the satisfaction of the City of Duarte.
- B. Contractor shall not be held responsible for failures due to neglect by the city, vandalism, etc., during Warranty Period. Report such conditions to Landscape Architect in writing.

1.09 CLEAN UP: Keep all areas of work clean, neat, and orderly at all times. Keep all paved areas clean during installation operations.

PART 2 - MATERIALS

2.01 MATERIALS: Materials throughout the new system shall be as specified and/or noted on the drawings, new and in perfect condition.

2.02 WATER METER: Shall be provided and installed by the local water district in accordance with their requirements.

2.03 BACKFLOW PREVENTION DEVICE: (IF NEEDED OR TO BE REPLACED)

- A. Watts 800M4QT – 1-1/2" Pressure Vacuum Breaker (PVB) – To be installed if existing backflow device is non operational or needs to be replaced.
- 2.04 PIPE:
- A. Main Line Piping on pressure side of irrigation control valves:
1. Three (3") inch and smaller - To be polyvinyl chloride (PVC) 1120-1220, PVC Schedule 40 IPS Plastic Pipe, shall conform to ASTM D-2241-73.
- B. Lateral Line Piping on non-pressure side of irrigation control valves:
1. Polyvinyl chloride (PVC) 1120-1220, SDR 21.0, Class 200, shall conform to ASTM D-2241-73.
- C. Identification: All piping shall be continuously and permanently marked with the following:
1. Manufacturer's name or trademark, size, schedule, and type of pipe, working pressure at 73 degrees F. and National Sanitation Foundation (N.S.F.) approval.
- 2.05 FITTINGS:
- A. Fittings for Solvent-Welded Pipe:
1. Schedule 40, polyvinyl chloride, standard weight, as manufactured by "Sloane", "Lasco", or approved equal, to meet ASTM D-2466-73 and D-2467-73.
  2. Threaded PVC nipples - Schedule 80 PVC.
- 2.06 SLEEVE FOR CONTROL WIRE AND WATER LINE: PVC 1126-1220, Schedule 40 pipe.
- 2.07 IRRIGATION CONTROLLER: HUNTER ACC (ACC-1200-PP) , indoor, with a wireless rain & freeze sensor or approved equal technology.
- 2.08 FLOW SENSOR: Hunter HFS-158
- 2.09 REMOTE CONTROL VALVES/MASTER VALVE:
- A. Hunter ICV-151G – Master Valve
- B. Hunter ICZ-101-40 – ICV-101-LF

2.10 CONTROL WIRE:

- A. Wire: Solid copper wire, U.L. approved for direct burial in ground. Minimum gauge: #14 UF. (#12 UF for runs over 1,000 LF.) Common ground wire shall be white, Control shall be red, or approved equal
- B. Splicing Materials: Scotchlock Spring Connector. "Scotchlock" #3576 Sealing Pack, or approved equal.

2.11 VALVE BOXES: To be injection-moulded of Polyesters and fibrous inorganic temperature resistant components. Box shall provide adequate clearance to operate and service valve. Box and lid to be black, as manufactured by "Ametek", "Christy", "Carson", or approved equal.

- A. For Remote Control (Station) Valves: Boxes shall be rectangular, (12") inches by sixteen (16") inches inside dimensions by seven (7") inches deep, or approved equal.
- B. For Ball Valves and Quick Coupler Valves: Shall be round, approximately (10") inches inside diameter by ten (10") inches deep, or approved equal.

2.12 DRIP LINE

- A. Hunter HDL-06-12

2.13 AUTOMATIC DRAIN

- A. KING DRAIN or approved equal

PART 3 - EXECUTION

3.01 LAYOUT:

- A. No consideration will be given to any design changes or substitutions until after the awarding of the contract. Should any changes be deemed necessary after award of contract, for proper installation and operation of the new and existing system, such changes shall be negotiated by the Landscape Architect (and based upon the Unit Price Schedule where applicable).
- B. Layout work as accurately as possible to drawings. Drawings are diagrammatic to the extent that swing joints, and all fittings are not shown.
- C. Full and complete head to head coverage is required. Contractor shall make any necessary minor adjustments to layout required to achieve full coverage of irrigated areas at no additional cost to the owner.
- D. Where piping is shown to be under paved areas but running parallel and adjacent to planted areas, the intent is to install piping in planted areas. Do not install directly over another line in same trench.

- E. The Contractor will stake out the location of each run of pipe and all sprinkler heads of sprinkler valve locations prior to trenching. Before installation is started in a given area, the Landscape Architect shall check all locations and give his approval.

3.02 EXCAVATING AND TRENCHING:

- A. Perform all excavations as required for installation of work included under this Section, including shoring of earth banks, if necessary. Restore all surfaces, existing underground installations, etc., damaged or cut as a result of the excavations, to their original condition.
- B. Trenching, excavation or boring activity within the Tree Protection Zone (TPZ) is restricted to the following activities, conditions and requirements if approved by the City Arborist.
  - 1. Notification. Contractor shall notify the City Arborist a minimum of 24 hours in advance of the activity in the TPZ.
  - 2. Root Severance. Roots that are encountered shall be cut to sound wood and repaired.
  - 3. Excavation. Any approved excavation, demolition, or extraction of material shall be performed with equipment sitting outside of the TPZ. Methods permitted are by hand digging, hydraulic or pneumatic air excavation technology (Air Spade). Avoid excavation within the TPZ during hot dry weather. It is the duty of the contractor to tunnel under any roots 2-inches in diameter or greater.
  - 4. Heavy Equipment. Use of backhoes, steel tread tractors or any heavy vehicles within the TPZ is prohibited unless approved by the City Arborist.
- C. Should utilities not shown on the plans be found during excavations, Contractor shall promptly notify Landscape Architect for instructions as to further action. Failure to do so will make Contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities. Indicate such utility crossings on the Record Drawings promptly.
- D. Dig trenches wide enough to allow a minimum of four (4") inches between parallel pipe lines. Trenches shall be of sufficient depth to provide minimum cover from finish grade as follows:
  - 1. Over pipe on pressure side of irrigation control valve, control wires and quick coupling valves: (18) inches.
  - 2. Over pipe on non-pressure side of irrigation control valve: (12) inches.
  - 3. Where system is installed over structure, lay pipe on top of soil separator. Protect soil separator with two (2") inch layer of specified planting soil mix or sand.
  - 4. All PVC sleeves under paving shall be bedded with minimum of four (4") inches of sand backfill on all sides and have twenty-four (24") inch cover.
  - 5. All main lines shall be sloped to drain valves where applicable.
  - 6. Backfill all pressurized mains and marker boxes with a minimum of four (4") inches of sand backfill on all sides to protect lines and boxes from expansion and contraction.

3.03 BORING UNDER EXISTING PAVEMENTS:

- A. The boring shall proceed from a pit provided for the boring equipment and workmen. Excavation for pits and installation shall be as described under "Excavating and Trenching". The location of the pit shall not interfere with existing plant materials or structures designated to remain.
- B. Holes shall be bored mechanically. Where holes required are larger than two (2") inches, the bore shall be completed using a pilot hole. The two (2") inch hole shall be bored the entire length of the crossing and shall be checked on the opposite end for line and grade. If acceptable, this hole shall serve as the centerline for the larger hole to be bored. Lateral and vertical tolerance is limited to one (1") inch in ten (10') feet, provided that the variation be regular and occur only in one direction.
- C. The use of water or other fluids in connection with the boring operation will be permitted only to lubricate cutting. Jetting or missiling shall not be permitted. (In unconsolidated soil formations, a gel-forming colloidal drilling fluid consisting of at least ten (10%) percent of high-grade processed bentonite may be used to consolidate cuttings, seal the hole walls and furnish lubrication for subsequent removal of cuttings and installation of the pipe.)
- D. Excavated material will be placed near the top of the working pit and disposed of as required.
- E. Refer to other authorities for jurisdiction over other installations.

3.04 WATER METER: EXISTING METER – NEW METER SHOULD NOT BE IN THIS CONTRACT.

3.05 BACKFLOW PREVENTION DEVICE: Install according to local codes and manufacturer's latest printed instructions. To be tested upon installation.

3.06 CONDUITS AND SLEEVES:

- A. Furnish and install conduit where control wires pass under walks and paving. Conduit to be of adequate size to accommodate retrieval for repair of wiring and shall extend twelve (12") inches beyond edge of walks and paving.
- B. Install sleeves for all pipes passing through or under walls, walks and paving as shown on drawings. Sleeving to be of adequate size to accommodate retrieval for repair of wiring or piping and shall extend twelve (12") inches beyond edge of paving or other construction.
- C. Coordinate conduit and sleeve installation with other trades as required.

3.07 PIPE LINE ASSEMBLY:

A. General:

1. Install pipes and fittings in accordance with manufacturer's latest printed instructions.
2. Clean all pipes and fittings of dirt, scales and moisture before assembly.
3. All pipe, fittings and valves, etc., shall be carefully placed in the trenches. Interior of pipes shall be kept free from dirt and debris and when pipe laying is not in progress, open ends of pipe shall be closed by approved means.
4. All lateral connections to the mainline as well as all other connections shall be made to the side of the mainline pipe. No connections to the top of the line shall be allowed. Thus, no angle valves.

B. Solvent-Welded Joints for PVC Pipes:

1. Use solvents and methods by pipe manufacturer.
2. Cure joint a minimum of one hour before applying any external stress on the piping and at least twenty-four (24) hours before placing the joint under water pressure.

C. Threaded Joints for Plastic Pipes:

1. Use Teflon tape on the threaded PVC fittings except where Marlex fittings are used.
2. Use strap-type friction wrench only. Do not use metal-jawed wrench.
4. When connection is plastic to metal, male adaptors shall be used. The male adaptor shall be hand tightened, plus one turn with a strap wrench. Joint compound shall be Teflon tape or equal upon approval.
5. Where applicable, use threaded PVC adapters into which the pipe may be welded.

D. Joints for Polyethylene Pipes:

1. Make all connections between polyethylene pipes and metal valves or pipes with threaded fittings using male adapters.
2. Polyethylene connectors shall be compression fittings.

E. Laying of Pipe:

1. Pipes shall be bedded in at least two (2") inches of finely divided material with no rocks or clods over one (1") inch diameter to provide a uniform bearing.
2. Pipe shall be snaked from side to side of trench bottom to allow for expansion and contraction. One additional foot per 100 feet of pipe is the minimum allowance for snaking.
3. Do not lay PVC pipe when there is water in the trench, nor shall PVC pipe be laid when temperature of 40 degrees or below or when rain is eminent.

4. Plastic pipe shall be installed in a manner so as to provide for expansion and contraction as recommended by the manufacturer.
  5. Plastic pipe shall be cut with PVC pipe cutters or hacksaw, or in a manner so as to ensure a square cut. Burrs at cut ends shall be removed prior to installation so that a smooth unobstructed flow will be obtained.
  6. All plastic to plastic joints shall be solvent-weld joints or slip seal joints. Only the solvent recommended by the pipe manufacturer shall be used. All plastic pipe and fittings shall be installed as outlined and instructed by the pipe manufacturer and it shall be the Contractor's responsibility to make arrangements with the pipe manufacturer for any field assistance that may be necessary. The Contractor shall assume full responsibility for the correct installation.
  7. Unless waived by the Landscape Architect, the Contractor shall install bell type or approved slip joint fitting at a minimum of twenty (20') feet OC for all pressurized mains. All polyethylene pipes shall be laid on surface with 2" mulch layer.
- 3.08 CONTROL (STATION) VALVES: Install control (station) valves in valve boxes where shown and group together where practical. Place no closer than twelve (12") inches to walk edges, buildings and walls. Top of valve boxes shall be flush with finish grade, not flush with top of mulch if located in planting bed.
- 3.09 CONTROLLER:
- A. Install per local code and manufacturer's latest printed instructions.
  - B. Connect remote control (station) valves to controller in sequence corresponding with the drawing.
- 3.10 CONTROL WIRING: see section 2.09
- 3.11 CLOSING OF PIPE AND FLUSHING OF LINES & TESTING:
- A. Cap or plug all openings as soon as lines have been installed to prevent entrance of materials that would obstruct the pipe. Leave in place until removal is necessary for completion of installation.
  - B. Thoroughly flush out all water lines before installing heads, valves and other hydrants.
  - C. Hydrostatic Pressure Test: Subject mainline pipe to a hydrostatic pressure equal to the static pressure of the water supply for 30 minutes. Backfill to prevent pipe from moving under pressure, not covering couplings and fittings. Leakage will be detected by visual inspection. Replace defective pipe, fitting, joint, valve, or appurtenance. Repeat the test until each component of the system passes the test. Cementing or caulking leaks is prohibited.
  - D. Upon completion of testing, complete assembly and adjust sprinkler heads for proper distribution.

3.12 BACKFILL AND COMPACTING:

- A. After system is operating and required tests and inspections have been made, backfill excavations and trenches with clean soil, free of debris and rubbish. In no case shall particles greater than the diameter of the pipe be used as backfill material. If rocky materials are to be used, pipe shall be embedded and covered with a minimum depth of 3 inches of sand.
- B. Backfill for all trenches, regardless of the type of pipe covered, shall be compacted to minimum ninety-five (95%) percent density under pavements, eighty-five (85%) percent of the Standard Proctor Density (ASTM D698) under planted areas.
- C. Compact trenches in areas to be planted by thoroughly flooding the backfill. Jetting process may be used in those areas. Compact all other areas by flooding or hand tamping. Compaction by jetting shall not be used in areas beneath or directly adjacent to existing or proposed pavement.
- D. Dress off all areas to finish grades.
- E. The CONTRACTOR shall immediately repair any trench subsidence before or during the guarantee period.

3.13 FINAL ADJUSTMENT

- A. After the installation has been completed, make final adjustment of sprinkler system preparatory to the OWNER's designated representative's final inspection.
- B. Completely flush system to removed debris from lines by removing nozzles from heads on ends of lines and turning system on.
- C. Check sprinklers for proper operation and proper alignment for direction of throw. Particular care will be given to spray and rotary heads that irrigate within street and other vehicular paving environments. All heads in medians and along curbs shall be adjusted as needed so that each is 1) set at the proper height in relation to the surrounding grade, 2) set so that the riser and body of the spray or rotary sprinkler is set plumb, and 3) adjusted so that overspray into vehicular pavement is minimized or eliminated. During inspection of the system at completion of installation, any spray or rotary head found to not comply with these criteria shall be immediately adjusted as to comply.
- D. Check each section of spray heads for operating pressure and balance to other sections by use of flow adjustment on top of each valve.
- E. Check nuzzling for proper coverage. Prevailing wind conditions may indicate that arc of angle of spray should be other than as shown on drawings. In this case, change nozzles to provide correct coverage and furnish record data to owner's designated representative with each change.
- F. After system is thoroughly flushed and ready for operation, each section of sprinklers must be adjusted to control pressure at heads. If heads in one zone has "misting" or



"fogging" out of nozzles, contractor is to replace that assembly with a pressure regulating head if not already installed.

3.13 WARRANTY:

- A. The Contractor shall guarantee all materials and workmanship for one (1) calendar year after the date of Final Acceptance, including repair and replacement of defective materials, workmanship and repair or backfill settlement.
- B. Warranty on all parts, equipment, components, piping heads, valves and other materials shall commence upon Final Acceptance of the irrigation system and continue in effect for a period of one (1) calendar year from the date of acceptance.

Owner may request that this inspection and acceptance be coordinated with weather conditions so as to eliminate risk to the system from inclement weather.

- C. Installer shall program and operate the irrigation system at rates of precipitation he/she deems necessary to sustain and promote vigorous growth of all plantings, as intended by design.
- D. Maintenance shall include, but not necessarily be limited to the following:
  - a. Adjustment of sprinkler height and plumb to compensate for settling.
  - b. Adjustment of head coverage as necessary. NOTE: The Owner reserves the right to require the Contractor to change nozzles from that indicated on the drawings to sizes that better suite field conditions, where overspray occurs, where improper nozzle sizes are installed, and where coverage adjustment is necessary for the proper performance of the system.
  - c. Unstopping of heads plugged by foreign material
  - d. Adjustment of controller as necessary to insure proper performance.
  - e. Cleaning to insure heads pop-up and pop-down properly.
- E. Operation and Maintenance manuals to be handed over to Owner, along with seasonal watering schedule.

3.14 CLEAN UP: Clean up and remove all debris from the entire work area prior to Final Acceptance to satisfaction of Owner.

END OF SECTION

SECTION 33 2318

EXCAVATION AND BACKFILL FOR STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavation, backfilling, and compaction of backfill for structures.

1.02 MEASUREMENT AND PAYMENT

- A. Unit Prices.
  - 1. No payment will be made for structural excavation and backfill under this Section. Include payment in unit price or lump sum for construction of structures.
- B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

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 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 332320 - Utility Backfill Materials.
- D. Backfill: 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 structure foundation base. Foundation backfill materials may include concrete fill and seal slabs.
- F. Foundation Base: For foundation base material, use crushed stone aggregate with filter fabric as required, cement stabilized sand, or concrete seal slab. Foundation base provides smooth, level working surface for construction of concrete foundation.

- G. Foundation Subgrade: Foundation subgrade is surface of natural soil which has been excavated and prepared to support foundation base or foundation backfill, where needed.
- H. Ground Water Control Systems: Installations external to excavation 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 excavation, and depressurization to prevent failure or heaving of excavation bottom. Refer to Section 015780 - Control of Ground Water and Surface Water.
- I. Surface Water Control: Diversion and drainage of surface water runoff and rain water away from excavation. Remove rain water and surface water which accidentally enters excavation as part of excavation drainage.
- J. Excavation Drainage: Removal of surface and seepage water in excavation by sump pumping and using French drains surrounding foundation to intercept water.
- K. Over-Excavation and Backfill: Excavation of subgrade soils with unsatisfactory bearing capacity or composed of otherwise unsuitable materials below foundation as shown on Drawings, and backfilled with foundation backfill material.
- L. Shoring System: Structure that supports sides of an excavation to maintain stable soil conditions and prevent cave-ins.

#### 1.04 REFERENCES

- A. ASTM D 698 - Standard Test Methods for Laboratory Compaction of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600kN-m/m<sup>3</sup>)).
- B. ASTM D 1556 - Standard Test Method for Density of Soil in Place by Sand-Cone Method.
- C. ASTM D 2922 - Standard Test Methods for Density of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- D. ASTM D 3017 - Standard Test Method for Water Content of Soil and Soil-Aggregate in place by Nuclear Methods (Shallow Depths).
- E. ASTM D 4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- F. TxDOT Tex-101-E - Preparing Soil and Flexible Base Materials for Testing.
- G. TxDOT Tex-110-E - Particle Size Analysis of Soils.
- H. Federal Regulations, 29 CFR, Part 1926, Standards - Excavation, Occupational Safety and Health Administration (OSHA).

1.05 SUBMITTALS

- A. Submit work plan for excavation and backfill for each structure with complete written description which identifies details of proposed method of construction and sequence of operations for construction relative to excavation and backfill activities. Use descriptions, with supporting illustrations, sufficiently detailed to demonstrate to Project Manager that procedures meet requirements of Specifications and Drawings.
- B. Submit excavation safety system plan.
  - 1. Submit excavation safety system plan in accordance with applicable OSHA requirements for excavations.
  - 2. Submit excavation safety system plan in accordance with requirements of Section 312260 - Trench Safety System, for excavations that fall under State and Federal trench safety laws.
- C. Submit ground and surface water control plan in accordance with requirements in this Section and Section 015780 - Control of Ground Water and Surface Water.
- D. Submit backfill material sources and product quality information in accordance with requirements of Section 332320 - Utility Backfill Materials.
- E. Submit project record documents under provisions of Section 017810 - 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.

1.06 TESTS

- A. Testing and analysis of backfill materials for soil classification and compaction during construction will be performed by an independent laboratory provided by City in accordance with requirements of Section 014540 - Testing Laboratory Services and as specified in this Section.
- B. Perform embedment and backfill material source qualification testing in accordance with requirements of Section 332320 - Utility Backfill Materials.

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. Perform excavation with equipment suitable for achieving requirements of this Specification.
- B. Use equipment which will produce degree of compaction specified. Compact backfill within 3 feet of walls with hand operated equipment. Do not use equipment weighing more than 10,000 pounds closer to walls than a horizontal distance equal to depth of 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. Use backfill materials conforming to classifications and product descriptions of Section 332320 - Utility Backfill Materials. Use classification or product description for backfill applications as shown on Drawings and as specified.

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. Maintain barricades and warning devices at all times for streets and intersections where work is in progress, or where construction work is considered hazardous to traffic movements.
- C. Perform work in accordance with OSHA standards. Employ an excavation safety system as specified in Section 312260 - Trench Safety Systems.
- D. Remove existing pavements and structures, including sidewalks and driveways, in accordance with requirements of Section 32221 - Removing Existing Pavements and Structures.
- E. Install and operate necessary dewatering and surface water control measures in accordance with requirements of Section 015780 - 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 grading limits as designated on Drawings, and in accordance with requirements of Section 015639 - 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 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 City.

3.03 EXCAVATION

- A. Perform excavation work so that underground structure can be installed to depths and alignments shown on Drawings. Use caution during excavation work to avoid disturbing surrounding ground and existing facilities and improvements. Keep excavation to absolute minimum necessary. No additional payment will be made for excess excavation not authorized by Project Manager.
- B. Upon discovery of unknown utilities, badly deteriorated utilities not designated for removal, or concealed conditions, discontinue work at that location. Notify Project Manager and obtain instructions before proceeding in such areas.

- C. Immediately notify agency or company owning any line which is damaged, broken or disturbed. Obtain approval from Project Manager 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 create dirt nuisance in streets. Verify that truck beds are sufficiently tight and loaded in such a manner such that objectionable materials 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 Work.
- H. Provide sheeting, shoring, and bracing where required to safely complete Work, to prevent excavation from extending beyond limits indicated on Drawings, and to protect Work and adjacent structures or improvements. Use sheeting, shoring, and bracing to protect workmen and public conforming to requirements of Section 02260 - Trench Safety Systems.
- I. Prevent voids from forming outside of sheeting. Immediately fill voids with grout, cement stabilized sand, or other material approved by Project Manager and compact to 95 percent standard density.
- J. After completion of structure, remove sheeting, shoring, and bracing unless shown on Drawings to remain in place or directed by Project Manager 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 Work and adjacent structures or improvements.
- K. Immediately fill and compact voids left or caused by removal of sheeting with cement stabilized sand or other material approved by Project Manager and compact to 95 percent standard density.

#### 3.04 HANDLING EXCAVATED MATERIALS

- A. Classify excavated materials. Place material which is suitable for use as backfill in orderly piles at sufficient distance from excavation to prevent slides or cave-ins.
- B. Provide additional backfill material if adequate quantities of suitable material are not available from excavation and trenching operations at site.

#### 3.05 DEWATERING

- A. Provide ground water control per Section 015780 - Control of Ground Water and Surface Water.
- B. Keep ground water surface elevation minimum of 2 feet below bottom of foundation base.

- C. Maintain ground water control as directed by Section 015780 - Control of Ground Water and Surface Water and until structure is sufficiently complete to provide required weight to resist hydrostatic uplift with minimum safety factor of 1.2.

### 3.06 FOUNDATION EXCAVATION

- A. Notify Project Manager at least 48 hours prior to planned completion of foundation excavations. Do not place foundation base until excavation is accepted by Project Manager.
- B. Excavate to elevations shown on Drawings, as needed to provide space for foundation base, forming level undisturbed surface, free of mud or soft material. Remove pockets of soft or otherwise unstable soils and replace with foundation backfill material or material as directed by Project Manager.  
Prior to placing material over it, recompact subgrade where indicated on Drawings, scarifying as needed, to 95 percent of maximum Standard Dry Density according to ASTM D 698. If specified level of compaction cannot be achieved, moisture condition subgrade and recompact until 95 percent is achieved over-excavate to provide minimum layer of 24 inches of foundation backfill material, or other means acceptable to Project Manager.
- C. Fill unauthorized excessive excavation with foundation backfill material or other material as directed by Project Manager.
- D. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition. Keep excavations free of standing water and completely free of water during concrete placement.
- E. Remove soils which become unsuitable due to inadequate dewatering or other causes, after initial excavation to required subgrade, and replace with foundation backfill material, as directed by Project Manager, at no additional cost to City.
- F. Place foundation base, or foundation backfill material where needed, over subgrade on same day that excavation is completed to final grade. Where base of excavations are left open for longer periods, protect them with seal slab or cement-stabilized sand.
- G. Place crushed aggregate, and other Class I materials, in uniform layers of 8-inch maximum thickness. Perform compaction by means of at least two passes of vibratory compactor.

### 3.07 FOUNDATION BASE.

- A. Place foundation base after subgrade is properly prepared, including placement of foundation backfill where needed. Use foundation base consisting of 12-inch layer of crushed stone aggregate or cement stabilized sand. Alternately, seal slab with minimum thickness of 4 inches may be placed. Extend foundation base minimum of 12 inches beyond edge of structure foundation, unless shown otherwise on Drawings.
- B. Where foundation base and foundation backfill are of 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. Remove forms, lumber, trash and debris from structures. Deposit backfill in uniform layers and compact each layer as specified.

1. Unless otherwise shown on Drawings, for structures under pavement or within one foot back of curb, use cement stabilized sand up to the top of the proposed structure. Use suitable on-site material (random backfill) up to 12 inches below pavement base or subgrade. Place minimum of 12 inches of select backfill below pavement base or subgrade.
  2. Unless otherwise shown on Drawings, for structures not under pavement, use random backfill of suitable material up to the surface.
- B. Do not place backfill against concrete walls or similar structures until laboratory test breaks indicate that concrete has reached minimum of 85 percent of specified compressive strength. Where walls are supported by slabs or intermediate walls, do not begin backfill operations until 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 backfill material at no less than 2 percent below nor more than 2 percent above optimum moisture content, unless otherwise approved by Project Manager. Place fill material in uniform 8-inch maximum loose layers. Compact fill to at least 95 percent of maximum Standard Proctor Density according to ASTM D 698 below paved areas. Compact fill to at least 90 percent around structures below unpaved areas.
- E. Where backfill is placed against sloped excavation surface, run compaction equipment across boundary of cut slope and backfill to form compacted slope surface for placement of next layer of backfill.
- F. Place backfill using cement stabilized sand in accordance with Section 02321 - Cement Stabilized Sand.

### 3.09 FIELD QUALITY CONTROL

- A. Testing will be performed under provisions of Section 014540 - Testing Laboratory Services.
- B. Tests will be performed initially on minimum of one different sample 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 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 following frequencies and conditions:
1. Minimum of one test for every 50 to 100 cubic yards of compacted backfill material as directed by Project Manager.
  2. A minimum of three density tests for each full work shift.
  3. Density tests will be performed in all placement areas.



4. Number of tests will be increased when inspection determines that soil types or moisture contents are not uniform or when compacting effort is variable and not considered sufficient to attain uniform density.
  5. Identify elevation of test with respect to natural ground.
  6. Record approximate depth of lift tested.
- D. At least one test for moisture-density relationships will be initially performed for each type of backfill material in accordance with ASTM D 698. Perform additional moisture-density relationship test once a month or whenever there is noticeable change in material gradation or plasticity.
- E. When tests indicate work does not meet specified compaction requirements, recondition, recompact, and retest at Contractor's expense.

#### 3.10 DISPOSAL OF EXCESS MATERIAL

Dispose of excess materials in accordance with requirements of Section 015760 - Waste Material Disposal.

END OF SECTION

SECTION 33 2320

UTILITY BACKFILL MATERIALS

PART 1 GENERAL

1.1 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
9. Cement stabilized sand

C. Material Handling and Quality Control Requirements.

1.2 MEASUREMENT AND PAYMENT

A. No separate payment will be made under this section. Include cost of such work in conformance with the Bid Proposal.

1.3 DEFINITIONS

A. Unsuitable Material:

1. Materials 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 containing large clods, aggregates, or stones greater than 4 inches in any dimension; debris, vegetation, or waste; or any other deleterious materials.
4. Materials contaminated with hydrocarbons or other chemical contaminants.

B. Suitable Material:

1. Materials meeting specification requirements.

2. Unsuitable materials meeting specification requirements for suitable soils after treatment with lime or cement.
- C. 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 structure foundation base. Foundation backfill materials may include concrete fill and seal slabs.
- D. Foundation Base: Crushed stone aggregate with filter fabric as required, cement stabilized sand, or concrete seal slab. Foundation base provides smooth, level working surface for construction of concrete foundation.
- E. Backfill Material: Classified soil material meeting specified quality requirements for designated application as embedment or trench zone backfill.
- F. Embedment Material: Soil material placed under controlled conditions within 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.
- G. Trench Zone Backfill: Classified soil material meeting specified quality requirements and placed under controlled conditions in trench zone from top of embedment zone to base course in paved areas or to surface grading material in unpaved areas.
- H. Foundation: Either suitable soil of trench bottom or material placed as backfill of over-excavation for removal and replacement of unsuitable or otherwise unstable soils.
- I. Source: Source selected by Contractor for supply of embedment or trench zone backfill material. Selected source may be project excavation, off-site borrow pits, commercial borrow pits, or sand and aggregate production or manufacturing plants.
- J. Refer to Section 322317 - Excavation and Backfill for Utilities for other definitions regarding utility installation by trench construction.

#### 1.4 REFERENCES

- A. ASTM C 33 - Standard Specification for Concrete Aggregate.
- B. ASTM C 40 - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete.
- C. ASTM C 123 - Standard Test Method for Lightweight Particles in Aggregate.
- D. ASTM C 131 - Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in Los Angeles Machine.
- E. ASTM C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- F. ASTM C 142 - Standard Test Method for Clay Lumps and Friable Particles in Aggregates.
- G. ASTM D 1140 - Standard Test Method for Amount of Material in Soils Finer Than No. 200 Sieve.
- H. ASTM D 2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

- I. ASTM D 4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- J. ASTM D 4643 - Standard Test Method for Determination of Water (Moisture) Content of Soil by Microwave Oven Method.
- K. TxDOT Tex-110-E - Determining Particle Size Analysis of Soils.
- L. TxDOT Tex-460-A - Material Finer Than 75 (No.200) Sieve In Mineral Aggregates (Decantation Test for Concrete Aggregates).

#### 1.5 SUBMITTALS

- A. Conform to requirements of Section 013300 - Submittal Procedures.
- B. Submit 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. Comply with Paragraph 2.03, Material Testing.
- D. Before stockpiling materials, submit copy of approval from landowner for stockpiling backfill material on private property.
- E. Provide delivery ticket which includes source location for each delivery of material that is obtained from off-site sources or is being paid as specific bid item.

#### 1.6 TESTS

- A. Perform tests of sources for backfill material in accordance with Paragraph 2.03B.
- B. Verification tests of backfill materials may be performed by Owner in accordance with provisions of Section 014540 – Testing Laboratory Services and 014520 – Inspection Services..

### PART 2 PRODUCTS

#### 2.1 MATERIAL CLASSIFICATIONS

- A. Classify materials for backfill for purpose of quality control in accordance with 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.
- B. Class Designations Based on Laboratory Testing:
  - 1. Class I: Well-graded gravels and sands, gravel-sand mixtures, crushed well-graded rock, little or no fines (GW, SW):
    - a. Plasticity index: non-plastic.
    - b. Gradation: D60/D10 - 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 gravels and sands, little to moderate fines (GM, GP, SP, SM):
  - a. Plasticity index: non-plastic to 4.
  - b. Gradations:
    - 1) Gradation (GP, SP): amount passing No. 200 sieve - less than 5 percent.
    - 2) Gradation (GM, SM): amount passing No. 200 sieve - between 12 percent and 50 percent.
    - 3) Borderline gradations with dual classifications (e.g., SP-SM): amount passing No. 200 sieve - between 5 percent and 12 percent.
3. Class III: Clayey gravels and sands, poorly graded mixtures of gravel, sand, silt, and clay (GC, SC, and dual classifications, e.g., SP-SC):
  - a. Plasticity index: greater than 7.
  - b. Gradation: amount passing No. 200 sieve - between 12 percent and 50 percent.
4. Class IVA: Lean clays (CL).
  - a. Plasticity Indexes:
    - 1) Plasticity index: greater than 7, and above A line.
    - 2) Borderline plasticity with dual classifications (CL-ML): PI between 4 and 7.
  - b. Liquid limit: less than 50.
  - c. Gradation: amount passing No. 200 sieve - greater than 50 percent.
  - d. Inorganic.
5. Class IVB: Fat clays (CH)
  - a. Plasticity index: above A line.
  - b. Liquid limit: 50 or greater.
  - c. Gradation: amount passing No. 200 sieve - greater than 50 percent.
  - d. Inorganic.
6. Use soils with dual class designation according to ASTM D 2487, and which are not defined above, according to more restrictive class.

## 2.2 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 Project Manager. Soils in Class IVB, fat clay (CH) may be used as backfill materials where allowed by applicable backfill installation specification. Refer to Section 33 2316 - Excavation and Backfill for Structures and Section 33 2317 - Excavation and Backfill for Utilities.

- B. Provide backfill material that is free of stones greater than 6 inches, free of roots, waste, debris, trash, organic material, unstable material, non-soil matter, hydrocarbon or other contamination, conforming to 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, such as crushed concrete, may be substituted for natural soil or rock products where indicated in product specification, and approved by Project Manager, provided that 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 Unified Soil Classification System (ASTM D 2487) meeting following requirements:
  - 1. Less than 15 percent passing number 200 sieve when tested in accordance with ASTM D 1140. Amount of clay lumps or balls may not exceed 2 percent.
  - 2. Material passing number 40 sieve shall meet the following requirements when tested in accordance with ASTM D 4318: Plasticity index: not exceeding 7.
- E. Concrete Sand: Natural sand, manufactured sand, or combination of natural and manufactured sand conforming to requirements of ASTM C 33 and graded within 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 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
1/2"	100
3/8"	85 to 100
No. 4	10 to 30
No. 8	0 to 10
No. 16	0 to 5

- H. Crushed Aggregates: Crushed aggregates consist of durable particles obtained from an approved source and meeting the following requirements:
1. Materials of one product delivered for same construction activity from single source, unless otherwise approved by Project Manager.
  2. Non-plastic fines.
  3. Los Angeles abrasion test wear not exceeding 45 percent when tested in accordance with ASTM C 131.
  4. Crushed aggregate shall have minimum of 90 percent of particles retained on No. 4 sieve with 2 or more crushed faces as determined by Tex-460-A, Part I.
  5. Crushed stone: Produced from oversize plant processed stone or gravel, sized by crushing to predominantly angular particles from naturally occurring single source. Uncrushed gravel is not acceptable materials for embedment where crushed stone is shown on applicable utility embedment drawing details.
  6. Crushed Concrete: Crushed concrete is an acceptable substitute for crushed stone as utility backfill. Gradation and quality control test requirements are 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, reinforcing steel fragments, soil, waste gypsum (calcium sulfate), or debris.

7. 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

- I. Select Backfill: Class III clayey gravel or sand or Class IV lean clay with plasticity index between 7 and 20 or clayey soils treated with lime in accordance with Section 322951 - Pavement Repair and Restoration 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 applicable backfill installation specification. Refer to Section 332316 - Excavation and Backfill for Structures and Section 332317 - Excavation and Backfill for Utilities.
- K. Cement Stabilized Sand: Conform to requirements of Section 322321 - Cement Stabilized Sand.
- L. Concrete Backfill: Conform to Class B concrete as specified in Section 333315 - Concrete for Utility Construction.
- M. Flexible Base Course Material: Conform to requirements of applicable portions of Section 322711 - Hot Mix Asphaltic Base Course, Section 322712 - Cement Stabilized Base Course, and Section 322713 - Recycled Crushed Concrete Base Course.

2.3 MATERIAL TESTING

- A. Source Qualification. Perform testing to obtain tests by suppliers for selection of material sources and products not from the project site. Test samples of processed materials from current production representing material to be delivered. Use tests to verify that materials meet specification requirements. Repeat qualification test procedures each time source characteristics change or there is planned change in source location or supplier. Include the following qualification tests, as applicable:
  - 1. Gradation. Report complete sieve analyses regardless of specified control sieves from largest particle through No. 200 sieve.
  - 2. Plasticity of material passing No. 40 sieve
  - 3. Los Angeles abrasion wear of material retained on No. 4 sieve
  - 4. Clay lumps
  - 5. Lightweight pieces



6. Organic impurities

- B. Production Testing. Provide reports to Project Manager from an independent testing laboratory that backfill materials to be placed in Work meet applicable specification requirements.
- C. Assist Project Manager in obtaining material samples for verification testing at source or at production plant.

PART 3 EXECUTION

3.1 SOURCES

- A. Use of existing material in trench excavations is acceptable, provided applicable specification requirements are satisfied.
- B. Identify off-site sources for backfill materials at least 14 days ahead of intended use so that Project Manager may obtain samples for verification testing.
- C. Materials may be subjected to inspection or additional verification testing after delivery. Materials which do not meet requirements of 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 material is approved by Project Manager, expense for sampling and testing required to change to different material will be credited to Owner through change order.
- D. Bank run sand, select backfill, and random backfill, if available in project excavation, may be obtained by selective excavation and acceptance testing. Obtain additional quantities of these materials and other materials required to complete work from off-site sources.
- E. Owner does not represent or guarantee that any soil found in excavation work will be suitable and acceptable as backfill material.

3.2 MATERIAL HANDLING

- A. When backfill material is obtained from either commercial or non-commercial borrow pit, open pit to expose vertical faces of various strata for identification and selection of approved material to be used. Excavate selected material by vertical cuts extending through exposed strata to achieve uniformity in product.
- B. Establish temporary stockpile locations for practical material handling, control, and verification testing by Project Manager in advance of final placement. Obtain approval from landowner for storage of backfill material on adjacent private property.
- C. When stockpiling backfill material near project site, use appropriate covers to eliminate blowing of materials into adjacent areas and prevent runoff containing sediments from entering 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.

3.3 FIELD QUALITY CONTROL

A. Quality Control

1. The Project Manager 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 Work.
2. The Project Manager may re-sample material at any stage of work or location if changes in characteristics are apparent.

- B. Production Verification Testing: Owner's testing laboratory will provide verification testing on backfill materials, as directed by Project Manager. Samples may be taken at source or at production plant, as applicable.

END OF SECTION