INVITATION FOR BIDS

AND

CONTRACT DOCUMENTS

FOR

PROJECT NUMBER 1210289
A. E. WOOD FISH HATCHERY
SAN MARCOS, HAYS COUNTY, TEXAS

ANALYTICAL SERVICES LABORATORY BUILDING
HVAC REPLACEMENT

P-O-C:
Gisela Alanis, Contract Manager, CTPM, CTCM
Email: gisela.alanis@tpwd.texas.gov
Direct Line: 512-389-4480

ISSUE DATE: March 11, 2019
BIDS DUE NO LATER THAN
2:00 PM (CST), April 11, 2019
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NOTICE TO BIDDERS

Sealed bids will be received by the Contracting Branch, Infrastructure Division, Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas 78744, UNTIL 2:00 P.M (CST), APRIL 11, 2019 for Project Number 1210289, A. E. Wood Fish Hatchery, San Marcos, Hays County, Texas. The bid opening will be conducted in A-100 Conference Room. The estimated range of construction cost is $475,000.00 to $525,000.00.

Project includes:

Remove existing facility HVAC system. Install new variable refrigerant flow system to serve facility along with new controls components. Install new fume hood and exhaust fan, provide temporary power as needed for existing freezers.

Performance Period: All work shall be completed within One Hundred Eighty (180) days commencing on the date specified in the Notice to Proceed.

Minimum Experience Requirements: Bidder must meet minimum qualifications requirements as stipulated in Division 1 – General Requirements, Section 01000 – Special Conditions, paragraph 1.32 to be eligible for contract award. (Three (3) successful construction projects similar to this project (as judged by owner) that occurred within the past five (5) years, two (2) of which are to have occurred within the last two (2) years).

HUB Subcontracting Plan (HSP): Each bidder must complete and return with the bid a HSP following the policy and utilizing the forms contained with the Invitation for Bids and Contract Documents included herein. FAILURE TO COMPLETE AND RETURN THESE FORMS WITH THE BID WILL BE CAUSE FOR REJECTION OF THE BID. THE CONTRACTOR RECEIVING AN AWARD MUST COMPLY WITH THE SPECIAL REQUIREMENTS SPECIFIED HEREIN.

Pre-Bid Conference: A Pre-Bid Conference will be held at the A. E. Wood Fish Hatchery, Analytical Services Laboratory Building is located at 505 Staples Rd, San Marcos, Texas 78666 at 10:00 am on Thursday, March 21, 2019. Although the pre-bid conference is not mandatory, Bidders are strongly encouraged to attend as important information regarding Bidding requirements and the Project will be discussed. Failure to give proper consideration to site conditions when preparing the bid will not constitute grounds for additional compensation.

Contact Information: For technical information and information regarding administration of the contract, contact Contract Manager, Gisela Alanis, at 512-389-4480 or gisela.alanis@tpwd.texas.gov.

To view and download full Bidding and Contract Documents, visit the TWPD web site using: http://tpwd.texas.gov/business/bidops/current_bid_opportunities/construction/

INSTRUCTIONS TO BIDDERS

1. **BIDS:** Bids must be received in the Infrastructure Division of the Texas Parks and Wildlife Department (TPWD) Austin, Texas NO LATER THAN the date and time specified in the Notice to Bidders. Bids received after this time will not be considered and will be returned unreviewed. **Bidders are advised that TPWD’s Headquarters Complex does not open until 8:00 A.M. Bidders should plan their delivery method accordingly.** Each bid shall be submitted on the Contractor’s Bid form provided.

**FAXED AND/OR EMAILED BIDS WILL NOT BE ACCEPTED. BIDS MUST BE ENCLOSED IN A SEALED ENVELOPE, BOX, OR CONTAINER CLEARLY MARKED ON THE OUTSIDE AS AN “OFFICIAL BID” AND SHALL INCLUDE THE FOLLOWING INFORMATION: PROJECT NUMBER, PROJECT DESCRIPTION, PROJECT LOCATION, BID OPENING DATE AND TIME.**

Bids shall have all blanks fully and legibly completed including a price for all alternates and/or unit costs when listed under the base bids on which a bid is submitted. Failure to do so shall result in rejection of the bid. Corrections in the bidder’s bid shall be legible and initialed. The bid form shall show no alterations or qualifications of any kind. **Bids must be signed by an individual who has the authority to legally Bind the firm.** TPWD reserves the right to require a bidder to furnish documentary evidence of Bidder’s signature authority.

Corrections, deletions, or additions to bids may be made by facsimile (FAX), provided such FAX are received in correct and comprehensive form prior to the opening time of bids and an original reflecting said corrections, deletion, or additions must be submitted to TPWD within two (2) business days of submitted FAX. No telephonic instructions will be accepted. **FAX corrections, deletions or additions to bids shall be sent to FAX number: 512/389-4790, attention: Gisela Alanis, Contract Manager.** This is the only number that will be used for receipt of corrections, deletions, or additions. TPWD shall NOT be responsible for failure of electronic equipment or operator error.

TPWD reserves the right to reject any or all bids—and to waive any or all informalities in connection therewith. TPWD does not bind itself to accept the lowest bid or any part thereof and reserves the right to ask for new bids for the whole or parts. The mere opening and reading aloud of a bid shall not constitute TPWD’s acceptance of the suitability of a bidder or a bid. The competency and responsibility of the bidders will be considered in making an award. TPWD reserves the right to award, partially award, or not award a contract if no responses are deemed acceptable; and may re-solicit as determined necessary and in the best of the State of Texas.

2. **BASIS OF AWARD:** Determination of the low bidder will be based on the lowest responsible base bid and/or a combination of the base bid and alternate bids. Alternates accepted will be considered in determining the low bidder, but TPWD does not obligate itself to accept an alternate or to accept alternates in any order listed unless otherwise stipulated elsewhere in the Invitation for Bids and Contract Documents.

3. **UNIT PRICE/ESTIMATED QUANTITY BIDS:** If the Bid furnished with this project requires a bid on a unit price/estimated quantity basis, the Bidder shall enter a unit price in the space provided therefor and a total item price based upon the estimated quantities shown on the bid form. Unit prices entered shall be the full price to TPWD including materials, labor, services, taxes, bonds, rentals, overhead, profit, etc., for the work described. Quantities shown reflect measurements taken from the Drawings and are assumed correct for bidding purposes. Final contract price will be based on actual quantities of work installed as determined by TPWD and Contractor upon completion of the work.

Award of contract shall be based upon the summation of the various unit price bids, but in case of error the unit prices shall govern, and computations will be checked for accuracy before award is made.
Prices will also be reviewed for balance prior to award, and obvious imbalance in favor of work scheduled for early completion or subject to significant expansion after award may be grounds for rejection of the bid.

4. **BID SECURITY:** Unless otherwise stipulated in the Invitation for Bids and Contract Documents, only projects in which the total contract price exceeds $25,000.00, will require bid security. **Bids exceeding $25,000.00 must be accompanied by a bid bond, certified check or cashier’s check drawn to the order of the Texas Parks and Wildlife Department for not less than five percent (5%) of the total amount of the bid (including total of all separate bids for one or more projects bid and multiple base bids and/or alternate bids and/or optional bids and/or allowances).** Therefore, to ensure adequate bid security, bidders should calculate bid security based on the highest possible monetary award. Certified checks and cashier checks must be originals. No other forms of bid security or checks will be accepted. **Bid will be rejected if the appropriate security is not furnished in the form specified above and by the time set for the bid opening.**

Bid security for the three (3) lowest bidders may be retained by TPWD until the successful bidder executes the contract, and if required, furnishes bonds and certificates of insurance. All other bid security will be returned as soon as practical after bid opening.

Bid security for the successful bidder will be returned following execution of the contract and submission of satisfactory bonds and insurance. If the successful bidder fails to return the signed contract (and bonds and certificate of insurance when required) within the time specified, the bid security may be forfeited not as a penalty but as liquidated damages.

5. **INSURANCE REQUIREMENTS:** The successful Contractor must certify the minimum insurance coverages as set forth by the contract, specifically, the Uniform General Conditions, Article 5, 5.2. and Division 1 – General Requirements, Section 01000 – Special Conditions. The required insurance information shall be submitted within ten (10) calendar days from receipt of Notice of Selection. Failure to timely meet this requirement may result in disqualification of the bid and forfeiture of the bid security, if any. In such circumstances, TPWD shall be authorized to proceed with award to the next highest ranking, responsive and responsible bidder.

6. **BONDING REQUIREMENTS:** If the total contract price exceeds $25,000.00, a Payment Bond must be furnished by the successful Contractor. If the total contract price exceeds $100,000.00 a Payment Bond and a Performance Bond must be furnished by the successful Contractor. All bonds submitted shall be the original form bearing original signatures and seal. (See also Article 5, Uniform General Conditions)

7. **DISCREPANCIES:** Should any Bidder find discrepancies between the Invitation for Bids and Contract Documents, or should Bidder be in doubt as to their exact meaning, Bidder should notify TPWD at once. TPWD may then, at its option, issue addenda clarifying same. TPWD will not be responsible for oral instructions or for misinterpretation of Invitation for Bids and Contract Documents.

8. **ADDENDA:** TPWD reserves the right to issue addenda at any time prior to the bid opening. (See also General Requirements – Special Conditions). All addenda shall be acknowledged as received on the Contractor’s Bid Form. Oral changes in the work made during the bidding period are not binding. **BIDDER’S FAILURE TO ACKNOWLEDGE RECEIPT OF ADDENDA MAY RESULT IN REJECTION OF BID.**

No oral explanation in regard to the meaning of the Invitation for Bids and Contract Documents will be made and no oral instructions will be given before the award of the contract. TPWD requests that all discrepancies, omissions or questions as to the meaning of Drawings and Specifications shall be communicated in writing to the Contract Manager for interpretation by **March 25, 2019 to the attention**
of Gisela Alanis, Contract Manager at the address stated in these Invitation for Bids and Contract Documents or via email to gisela.alanis@tpwd.texas.gov or via fax at 512-389-4790.

9. **PROHIBITED COMMUNICATIONS:** Upon issuance of this solicitation, TPWD, its representative(s), or partners will not answer questions or otherwise discuss the contents of this Solicitation with any potential Bidder or their representatives(s), except for the written inquiries described in the foregoing paragraph. Attempts to ask questions by phone or in person will not be allowed or recognized as valid.

**Failure to observe this restriction may disqualify Bidder.** Bidder shall rely only on written statements issued through or by TPWD’s contracting staff. This restriction does not preclude discussions between affected parties for the purposes of conducting business unrelated to this solicitation.

10. **LABOR LAWS:** Contractors must comply with all labor laws established by State and Federal statutes. (See also Article 2, Uniform General Conditions).

11. **STATE SALES TAX:** TPWD qualifies for exemption from State and Local Sales and Use Taxes pursuant to the provisions of the Texas Tax Code (Title 2, Chapter 151, Subsection 151.309).

The Contractor shall comply with applicable provisions of Chapter 34, Rules 3.291 and 3.357 of the Texas Administrative Code, or other procedures as may be prescribed by the State Comptroller of Public Accounts. Refer to Uniform General Conditions, Article 2.

12. **CONTRACTOR QUALIFICATIONS:** A Contractor's Statement of Qualifications must be submitted with the bid. Failure to properly complete and provide a Contractor's Statement of Qualifications shall be cause for the Contractor's bid being rejected by TPWD. TPWD may make such investigations as necessary to determine the ability of the Contractor to perform the work and reserves the right to reject any bid if the evidence submitted and/or obtained through investigation fails to satisfy TPWD that the Contractor is properly qualified to carry out the obligations of the Agreement.

13. **HISTORICALLY UNDERUTILIZED BUSINESS REPRESENTATIONS & CERTIFICATIONS:** BIDDERS ARE ADVISED THAT, in accordance with Texas Government Code, Sections 2161.181-182 and Title 34, Chapter 20, Subchapter B., 20.285 of the Texas Administrative Code (TAC), state agencies must make good faith effort to utilize Historically Underutilized Businesses (HUBs) in contracts for construction services, professional and consulting services and commodities contracts with an expected value of $100,000.00 or more. Each bidder must complete and return with the bid a HUB Subcontracting Plan (HSP) following the policy and utilizing the forms contained with the Invitation for Bids And Contract Documents included herein. **FAILURE TO COMPLETE AND RETURN THESE FORMS WITH THE BID WILL BE CAUSE FOR REJECTION OF THE BID. THE CONTRACTOR RECEIVING AN AWARD MUST COMPLY WITH THE SPECIAL REQUIREMENTS SPECIFIED HERIN.** For questions, call HUB Staff, 512/389-4784. An instructional video, Microsoft Word® documents and PowerPoint® presentation can be located at:

http://tpwd.texas.gov/business/bidops/hub/HSP/index.phtml

14. **PROTEST PROCEDURES:** Any Actual or prospective Respondent who is aggrieved in connection with this solicitation, evaluation, or award of any contract resulting from this solicitation may formally protest as provided in TPWD’s rules at TAC, Title 31, Part 2, Chapter 51, Subchapter L, Rule 51.350.

15. **CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY, AND VOLUNTARY EXCLUSION:** Bidder certifies that the responding entity and its principals are eligible to participate in this transaction and have not been subjected to suspension, debarment, or similar ineligibility determined by any federal, state or local governmental entity and the Bidder is in compliance with the
State of Texas statutes and rules relating to procurement and that Bidder is not listed on the federal government’s terrorism watch list as described in Executive Order 13224.

16. RESERVED

18. RESERVED

19. RESERVED
CONTRACTOR’S
BID
SUBMITTALS
Texas Parks and Wildlife Department  
4200 Smith School Road  
Austin, Texas 78744  

Having carefully examined the Invitation for Bids and Contract Documents. Project Number 1210289, A. E. Wood Fish Hatchery, Analytical Services Lab Building HVAC Replacement, San Marcos, Hays County Texas for the Texas Parks and Wildlife Department, as well as the premises and conditions affecting this work, and all other contract documents, the undersigned proposes to furnish all labor, equipment and materials necessary to complete the work for the sum of:

**BID SCHEDULE**

<table>
<thead>
<tr>
<th>BASE BID ITEMS</th>
<th>LUMP SUM PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furnish all labor, equipment, materials, and incidentals necessary to remove existing facility HVAC system and replace with new variable refrigerant flow (VRF) system, to include new controls components, fume hood and exhaust, temporary power supply for freezers, in accordance with the Invitation for Bids and Contract Documents.</td>
<td>$</td>
</tr>
<tr>
<td>Mobilization/Demobilization:</td>
<td>$</td>
</tr>
</tbody>
</table>

| TOTAL LUMP SUM BASE BID | $ |

(Total Base Bid Price written in words)

**EACH BID ITEM INCLUDES ANY AND ALL APPURtenant WORK AND ITEMS NECESSARY FOR FULLY FUNCTIONAL AND OPERATIONAL SYSTEMS, COMPLETE AND IN PLACE, IN ACCORDANCE WITH THE INVITATION FOR BIDS AND CONTRACT DOCUMENTS.**

BASE BID will be evaluated, and determination of the low bidder will be based on responsiveness and responsibility of the bidder and on the Base Bid. HOWEVER, THE OWNER RESERVES THE RIGHT TO AWARD TO THE LOW BIDDER ANY COMBINATION OF BID ITEMS OR TO REJECT ALL BIDS.

**BIDDER UNDERSTANDS AND ACKNOWLEDGES THAT BIDDER MUST MEET THE MINIMUM QUALIFICATION AND/OR EXPERIENCE REQUIREMENTS SET FORTH IN PARAGRAPH 1.32 OF DIVISION 1, GENERAL REQUIREMENTS, SECTION 01000, SPECIAL CONDITIONS TO BE ELIGIBLE FOR AWARD OF THIS CONTRACT. BIDDER, BY SIGNING THIS BID, AFFIRMS THAT**
BIDDER MEETS SUCH MINIMUM REQUIREMENTS. FAILURE TO MEET ANY OF THE MINIMUM QUALIFICATIONS SHALL RESULT IN REJECTION OF THE BID.

The undersigned further agrees that, if awarded the Contract, the work will be completed within **One Hundred Eighty (180) calendar days** commencing on the date specified in the Notice to Proceed.

The undersigned agrees that when written notice of bid acceptance is furnished by the Owner within **sixty (60) calendar days** after the bid opening date, the undersigned will, within the stipulated time, execute and deliver the contract and all required bonds, certificates of insurance, and PR-1 and PR-2 submittals to the Owner. Failure to timely provide the insurance certificate, bonds, and submittals shall be grounds for disqualification of bid and forfeiture of bid security. In such circumstances, TPWD shall be authorized to proceed with award to the next lowest, responsive and responsible bidder.

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

The undersigned agrees that this bid will not be withdrawn for a period of sixty (60) calendar days from the date set for the bid opening, and the undersigned further agrees that the bid security will be forfeited in the event this bid is withdrawn before expiration of said sixty (60) calendar days.

By the signature hereon affixed, the bidder hereby certifies that neither the bidder, nor the firm, corporation, partnership, or institution represented by the bidder, or anyone acting for such firm, corporation, or institution has violated the antitrust laws of this State, codified in Section 15.01 et seq., **Texas Business and Commerce Code**, or the Federal antitrust laws, nor communicated directly or indirectly the bid made to any competitor or any other person engaged in such line of business.

Pursuant to **Texas Government Code**, Title 10, Subchapter A, §2155.004 (a), Bidder acknowledges that Bidder has not received compensation for participation in the preparation of the specifications for this project.

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

By signing this bid, Bidder certifies that if a Texas address is shown as the address of the Bidder, Bidder qualifies as a Texas Resident bidder as defined in **Texas Administrative Code**, Title 1, Part 5, Chapter 111, Subchapter A, §111.2 (10).

By signature hereon, the bidder hereby certifies that he/she is not currently delinquent in the payment of any franchise taxes owed the State of Texas under Chapter 171, Tax Code. Making a false statement as to corporate tax status is a material breach of contract.
Bidder certifies that the bidding entity and its principals are eligible to participate in this transaction and have not been subjected to suspension, debarment, or similar ineligibility determined by any federal, state or local governmental entity and that bidder is in compliance with the State of Texas Statutes and Rules relating to procurement and that bidder is not listed on the Federal Government’s Terrorism Watch List as described in Executive Order 13224. Entities ineligible for federal procurement are listed at http://www.sam.gov.

By signing this bid, a bidder affirms that he has not given, offered to give, nor intends to give at any time hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor or service to a public servant in connection with the submitted bid.

Bidder agrees that any payments due under this contract will be applied towards any debt, including but not limited to delinquent taxes and child support, which is owed to the State of Texas.

Bidder agrees to comply with Texas Government Code, Title 10, Subtitle D, §2155.4441, relating to use of services contracts for products produced in the State of Texas.

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

Pursuant to Texas Government Code, Title 10, Subchapter F, §§ 2270.001-2270.002, TPWD may not enter into a contract with a company (as defined by Texas Government Code, Title 8, Subchapter A, § 808.001) that boycotts Israel. By signing this bid, Bidder verifies that in accordance with Texas Government Code, Title 10, Subchapter F, §§ 2270.001-2270.002, Bidder:

1. Does not boycott Israel; and
2. Will not boycott Israel during the term of the contract.

Pursuant to Texas Government Code, Title 10, Subchapter F, §§ 2252.151-2252.154, TPWD may not enter into a contract with a company (as defined by Texas Government Code, Title 8, Subchapter A, § 806.051) that is identified on a list prepared and maintained by the Texas Comptroller of Public Accounts under Texas Government Code, §§ 806.001, 807.051 or 2252.153. By signing this bid, Bidder certifies that it is not a company identified on a list as prepared and maintained by the Texas Comptroller of Public Accounts pursuant to Texas Government Code, §§ 806.001, 807.051 or 2252.153.

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

By signing this bid, Bidder acknowledges and understands that the acceptance of funds by the Bidder or any other entity or person directly under this Contract, or indirectly through a subcontract under this Contract, shall constitute acceptance of the authority of the State Auditor’s Office, Comptroller or other agency of the State of Texas, TPWD or any successor agency, to conduct an audit or investigation in connection with those funds. The Bidder further agrees to cooperate fully with the above parties in the conduct of the audit or investigation, including providing access to any information the state auditor considers relevant to the investigation or audit. The Bidder shall ensure that this paragraph concerning the State’s authority to audit funds received indirectly by subcontractors through the Bidder and the requirement to cooperate is included in any subcontract it awards.
Bidder represents and warrants that the provision of goods and services or other performance under the contract will not constitute an actual or potential conflict of interest or reasonably create an appearance of impropriety.

If applicable, pursuant to Texas Family Code, Title 5, Subtitle D, §231.006(d), regarding child support, the Bidder certifies that the individual or business entity named in this bid is not ineligible to receive the specified payment and acknowledges that this contract may be terminated, and payment may be withheld if this certification is inaccurate. Furthermore, Bidder must provide, in the spaces(s) below, the name and Social Security number of an individual owner, a sole proprietor and all partners, shareholders, or owners with an ownership interest of at least 25% of the business entity prior to award of contract.

<table>
<thead>
<tr>
<th>Name</th>
<th>SSN</th>
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Bidder certifies that they are in compliance with Texas Government Code, Title 6, §669.003, relating to contracting with executive head of a State agency. If §669.003 applies, Bidder will complete the following information in order for the bid to be evaluated:

Name of former executive: ________________________________

Name of State agency: ________________________________

Date of separation from State agency: ____________________

Position with Bidder: ________________________________

Date of employment with Bidder: ________________________

THE REST OF THIS PAGE INTENTIONALLY LEFT BLANK
RECEIPT IS HEREBY ACKNOWLEDGED OF THE FOLLOWING ADDENDA TO THIS IFB (INITIAL IF APPLICABLE)

No. 01 ____ No. 02 ____ No. 03 ____ No. 04 ____ No. 05 ____ No. 06 ____ No. 07 ____

WARNING: BIDDER’S FAILURE TO ACKNOWLEDGE RECEIPT OF ADDENDA MAY RESULT IN REJECTION OF BID.

BIDDER’S AFFIRMATION: SIGNING THIS BID WITH A FALSE STATEMENT IS A MATERIAL BREACH OF CONTRACT AND SHALL VOID THE SUBMITTED BID OR ANY RESULTING CONTRACTS, AND THE BIDDER SHALL BE REMOVED FROM ALL BID LISTS.

<table>
<thead>
<tr>
<th>Name of Contracting Firm</th>
<th>By</th>
<th>Authorized Signature</th>
<th>Date</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Address</th>
<th>Printed Name</th>
<th></th>
</tr>
</thead>
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<table>
<thead>
<tr>
<th>City</th>
<th>State</th>
<th>Zip</th>
<th>Title</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Area Code) Phone Number</td>
<td>(Area Code) Phone Number</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email address</td>
<td>(Area Code) FAX Number</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Texas Identification Number</td>
<td>(Area Code) Cell Number</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TEXAS PARKS AND WILDLIFE

CONTRACTOR'S QUALIFICATION STATEMENT

COMPLETE ALL SECTIONS OF THIS FORM AND SUBMIT WITH BID

PROJECT NO. 1210289 LOCATION: A. E. Wood Fish Hatchery BID DATE: April 11, 2019

FIRM

ADDRESS

PHONE FAX

E-MAIL

Individual ______ Partnership ______ Corporation ______

If incorporated, under the laws of the State of ______ with principal place of business in ______

PRINCIPALS IN FIRM AND YEARS EXPERIENCE IN CONSTRUCTION:

<table>
<thead>
<tr>
<th>NAME</th>
<th>TITLE</th>
<th>PHONE</th>
<th>NO. OF YEARS</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
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<tr>
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</tr>
</tbody>
</table>

FIRM HISTORY: List firm history below including any other business names used.

From ______ to ______ Firm Name

From ______ to ______ Firm Name

From ______ to ______ Firm Name

From ______ to ______ Firm Name

Has firm, under its current or former name(s) ever failed to complete a project, defaulted on a contract, or been engaged in litigation over a contract? _____ Yes _____ No. If so, state particulars of most recent occurrence on separate sheet(s) and attach to this form.

CONSTRUCTION CAPABILITIES:

FIRM'S AVERAGE ANNUAL CONSTRUCTION VOLUME $ ________ Percentage of this volume by construction categories:

<table>
<thead>
<tr>
<th>Building ______ %</th>
<th>Mech.-HVAC ______ %</th>
<th>Hwy/Roads ______ %</th>
<th>Other ______ %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical ______ %</td>
<td>Utility Lines ______ %</td>
<td>Earthwork ______ %</td>
<td>Other ______ %</td>
</tr>
<tr>
<td>Plumbing ______ %</td>
<td>Utility Plants ______ %</td>
<td>Site Work ______ %</td>
<td>Other ______ %</td>
</tr>
</tbody>
</table>
BONDING INFORMATION: Indicate agency/surety through which bonding will be obtained.

<table>
<thead>
<tr>
<th>AGENCY</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/State/Zip</td>
<td>E-Mail</td>
</tr>
<tr>
<td>Phone</td>
<td>Fax</td>
</tr>
<tr>
<td>Agent's Name</td>
<td>Agent's Phone</td>
</tr>
<tr>
<td>Name of Power of Attorney from Bond Company</td>
<td>Expiration Date</td>
</tr>
</tbody>
</table>

BONDING COMPANY

<table>
<thead>
<tr>
<th>Address</th>
</tr>
</thead>
<tbody>
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<tr>
<td>Phone</td>
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<tr>
<td>Name of Representative</td>
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</table>

EXPERIENCE RECORD

List minimum of three (3) projects (attach additional sheets if necessary) that are at least 50% completed (50% completed projects will be counted towards successful projects) or have been completed within the last (5) years, of which, two (2) projects are within the last two (2) years, and that demonstrate similar experience. Refer to DIVISION ONE – GENERAL REQUIREMENTS, Section 01000 - Special Conditions, paragraph 1.32.

1. Project Description

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<th>Project Location</th>
<th>Contract Amount</th>
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<td>Project Owner's Rep familiar with project</td>
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### EXPERIENCE RECORD: (CONTINUED)

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**HUB AND TPWD CONTRACTING EXPERIENCE:**

Please indicate if the firm is a Texas Certified Historically Underutilized Business (HUB): _____ YES  _____ NO
If yes, please indicate gender and ethnicity:  Gender: _____ Male _____ Female
Ethnicity ________________________________ (Asian Pacific Islander, Black American, Hispanic American, Native American)
Service Disabled Veteran: _____ YES  _____ NO

Has firm ever done business with TPWD? _____ YES  _____ NO
If yes, list the most recent project number(s): ____________________________

I hereby certify that all information provided above and attached is true and correct. Furthermore, I hereby authorize you to contact the references listed above and authorize release of information from such references to Texas Parks and Wildlife Department. I hereby certify that my firm is not debarred or suspended from performing work for the U.S.A. or the State of Texas.

Name of Firm

Signature of Owner or Officer

Title of Person Signing

Date
HUB Subcontracting Plan (HSP)

QUICK CHECKLIST

While this HSP Quick Checklist is being provided to merely assist you in readily identifying the sections of the HSP form that you will need to complete, it is very important that you adhere to the instructions in the HSP form and instructions provided by the contracting agency.

► If you will be awarding all of the subcontracting work you have to offer under the contract to only Texas certified HUB vendors, complete:

☐ Section 1 - Respondent and Requisition Information
☐ Section 2 a. - Yes, I will be subcontracting portions of the contract.
☐ Section 2 b. - List all the portions of work you will subcontract, and indicate the percentage of the contract you expect to award to Texas certified HUB vendors.
☐ Section 2 c. - Yes
☐ Section 4 - Affirmation
☐ GFE Method A (Attachment A) - Complete an Attachment A for each of the subcontracting opportunities you listed in Section 2 b.

► If you will be subcontracting any portion of the contract to Texas certified HUB vendors and Non-HUB vendors, and the aggregate percentage of all the subcontracting work you will be awarding to the Texas certified HUB vendors with which you do not have a continuous contract* in place for more than five (5) years meets or exceeds the HUB Goal the contracting agency identified in the "Agency Special Instructions/Additional Requirements", complete:

☐ Section 1 - Respondent and Requisition Information
☐ Section 2 a. - Yes, I will be subcontracting portions of the contract.
☐ Section 2 b. - List all the portions of work you will subcontract, and indicate the percentage of the contract you expect to award to Texas certified HUB vendors and Non-HUB vendors.
☐ Section 2 c. - No
☐ Section 2 d. - Yes
☐ Section 4 - Affirmation
☐ GFE Method A (Attachment A) - Complete an Attachment A for each of the subcontracting opportunities you listed in Section 2 b.

► If you will be subcontracting any portion of the contract to Texas certified HUB vendors and Non-HUB vendors or only to Non-HUB vendors, and the aggregate percentage of all the subcontracting work you will be awarding to the Texas certified HUB vendors with which you do not have a continuous contract* in place for more than five (5) years does not meet or exceed the HUB Goal the contracting agency identified in the "Agency Special Instructions/Additional Requirements", complete:

☐ Section 1 - Respondent and Requisition Information
☐ Section 2 a. - Yes, I will be subcontracting portions of the contract.
☐ Section 2 b. - List all the portions of work you will subcontract, and indicate the percentage of the contract you expect to award to Texas certified HUB vendors and Non-HUB vendors.
☐ Section 2 c. - No
☐ Section 2 d. - No
☐ Section 4 - Affirmation
☐ GFE Method B (Attachment B) - Complete an Attachment B for each of the subcontracting opportunities you listed in Section 2 b.

► If you will not be subcontracting any portion of the contract and will be fulfilling the entire contract with your own resources (i.e., employees, supplies, materials and/or equipment), complete:

☐ Section 1 - Respondent and Requisition Information
☐ Section 2 a. - No, I will not be subcontracting any portion of the contract, and I will be fulfilling the entire contract with my own resources.
☐ Section 3 - Self Performing Justification
☐ Section 4 - Affirmation

*Continuous Contract: Any existing written agreement (including any renewals that are exercised) between a prime contractor and a HUB vendor, where the HUB vendor provides the prime contractor with goods or service, to include under the same contract for a specified period of time. The frequency the HUB vendor is utilized or paid during the term of the contract is not relevant to whether the contract is considered continuous. Two or more contracts that run concurrently or overlap one another for different periods of time are considered by CPA to be individual contracts rather than renewals or extensions to the original contract. In such situations the prime contractor and HUB vendor are entering (have entered) into "new" contracts.
HUB Subcontracting Plan (HSP)

In accordance with Texas Gov't Code §2161.252, the contracting agency has determined that subcontracting opportunities are probable under this contract. Therefore, all respondents, including State of Texas certified Historically Underutilized Businesses (HUBs) must complete and submit this State of Texas HUB Subcontracting Plan (HSP) with their response to the bid requisition (solicitation).

NOTE: Responses that do not include a completed HSP shall be rejected pursuant to Texas Gov't Code §2161.252(b).

The HUB Program promotes equal business opportunities for economically disadvantaged persons to contract with the State of Texas in accordance with the goals specified in the 2009 State of Texas Disparity Study. The statewide HUB goals defined in 34 Texas Administrative Code (TAC) §20.284 are:

- 11.2 percent for heavy construction other than building contracts,
- 21.1 percent for all building construction, including general contractors and operative builders' contracts,
- 32.9 percent for all special trade construction contracts,
- 23.7 percent for professional services contracts,
- 26.0 percent for all other services contracts, and
- 21.1 percent for commodities contracts.

--- Agency Special Instructions/Additional Requirements ---

In accordance with 34 TAC §20.285(d)(1)(D)(ii), a respondent (prime contractor) may demonstrate good faith effort to utilize Texas certified HUBs for its subcontracting opportunities, if the total value of the respondent's subcontracts with Texas certified HUBs meets or exceeds the statewide HUB goal or the agency specific HUB goal, whichever is higher. When a respondent uses this method to demonstrate good faith effort, the respondent must identify the HUBs with which it will subcontract. If using existing contracts with Texas certified HUBs to satisfy this requirement, only the aggregate percentage of the contracts expected to be subcontracted to HUBs with which the respondent does not have a continuous contract in place for more than five (5) years shall qualify for meeting the HUB goal. This limitation is designed to encourage vendor rotation as recommended by the 2009 Texas Disparity Study.

If you are completing Method B (Attachment B) of the HSP, please provide all supporting documentation pertaining to the notifications of a minimum of three (3) Texas-certified HUBs and two (2) minority, women, or service-disabled veteran trade organizations or development centers for each subcontracting opportunity listed in Section 2, Item b. Such supporting documentation would include all e-mails, faxes, delivery receipts, confirmation receipts/pages, attachments, etc.

For questions regarding the HSP, please contact TPWD HUB Administration at 512-389-4784 or hub@tpwd.texas.gov.

SECTION 1: RESPONDENT AND REQUISITION INFORMATION

<table>
<thead>
<tr>
<th>a. Respondent (Company) Name:</th>
<th>State of Texas VID #:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point of Contact:</td>
<td>Phone #:</td>
</tr>
<tr>
<td>E-mail Address:</td>
<td>Fax #:</td>
</tr>
</tbody>
</table>

b. Is your company a State of Texas certified HUB?  □ - Yes  □ - No

c. Requisition #: Bid Open Date: (mm/dd/yyyy)
SECTION 2a: RESPONDENT'S SUBCONTRACTING INTENTIONS

After dividing the contract work into reasonable lots or portions to the extent consistent with prudent industry practices, and taking into consideration the scope of work to be performed under the proposed contract, including all potential subcontracting opportunities, the respondent must determine what portions of work, including contracted staffing, goods and services will be subcontracted. Note: In accordance with 34 TAC §20.282, a "Subcontractor" means a person who contracts with a prime contractor to work, to supply commodities, or to contribute toward completing work for a governmental entity.

a. Check the appropriate box (Yes or No) that identifies your subcontracting intentions:

   - Yes, I will be subcontracting portions of the contract. (If Yes, complete Item b of this SECTION and continue to Item c of this SECTION.)
   - No, I will not be subcontracting any portion of the contract, and I will be fulfilling the entire contract with my own resources, including employees, goods and services. (If No, continue to SECTION 3 and SECTION 4.)

b. List all the portions of work (subcontracting opportunities) you will subcontract. Also, based on the total value of the contract, identify the percentages of the contract you expect to award to Texas certified HUBs, and the percentage of the contract you expect to award to vendors that are not a Texas certified HUB (i.e., Non-HUB).

<table>
<thead>
<tr>
<th>Item #</th>
<th>Subcontracting Opportunity Description</th>
<th>Percentage of the contract expected to be subcontracted to HUBs with which you do not have a continuous contract in place for more than five (5) years</th>
<th>Percentage of the contract expected to be subcontracted to HUBs with which you have a continuous contract in place for more than five (5) years</th>
<th>Percentage of the contract expected to be subcontracted to non-HUBs</th>
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Aggregate percentages of the contract expected to be subcontracted:

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<th>Non-HUBs</th>
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(Note: If you have more than fifteen subcontracting opportunities, a continuation sheet is available online at [https://www.comptroller.texas.gov/purchasing/vendorhub/forms.php](https://www.comptroller.texas.gov/purchasing/vendorhub/forms.php).

c. Check the appropriate box (Yes or No) that indicates whether you will be using only Texas certified HUBs to perform all of the subcontracting opportunities you listed in SECTION 2, Item b.

   - Yes (If Yes, continue to SECTION 4 and complete an "HSP Good Faith Effort - Method A (Attachment A)" for each of the subcontracting opportunities you listed.)
   - No (If No, continue to Item d, of this SECTION.)

d. Check the appropriate box (Yes or No) that indicates whether the aggregate expected percentage of the contract you will subcontract with Texas certified HUBs will which you do not have a continuous contract in place with for more than five (5) years, meets or exceeds the HUB goal the contracting agency identified on page 1 in the "Agency Special Instructions/Additional Requirements."

   - Yes (If Yes, continue to SECTION 4 and complete an "HSP Good Faith Effort - Method A (Attachment A)" for each of the subcontracting opportunities you listed.)
   - No (If No, continue to SECTION 4 and complete an "HSP Good Faith Effort - Method B (Attachment B)" for each of the subcontracting opportunities you listed.)

*Continuous Contract: Any existing written agreement (including any renewals that are exercised) between a prime contractor and a HUB vendor, where the HUB vendor provides the prime contractor with goods or service under the same contract for a specified period of time. The frequency the HUB vendor is utilized or paid during the term of the contract is not relevant to whether the contract is considered continuous. Two or more contracts that run concurrently or overlap one another for different periods of time are considered by CPA to be individual contracts rather than renewals or extensions to the original contract. In such situations the prime contractor and HUB vendor are entering (have entered) into "new" contracts.
### SECTION 2: RESPONDENT'S SUBCONTRACTING INTENTIONS (CONTINUATION SHEET)

This page can be used as a continuation sheet to the HSP Form's page 2, Section 2, Item b. Continue listing the portions of work (subcontracting opportunities) you will subcontract. Also, based on the total value of the contract, identify the percentages of the contract you expect to award to Texas certified HUBs, and the percentage of the contract you expect to award to vendors that are not a Texas certified HUB (i.e., Non-HUB).

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Aggregate percentages of the contract expected to be subcontracted: % % %

*Continuous Contract: Any existing written agreement (including any renewals that are exercised) between a prime contractor and a HUB vendor, where the HUB vendor provides the prime contractor with goods or service under the same contract for a specified period of time. The frequency the HUB vendor is utilized or paid during the term of the contract is not relevant to whether the contract is considered continuous. Two or more contracts that run concurrently or overlap one another for different periods of time are considered by CPA to be individual contracts rather than renewals or extensions to the original contract. In such situations the prime contractor and HUB vendor are entering (have entered) into "new" contracts.*
SECTION 3. SELF PERFORMING JUSTIFICATION (If you responded “No” to SECTION 2, Item a, you must complete this SECTION and continue to SECTION 4.) If you responded “No” to SECTION 2, Item a, in the space provided below explain how your company will perform the entire contract with its own employees, supplies, materials and/or equipment.

SECTION 4. AFFIRMATION

As evidenced by my signature below, I affirm that I am an authorized representative of the respondent listed in SECTION 1, and that the information and supporting documentation submitted with the HSP is true and correct. Respondent understands and agrees that, if awarded any portion of the requisition:

- The respondent will provide notice as soon as practical to all the subcontractors (HUBs and Non-HUBs) of their selection as a subcontractor for the awarded contract. The notice must specify at a minimum the contracting agency’s name and its point of contact for the contract, the contract award number, the subcontracting opportunity they (the subcontractor) will perform, the approximate dollar value of the subcontracting opportunity and the expected percentage of the total contract that the subcontracting opportunity represents. A copy of the notice required by this section must also be provided to the contracting agency’s point of contact for the contract no later than ten (10) working days after the contract is awarded.

- The respondent must submit monthly compliance reports (Prime Contractor Progress Assessment Report – PAR) to the contracting agency, verifying its compliance with the HSP, including the use of and expenditures made to its subcontractors (HUBs and Non-HUBs). (The PAR is available at https://www.comptroller.texas.gov/purchasing/docs/hub-forms/Progress-AssessmentReportForm.xl).n

- The respondent must seek approval from the contracting agency prior to making any modifications to its HSP, including the hiring of additional or different subcontractors and the termination of a subcontractor the respondent identified in its HSP. If the HSP is modified without the contracting agency’s prior approval, respondent may be subject to any and all enforcement remedies available under the contract or otherwise available by law, up to and including debarment from all state contracting.

- The respondent must, upon request, allow the contracting agency to perform on-site reviews of the company’s headquarters and/or work-site where services are being performed and must provide documentation regarding staffing and other resources.

__________________________  __________________________  __________________________  ________________
Signature  Printed Name  Title  Date
(mmm/dd/yyyy)

Reminder:

➤ If you responded “Yes” to SECTION 2, Items c or d, you must complete an “HSP Good Faith Effort - Method A (Attachment A)” for each of the subcontracting opportunities you listed in SECTION 2, Item b.

➤ If you responded “No” SECTION 2, Items c and d, you must complete an “HSP Good Faith Effort - Method B (Attachment B)” for each of the subcontracting opportunities you listed in SECTION 2, Item b.
HSP Good Faith Effort - Method A (Attachment A)

Enter your company's name here: ____________________________ Requisition #: _______________________

IMPORTANT: If you responded "Yes" to SECTION 2, Item 3 or of the completed HSP form, you must submit a completed "HSP Good Faith Effort - Method A (Attachment A)" for each of the subcontracting opportunities you listed in SECTION 2, Item b, of the completed HSP form. You may photo-copy this page or download the form at https://www.comptroller.texas.gov/purchasing/docs/hub-forms/hub-subcont-plan-gfe-a.pdf

SECTION A-1: Subcontracting Opportunity

Enter the item number and description of the subcontracting opportunity you listed in SECTION 2, Item b, of the completed HSP form for which you are completing the attachment.

Item Number: ___________________ Description: ____________________________________________

SECTION A-2: Subcontractor Selection

List the subcontractor(s) you selected to perform the subcontracting opportunity you listed above in SECTION A-1. Also identify whether they are a Texas certified HUB and their Texas Vendor Identification (VID) Number or federal Employer Identification Number (EIN), the approximate dollar value of the work to be subcontracted, and the expected percentage of work to be subcontracted. When searching for Texas certified HUBs, verify their HUB status, ensure that you use the State of Texas' Centralized Master Bidders List (CMBL) - Historically Underutilized Business (HUB) Directory Search located at http://mycba.dot.state.tx.us/passesmb/search/index.jsp. HUB status code "A" signifies that the company is a Texas certified HUB.

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Texas certified HUB</th>
<th>Texas VID or federal EIN (if you do not know their VID or EIN, please enter &quot;Not Available&quot;)</th>
<th>Approximate Dollar Amount</th>
<th>Expected Percentage of Contract</th>
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REMEMBER: As specified in SECTION 4 of the completed HSP form, if you (respondent) are awarded any portion of the requisition, you are required to provide notice as soon as practical to all the subcontractors (HUBs and Non-HUBs) of their selection as a subcontractor. The notice must specify at a minimum the contracting agency’s name and its point of contact for the contract, the contract award number, the subcontracting opportunity they (the subcontractor) will perform, the approximate dollar value of the subcontracting opportunity and the expected percentage of the total contract that the subcontracting opportunity represents. A copy of the notice required by this section must also be provided to the contracting agency’s point of contact for the contract no later than ten (10) working days after the contract is awarded.

Page 1 of 1
(Attachment A)
HSP Good Faith Effort - Method B (Attachment B)

Enter your company's name here: __________________________ Requisition #: __________________________

IMPORTANT: If you responded "No" to SECTION 2, Items c and d of the completed HSP form, you must submit a completed "HSP Good Faith Effort - Method B (Attachment B)" for each of the subcontracting opportunities you listed in SECTION 2, Item b of the completed HSP form. You may photo-copy this page or download the form at https://www.comptroller.texas.gov/purchasing/docs/hub-forms/hub-subcontract-plan-of-achm-b.pdf.

SECTION B-1: SUBCONTRACTING OPPORTUNITY

Enter the item number and description of the subcontracting opportunity you listed in SECTION 2, Item b, of the completed HSP form for which you are completing the attachment.

Item Number: ______ Description: ______

SECTION B-2: MENTOR PROTÉGÉ PROGRAM

If respondent is participating as a Mentor in a State of Texas Mentor Protégé Program, submitting its Protégé (Protégé must be a State of Texas certified HUB) as a subcontractor to perform the subcontracting opportunity listed in SECTION B-1, constitutes a good faith effort to subcontract with a Texas certified HUB towards that specific portion of work.

Check the appropriate box (Yes or No) that indicates whether you will be subcontracting the portion of work you listed in SECTION B-1 to your Protégé.

☐ - Yes (If Yes, continue to SECTION B-4.)
☐ - No / Not Applicable (If No or Not Applicable, continue to SECTION B-3 and SECTION B-4.)

SECTION B-3: NOTIFICATION OF SUBCONTRACTING OPPORTUNITY

When completing this section you MUST comply with items a, b, c, and d, thereby demonstrating your Good Faith Effort of having notified Texas certified HUBs and trade organizations or development centers about the subcontracting opportunity you listed in SECTION B-1. Your notice should include the scope of work, information regarding the location to review plans and specifications, bonding and insurance requirements, required qualifications, and identify a contact person. When sending notice of your subcontracting opportunity, you are encouraged to use the attached HUB Subcontracting Opportunity Notice form, which is also available online at https://www.comptroller.texas.gov/purchasing/docs/hub-forms/HUBSubcontractingOpportunityNotificationForm.pdf.

Retain supporting documentation (i.e., certified letter, fax, e-mail) demonstrating evidence of your good faith effort to notify the Texas certified HUBs and trade organizations or development centers. Also, be mindful that a working day is considered a normal business day of a state agency, not including weekends, federal or state holidays, or days the agency is declared closed by its executive officer. The initial day the subcontracting opportunity notice is sent to the HUBs and to the trade organizations or development centers is considered to be “day zero” and does not count as one of the seven (7) working days.

a. Provide written notification of the subcontracting opportunity you listed in SECTION B-1, to three (3) or more Texas certified HUBs. Unless the contracting agency specified a different time period, you must allow the HUBs at least seven (7) working days to respond to the notice prior to submitting your bid response to the contracting agency. When searching for Texas certified HUBs and verifying their status, make sure that you use the State of Texas’ Centralized Master Bidders List (CMBL) - Historically Underutilized Business (HUB) Directory Search located at http://mycga.cpa.state.tx.us/passclmtsearch/index.jsp. HUB status code "A" signifies that the company is a Texas certified HUB.

b. List the three (3) Texas certified HUBs you notified regarding the subcontracting opportunity you listed in SECTION B-1. Include the company’s Texas Vendor Identification (VID) Number, the date you sent notice to that company, and indicate whether it was responsive or non-responsive to your subcontracting opportunity notice.

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Texas VID (Do not enter Social Security Numbers)</th>
<th>Date Notice Sent (MM/DD/YYYY)</th>
<th>Did the HUB Respond?</th>
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c. Provide written notification of the subcontracting opportunity you listed in SECTION B-1 to two (2) or more trade organizations or development centers in Texas to assist in identifying potential HUBs by disseminating the subcontracting opportunity to their members/participants. Unless the contracting agency specified a different time period, you must provide your subcontracting opportunity notice to trade organizations or development centers at least seven (7) working days prior to submitting your bid response to the contracting agency. A list of trade organizations and development centers that have expressed an interest in receiving notices of subcontracting opportunities is available on the Statewide HUB Program’s webpage at https://www.comptroller.texas.gov/purchasing/vendor/hub/resources.php.

d. List two (2) trade organizations or development centers you notified regarding the subcontracting opportunity you listed in SECTION B-1. Include the date when you sent notice to it and indicate if it accepted or rejected your notice.

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<tr>
<th>Trade Organizations or Development Centers</th>
<th>Date Notice Sent (MM/DD/YYYY)</th>
<th>Was the Notice Accepted?</th>
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Page 1 of 2
(Attachment B)
SECTION B-4: SUBCONTRACTOR SELECTION

Enter the item number and description of the subcontracting opportunity you listed in SECTION 2, Item b, of the completed HSP form for which you are completing the attachment.

a. Enter the item number and description of the subcontracting opportunity for which you are completing this Attachment B continuation page.

Item Number: ____________ Description: ____________________________

b. List the subcontractor(s) you selected to perform the subcontracting opportunity you listed in SECTION B-1. Also identify whether they are a Texas certified HUB and their Texas Vendor Identification (VID) Number or federal Employer Identification Number (EIN), the approximate dollar value of the work to be subcontracted, and the expected percentage of work to be subcontracted. When searching for Texas certified HUBs and verifying their HUB status, ensure that you use the State of Texas' Centralized Master Bidders List (CMBL) - Historically Underutilized Business (HUB) Directory Search located at http://mycpa.cpa.state.tx.us/passesmbsearch/index.jsp. HUB status code "A" signifies that the company is a Texas certified HUB.

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<tr>
<th>Company Name</th>
<th>Texas certified HUB</th>
<th>Texas VID or federal EIN</th>
<th>Approximate Dollar Amount</th>
<th>Expected Percentage of Contract</th>
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If any of the subcontractors you have selected to perform the subcontracting opportunity you listed in SECTION B-1 is not a Texas certified HUB, provide written justification for your selection process (attach additional page if necessary):

REMEMBER: As specified in SECTION 4 of the completed HSP form, if you (respondent) are awarded any portion of the requisition, you are required to provide notice as soon as practical to all the subcontractors (HUBs and Non-HUBs) of their selection as a subcontractor. The notice must specify at a minimum the contracting agency's name and its point of contact for the contract, the contract award number, the subcontracting opportunity it (the subcontractor) will perform, the approximate dollar value of the subcontracting opportunity and the expected percentage of the total contract that the subcontracting opportunity represents. A copy of the notice required by this section must also be provided to the contracting agency's point of contact for the contract no later than ten (10) working days after the contract is awarded.
# HUB Subcontracting Opportunity Notification Form

In accordance with Texas Gov't Code, Chapter 2161, each state agency that considers entering into a contract with an expected value of $100,000 or more shall, before the agency solicits bids, proposals, offers, or other applicable expressions of interest, determine whether subcontracting opportunities are probable under the contract. The state agency has identified subcontracting opportunities are probable under the requisition to which my company will be responding.

34 Texas Administrative Code, §20.285 requires all respondents (prime contractors) bidding on the contract to provide notice of each of their subcontracting opportunities to at least three (3) Texas certified HUBs (who work within the respective industry applicable to the subcontracting opportunity), and allow the HUBs at least seven (7) working days to respond to the notice prior to the respondent submitting its bid response to the contracting agency. In addition, at least seven (7) working days prior to submitting its bid response to the contracting agency, the respondent must provide notice of each of its subcontracting opportunities to two (2) or more trade organizations or development centers (in Texas) that serves members of groups (i.e., Asian Pacific American, Black American, Hispanic American, Native American, Woman, Service Disabled Veteran) identified in Texas Administrative Code §20.282(19)(C).

We respectfully request that vendors interested in bidding on the subcontracting opportunity scope of work identified in Section C, Item 2, reply no later than the date and time identified in Section C, Item 1. Submit your response to the point-of-contact referenced in Section A.

### SECTION A: PRIME CONTRACTOR’S INFORMATION

<table>
<thead>
<tr>
<th>Company Name:</th>
<th>State of Texas VID #:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point-of-Contact:</td>
<td>Phone #:</td>
</tr>
<tr>
<td>E-mail Address:</td>
<td>Fax #:</td>
</tr>
</tbody>
</table>

### SECTION B: CONTRACTING STATE AGENCY AND REQUISITION INFORMATION

<table>
<thead>
<tr>
<th>Agency Name:</th>
<th>Phone #:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point-of-Contact:</td>
<td>Requisition #:</td>
</tr>
<tr>
<td>Requisition #:</td>
<td>Bid Open Date:</td>
</tr>
</tbody>
</table>

### SECTION C: SUBCONTRACTING OPPORTUNITY RESPONSE DUE DATE, DESCRIPTION, REQUIREMENTS AND RELATED INFORMATION

1. Potential Subcontractor’s Bid Response Date:
   
   If you would like for our company to consider your company’s bid for the subcontracting opportunity identified below in Item 2, we must receive your bid response no later than _____________ on _____________ Central Time (mm/dd/yyyy).

   In accordance with 34 TAC §20.285, each notice of subcontracting opportunity shall be provided to at least three (3) Texas certified HUBs, and allow the HUBs at least seven (7) working days to respond to the notice prior to submitting our bid response to the contracting agency. In addition, at least seven (7) working days prior to us submitting our bid response to the contracting agency, we must provide notice of each of our subcontracting opportunities to two (2) or more trade organizations or development centers (in Texas) that serves members of groups (i.e., Asian Pacific American, Black American, Hispanic American, Native American, Woman, Service Disabled Veteran) identified in Texas Administrative Code, §20.282(19)(C).

   (A working day is considered a normal business day of a state agency, not including weekends, federal or state holidays, or days the agency is declared closed by its executive officer. The initial day the subcontracting opportunity notice is sent/provided to the HUBs and to the trade organizations or development centers is considered to be “day zero” and does not count as one of the seven (7) working days.)

2. Subcontracting Opportunity Scope of Work:

3. Required Qualifications:  
   - Not Applicable

4. Bonding/Insurance Requirements:  
   - Not Applicable

5. Location to review plans/specifications:  
   - Not Applicable
Infrastructure HUB Subcontracting Opportunities

Date of HUB List: March 8, 2019  Project/Contract Number: 1210289

Description:
Analytical Services Lab Building HVAC Replacement at A. E. Wood Fish Hatchery, San Marcos, Hays County, Texas

In accordance with Texas Administrative Code, Title 34, Part 1, Chapter 20, Subchapter D, Division 1, state agencies shall make a good faith effort to utilize Historically Underutilized Businesses (HUBs) in contracts for Construction, Services (including Professional and Consulting Services), and Commodity procurements. The State of Texas Policy is to contract directly with HUBs or indirectly through subcontracting opportunities. Each Contractor/Vendor shall also make a good faith effort to utilize HUBs in subcontracting opportunities.

TPWD estimates the value of this contract to be $475,000 to 525,000 and further sets the HUB subcontracting goal at 32.9% of the contract’s value.

(Subcontractor - A person who contracts with a vendor to work, to supply commodities, or contribute toward completing work for a governmental entity as defined in Texas Government Code 2251.001.)

<table>
<thead>
<tr>
<th>CMBL Class &amp; Item Code</th>
<th>Trades/Disciplines/Major Supplies:</th>
<th>CMBL Class &amp; Item Code</th>
<th>Trades/Disciplines/Major Supplies:</th>
</tr>
</thead>
<tbody>
<tr>
<td>914-50</td>
<td>CONSTRUCTION SERVICES, HVAC, NEW</td>
<td>962-39</td>
<td>HAULING SERVICES</td>
</tr>
<tr>
<td>910-36</td>
<td>HVAC INSTALLATION SERVICES</td>
<td>961-83</td>
<td>UTILITY SERVICES, ELECTRIC</td>
</tr>
<tr>
<td>967-02</td>
<td>HVAC MANUFACTURING SERVICES</td>
<td>910-66</td>
<td>INSTALLATION SERVICES, ROOFING</td>
</tr>
<tr>
<td>914-73</td>
<td>CONSTRUCTION SERVICES, ROOFING, NEW</td>
<td>910-82</td>
<td>REPAIR SERVICES, ELECTRICAL WIRING</td>
</tr>
<tr>
<td>914-38</td>
<td>ELECTRICAL SERVICES, NEW CONSTRUCTION</td>
<td>913-82</td>
<td>SAWING OF CONCRETE PAVEMENT, DRIVEWAYS, AND SIDEWALKS</td>
</tr>
<tr>
<td>912-44</td>
<td>EXCAVATION SERVICES, CONSTRUCTION</td>
<td>745-14</td>
<td>PAVEMENT, ASPHALTIC CONCRETE</td>
</tr>
</tbody>
</table>

HUB LIST:
TPWD does not endorse, recommend or attest to the capabilities of any company or individual listed. The list is strictly provided as a convenience to respondents.

Respondents may also access a list of HUB subcontractors by referencing the above Class and Item codes in a Centralized Master Bidders List (CMBL) search at https://mycpa.cpa.state.tx.us/tpasscmblsearch/index.jsp.


A few minority and women trade organizations and development centers are listed below. For a more complete list, please visit https://www.comptroller.texas.gov/purchasing/vendor/hub/resources.php.

<table>
<thead>
<tr>
<th>Women's Business Enterprise Alliance</th>
<th>Texas Association of African American Chambers of Commerce</th>
<th>Texas Association of Mexican American Chambers of Commerce</th>
</tr>
</thead>
<tbody>
<tr>
<td>9800 Northwest Freeway, Ste. 120</td>
<td>807 Brazos St., Ste. 710</td>
<td>P.O. Box 41780</td>
</tr>
<tr>
<td>Houston, TX 77092</td>
<td>Austin, TX 78701</td>
<td>Austin, TX 78704</td>
</tr>
<tr>
<td>(713) 681-9232 office</td>
<td>(512) 535-5610 office</td>
<td>(512) 444-5727 office</td>
</tr>
<tr>
<td>(713) 681-9242 fax</td>
<td><a href="mailto:info@taaacc.org">info@taaacc.org</a> email</td>
<td><a href="mailto:president@tamacc.org">president@tamacc.org</a> email</td>
</tr>
<tr>
<td><a href="mailto:bids@wbea-texas.org">bids@wbea-texas.org</a> email</td>
<td><a href="http://www.taaacc.org">www.taaacc.org</a> website</td>
<td><a href="http://www.tamacc.org">www.tamacc.org</a> website</td>
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<tr>
<td><a href="http://www.wbea-texas.org">www.wbea-texas.org</a> website</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Golden Triangle Minority Business Council</td>
<td>Asian Contractor Association</td>
<td>Women's Business Council - Southwest</td>
</tr>
<tr>
<td>P.O. Box 5064</td>
<td>4201 Ed Bluestein Blvd. #2105</td>
<td>2201 N. Collins, Ste. 158</td>
</tr>
<tr>
<td>Beaumont, TX 77726-5064</td>
<td>Austin, TX 78721</td>
<td>Arlington, TX 76011</td>
</tr>
<tr>
<td>(409) 962-8530 office</td>
<td>(512) 926-5400 office</td>
<td>(817) 299-0566 office</td>
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<tr>
<td>(409) 722-5402 fax</td>
<td>(512) 926-5410 fax</td>
<td>(817) 299-0949 fax</td>
</tr>
<tr>
<td><a href="mailto:hatcher.beverly@gtmbc.com">hatcher.beverly@gtmbc.com</a> email</td>
<td><a href="mailto:asiancontractor@gmail.com">asiancontractor@gmail.com</a> email</td>
<td><a href="mailto:lwilliams@wbcsouthwest.org">lwilliams@wbcsouthwest.org</a> email</td>
</tr>
</tbody>
</table>

For information on the TPWD HUB program, assistance with completing forms, or to obtain HUB lists if web access is not possible, please contact the TPWD HUB staff at (512) 389-4784 or hub@tpwd.texas.gov.
CONDITIONS OF THE CONTRACT
Uniform General Conditions for State of Texas Construction Contracts

Including Supplementary General Conditions for Projects Administered by the Texas Parks and Wildlife Department

TEXAS PARKS & WILDLIFE
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Article 1. Definitions

Unless the context clearly requires another meaning, the following terms have the meaning assigned herein.

1.1 **Addendum/Addenda** means formally issued written or graphic modifications and/or interpretations of the Construction Documents that may add to, delete from, clarify or correct the description and/or scope of the Work. Addenda are issued during the bidding phase of the project.

1.2 **Application for Payment** means Contractor’s monthly partial invoice for payment that includes any portion of the Work that has been completed for which an invoice has not been submitted and performed in accordance with the requirements of the Contract Documents. The Application for Payment accurately reflects the progress of the Work, is itemized based on the Schedule of Values, bears the notarized signature of Contractor, and shall not include subcontracted items for which Contractor does not intend to pay.

1.3 **Application for Final Payment** means Contractor’s final invoice for payment that includes any portion of the Work that has been completed for which an invoice has not been submitted, amounts owing to adjustments to the final Contract Sum resulting from approved change orders, and release of remaining Contractor’s retainage.

1.4 **Architect/Engineer (A/E)** means a person registered as an architect pursuant to Tex. Occ. Code Ann., Ch. 1051, as a landscape architect pursuant to Tex. Occ. Code Ann., Ch. 1052, a person licensed as a professional engineer pursuant Tex. Occ. Code Ann., Ch. 1001, and/or a firm employed by Owner or Design-Build Contractor to provide professional architectural or engineering services and to exercise overall responsibility for the design of a Project or a significant portion thereof, and to perform the contract administration responsibilities set forth in the Contract.

1.5 **As-Built Drawings and Specifications** means the drawing set, specifications and other materials prepared by the Contractor, in the field, that documents the changes made by the contractor. Collectively, these are also called “red-lines” or “as-builts.”

1.6 **Authority Having Jurisdiction** means a federal, state, local, or other regional department, or an individual such as a fire marshal, building official, electrical inspector, utility provider or other individual having statutory authority.

1.7 **Baseline Schedule** means the initial time schedule prepared by Contractor for Owner’s information and acceptance that conveys Contractor’s and Subcontractors’ activities (including coordination and review activities required in the Contract Documents to be performed by A/E and ODR), durations, and sequence of work related to the entire Project to the extent required by the Contract Documents. The schedule clearly demonstrates the critical path of activities, durations and necessary predecessor conditions that drive the end date of the schedule. The Baseline Schedule shall not exceed the time limit current under the Contract Documents.
1.8 *Certificate of Final Completion* means the certificate issued by TPWD that includes certification by the A/E that documents, to the best of A/E’s knowledge and understanding, Contractor’s completion of all Contractor’s Punchlist items and pre-final Punchlist items, final cleanup and Contractor’s provision of Record-As-Built Documents, operations and maintenance manuals, and all other closeout documents required by the Contract Documents. **Additional documentation may be required by TPWD for consideration of the Contractor’s Application for Final Payment.**

1.9 *Certificate of Substantial Completion* means the certificate executed by the A/E, ODR and Contractor that documents to the best of A/E’s and ODR’s knowledge and understanding, Contractor’s sufficient completion of the work in accordance with the Contract, so as to be operational and fit for the use intended.

1.10 *Change Order* means a written modification of the Contract between Owner and Contractor, signed by Owner, Contractor, and A/E.

1.11 *Close-out Documents* mean the product brochures, submittals, product/equipment maintenance and operations instructions, manuals, and other documents/warranties, record As-Built documents, affidavit of payment, release of lien and claim, and as may be further defined, identified, and required by the Contract Documents.

1.12 *Contract* means the entire agreement between Owner and Contractor, including all of the Contract Documents.

1.13 *Contract Date* is the date when the agreement between Owner and Contractor becomes effective.

1.14 *Contract Documents* mean those documents identified as a component of the agreement (Contract) between Owner and Contractor. These may include, but are not limited to, Drawings; Specifications; General, Supplementary General, and Special Conditions; and all pre-bid and/or pre-proposal addenda.

1.15 *Contract Sum* means the total compensation payable to Contractor for completion of the Work in accordance with the terms of the Contract.

1.16 *Contract Time* means the period between the start date identified in the Notice to Proceed with construction and the Substantial Completion date identified in the Notice to Proceed or as subsequently amended by a Change Order.

1.17 *Contractor* means the individual, corporation, limited liability company, partnership, firm, or other entity contracted to perform the Work, regardless of the type of construction contract used, so that the term as used herein includes a Construction Manager-at-Risk or a Design-Build firm as well as a general or prime Contractor. The Contract Documents refer to Contractor as if singular in number.

1.18 *Construction Documents* mean the Drawings, Specifications, and other documents issued to build the Project. Construction Documents become part of the Contract Documents when listed in the Contract or any Change Order.
1.19 *Construction Manager-at-Risk*, in accordance with Tex. Gov't Code, Ch. 2166, means a sole proprietorship, partnership, corporation, or other legal entity that assumes the risk for construction, rehabilitation, alteration, or repair of a facility at the contracted price as a general contractor and provides consultation to Owner regarding construction during and after the design of the facility.

1.20 *Date of Commencement* means the date designated in the Notice to Proceed for Contractor to commence the Work.

1.21 *Day* means a calendar day unless otherwise specifically stipulated.

1.22 *Design-Build* means a project delivery method in which the detailed design and subsequent construction is provided through a single contract with a Design-Build firm; a team, partnership, or legal entity that includes design professionals and a builder. The Design-Build Project delivery shall be implemented in accordance with Tex. Gov't Code § 2166.2531.

1.23 *Drawings* mean that product of A/E which graphically depicts the Work.

1.24 *Final Completion* means the date determined and certified by A/E and Owner on which the Work is fully and satisfactorily complete in accordance with the Contract.

1.25 *Final Payment* means the last and final monetary compensation made to Contractor for any portion of the Work that has been completed and accepted for which payment has not been made, amounts owing to adjustments to the final Contract Sum resulting from approved change orders, and release of Contractor's retainage.

1.26 *Historically Underutilized Business (HUB)* pursuant to Tex. Gov't Code, Ch. 2161, means a business that is at least 51% owned by an Asian Pacific American, a Black American, a Hispanic American, a Native American and/or an American Woman; is an entity with its principal place of business in Texas; and has an owner residing in Texas with proportionate interest that actively participates in the control, operations, and management of the entity's affairs.

1.27 *Notice to Proceed (NTP)* means written document informing Contractor of the dates beginning Work and the dates anticipated for Substantial Completion.

1.28 *Open Item List* means a list of work activities, Punchlist items, changes or other issues that are not expected by Owner and Contractor to be complete prior to Substantial Completion.

1.29 *Owner* means the State of Texas, and any agency of the State of Texas, acting through the responsible entity of the State of Texas identified in the Contract as Owner. *Owner herein shall mean the Texas Parks and Wildlife Department.*

1.30 *Owner's Designated Representative (ODR)* means the individual assigned by Owner to act on its behalf and to undertake certain activities as specifically outlined in the Contract. ODR is the only party authorized to direct changes to the scope, cost, or
1.31 Project means all activities necessary for realization of the Work. This includes design, contract award(s), execution of the Work itself, and fulfillment of all Contract and warranty obligations.

1.32 Progress Assessment Report (PAR) means the monthly compliance report to Owner verifying compliance with the HUB subcontracting plan (HSP).

1.33 Proposed Change Order (PCO) means a document that informs Contractor of a proposed change in the Work and appropriately describes or otherwise documents such change including Contractor’s response of pricing for the proposed change.

1.34 Punchlist means a list of minor items of Work to be completed or corrected by Contractor after Substantial Completion. Punchlists indicate minor items to be finished, remaining Work to be performed, or Work that does not meet quality or quantity requirements as required in the Contract Documents.

1.35 Record Documents mean the drawing set, Specifications, and other materials maintained produced by the A/E of Record Contractor that documents all addenda, Architect’s Supplemental Instructions, Change Orders, and postings and markings that record the as-constructed conditions of the Work and all changes made during construction. The Record Documents are produced using the As-Built Drawings and Specifications as provided by the Contractor, and any As-Built documents produced by the A/E of Record during the course of the construction.

1.36 Request for Information (RFI) means a written request by Contractor directed to A/E or ODR for a clarification of the information provided in the Contract Documents or for direction concerning information necessary to perform the Work that may be omitted from the Contract Documents.

1.37 Samples mean representative physical examples of materials, equipment, or workmanship used to confirm compliance with requirements and/or to establish standards for use in execution of the Work.

1.38 Schedule of Values means the detailed breakdown of the cost of the materials, labor, and equipment necessary to accomplish the Work as described in the Contract Documents, submitted by Contractor for approval by Owner and A/E.

1.39 Shop Drawings mean the drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data prepared by Contractor or its agents which detail a portion of the Work.

1.40 Site means the geographical area of the location of the Work.

1.41 Special Conditions mean the documents containing terms and conditions which may be unique to the Project. Special Conditions are a part of the Contract Documents and have precedence over the Uniform General Conditions and Supplementary General Conditions.
1.42 Specifications mean the written product of A/E that establishes the quality and/or performance of products utilized in the Work and processes to be used, including testing and verification for producing the Work.

1.43 Subcontractor means a business entity that enters into an agreement with Contractor to perform part of the Work or to provide services, materials, or equipment for use in the Work.

1.44 Submittal Register means a list provided by Contractor of all items to be furnished for review and approval by A/E and Owner and as identified in the Contract Documents including anticipated sequence and submittal dates.

1.45 Substantial Completion means the date determined and certified by Contractor, A/E, and Owner when the Work, or a designated portion thereof, is sufficiently complete, in accordance with the Contract, so as to be operational and fit for the use intended.

1.46 Supplementary General Conditions mean procedures and requirements that modify the Uniform General Conditions. Supplementary General Conditions, when used, have precedence over the Uniform General Conditions. Texas Parks and Wildlife Department has adopted Uniform Supplementary General Conditions that apply to all TPWD construction projects. TPWD Uniform Supplementary General Conditions are indicated by the bold and italicized typeface shown here.

1.47 Unit Price Work means the Work, or a portion of the Work, paid for based on incremental units of measurement.

1.48 Unilateral Change Order (ULCO) means a Change Order issued by Owner without the complete agreement of Contractor, as to cost and/or time.

1.49 Work means the administration, procurement, materials, equipment, construction and all services necessary for Contractor, and/or its agents, to fulfill Contractor’s obligations under the Contract.

1.50 Work Progress Schedule means the continually updated time schedule prepared and monitored by Contractor that accurately indicates all necessary appropriate revisions as required by the conditions of the Work and the Project while maintaining a concise comparison to the Baseline Schedule.
Article 2. Wage Rates and Other Laws Governing Construction

2.1 Environmental Regulations. Contractor shall conduct activities in compliance with applicable laws and regulations and other requirements of the Contract relating to the environment and its protection at all times. Unless otherwise specifically determined, Owner is responsible for obtaining and maintaining permits related to stormwater run-off. Contractor shall conduct operations consistent with stormwater run-off permit conditions. Contractor is responsible for all items it brings to the Site, including hazardous materials, and all such items brought to the Site by its Subcontractors and suppliers, or by other entities subject to direction of Contractor. Contractor shall not incorporate hazardous materials into the Work without prior approval of Owner, and shall provide an affidavit attesting to such in association with request for Substantial Completion inspection.

2.2 Wage Rates. Contractor shall not pay less than the wage scale of the various classes of labor as shown on the prevailing wage schedule provided by Owner in the bid or proposal specifications. The specified wage rates are minimum rates only. Owner is not bound to pay any claims for additional compensation made by any Contractor because the Contractor pays wages in excess of the applicable minimum rate contained in the Contract. The prevailing wage schedule is not a representation that qualified labor adequate to perform the Work is available locally at the prevailing wage rates.

2.2.1 Notification to Workers. Contractor shall post the prevailing wage schedule in a place conspicuous to all workers on the Project Site when requested by Owner, Contractor shall furnish evidence of compliance with the Texas Prevailing Wage Law and the addresses of all workers.

2.2.1.1 Pursuant to Tex. Gov't Code § 2258.024, Contractor shall keep, on site, true and accurate records showing the name and occupation of each worker employed by the Contractor or subcontractors and the actual per diem wages paid to each worker. The record shall be open to inspection by the ODR and their agents at all reasonable hours for the duration of the contract.

2.2.1.2 With each application for progress payment, Contractor shall make available upon request certified payroll records, including from subcontractors of any tier level, on Form WH-347 as promulgated by the U.S. Department of Labor, as may be revised from time to time and in unlocked and unprotected Excel format, along with copies of any and all Contract Documents between Contractor and any Subcontractors. Pursuant to Tex. Penal Code §§ 37.02 and 37.10, Employees of Contractor and subcontractors, including all tier levels, shall be subject to prosecution for submitting certified payroll records that contain materially false information.

2.2.1.3 The prevailing wage schedule is determined by Owner in compliance
with Tex. Gov't Code, Ch. 2258. Should Contractor at any time become aware that a particular skill or trade not reflected on Owner's prevailing wage schedule will be or is being employed in the Work, whether by Contractor or by Subcontractor, Contractor shall promptly inform ODR of the proposed wage to be paid for the skill along with a justification for same and ODR shall promptly concur with or reject the proposed wage and classification.

2.2.1.4 Contractor is responsible for determining the most appropriate wage for a particular skill in relation to similar skills or trades identified on the prevailing wage schedule. In no case, shall any worker be paid less than the wage indicated for laborers.

2.2.1.5 Pursuant to Tex. Labor Code § 214.008, Misclassification of Workers; Penalty. The Owner requires Contractor and all subcontractors properly classify individuals as Employees or Independent Contractors.

2.2.2 **Penalty for Violation.** Contractor, and any Subcontractor, will pay to the State a penalty of sixty dollars ($60) for each worker employed for each day, or portion thereof, that the worker is paid less than the wage rates stipulated in the prevailing wage schedule.

2.2.3 **Complaints of Violations.**

2.2.3.1 **Owner’s Determination of Good Cause.** Upon receipt of information concerning a violation, Owner will conduct an investigation in accordance with Tex. Gov’t Code, Ch. 2258 and make an initial determination as to whether good cause exists that a violation occurred. Upon making a good cause finding, Owner will retain the full amounts claimed by the claimant or claimants as the difference between wages paid and wages due under the prevailing wage schedule and any supplements thereto, together with the applicable penalties in accordance with Tex. Gov’t Code § 2258.023, such amounts being subtracted from successive progress payments pending a final decision on the violation.

2.2.3.2 **No Extension of Time.** If Owner’s determination proves valid that good cause existed to believe a violation had occurred, Contractor is not entitled to an extension of time for any delay arising directly or indirectly from the arbitration procedures.

2.2.3.3 **Cooperation with Owner’s Investigation.** Contractor shall cooperate with Owner during any investigations hereunder. Such cooperation shall include, but not necessarily be limited to, timely providing the information and/or documentation requested by Owner, which may include certified payroll records on Form WH-347 as promulgated by the U.S. Department of Labor, as may be revised from time to time and in unlocked and unprotected Excel format; and copies of any and
all Contract Documents between Contractor and any Subcontractors.

2.2.3.4 Notification to Owner. In the event Contractor or Subcontractor elect to appeal an initial determination made pursuant to Paragraph 2.2.3.1, the Contractor and/or Subcontractor, as applicable, shall deliver notice thereof to Owner.

2.3 Venue for Suits. The venue for any suit arising from the Contract will be in a court of competent jurisdiction in Travis County, Texas, or as may otherwise be designated in the Supplementary General Conditions.

2.4 Licensing of Trades. Contractor shall comply with all applicable provisions of State law related to license requirements for skilled tradesmen, contractors, suppliers and or laborers, as necessary to accomplish the Work. In the event Contractor, or one of its Subcontractors, loses its license during the term of performance of the Contract, Contractor shall promptly hire or contract with a licensed provider of the service at no additional cost to Owner.

2.5 Royalties, Patents, and Copyrights. Contractor shall pay all royalties and license fees, defend suits or claims for infringement of copyrights and patent rights, and shall hold Owner harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by Owner or A/E. However, if Contractor has reason to believe that the required design, process, or product is an infringement of a copyright or a patent, Contractor shall be responsible for such loss unless such information is promptly furnished to A/E.

2.6 State Sales and Use Taxes. Owner qualifies for exemption from certain State and local sales and use taxes pursuant to the provisions of Tex. Tax Code, Ch. 151. Upon request from Contractor, Owner shall furnish evidence of tax exempt status. Contractor may claim exemption from payment of certain applicable State taxes by complying with such procedures as prescribed by the State Comptroller of Public Accounts. Owner acknowledges not all items qualify for exemption. Owner is not obligated to reimburse Contractor for taxes paid on items that qualify for tax exemption.
Article 3. General Responsibilities of Owner and Contractor

3.1 **Owner's General Responsibilities.** Owner is the entity identified as such in the Contract and referred to throughout the Contract Documents as if singular in number.

3.1.1 **Preconstruction Conference.** Prior to, or concurrent with, the issuance of Notice to Proceed with construction, a conference will be convened for attendance by Owner, Contractor, A/E and appropriate Subcontractors. The purpose of the conference is to establish a working understanding among the parties as to the Work, the operational conditions at the Project Site, and general administration of the Project. Topics include communications, schedules, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, maintaining required records and all other matters of importance to the administration of the Project and effective communications between the Project team members.

3.1.2 **Owner's Designated Representative.** Prior to the start of construction, Owner will identify Owner's Designated Representative (ODR), who has the express authority to act and bind Owner to the extent and for the purposes described in the various Articles of the Contract, including responsibilities for general administration of the Contract.

3.1.2.1 Unless otherwise specifically defined elsewhere in the Contract Documents, ODR is the single point of contact between Owner and Contractor. Notice to ODR, unless otherwise noted, constitutes notice to Owner under the Contract.

3.1.2.2 All directives on behalf of Owner will be conveyed to Contractor and A/E by ODR in writing.

3.1.2.3 Owner will furnish or cause to be furnished, free of charge, the number of complete sets of the Drawings, Specifications, and addenda as provided in the Supplementary General Conditions or Special Conditions.

3.1.2.4 The ODR will establish the protocol for planning, scheduling and documenting progress meetings with provisions for absence of various project team members that have a key role in these duties.

3.1.3 **Owner Supplied Materials and Information.**

3.1.3.1 Owner will furnish to Contractor those surveys describing the physical characteristics, legal description, limitations of the Site, Site utility locations, and other information used in the preparation of the Contract Documents.

3.1.3.2 Owner will provide information, equipment, or services under
Owner’s control to Contractor with reasonable promptness.

3.1.4 Availability of Lands. Owner will furnish, as indicated in the Contract, all required rights to use the lands upon which the Work occurs. This includes rights-of-way and easements for access and such other lands that are designated for use by Contractor. Contractor shall comply with all Owner identified encumbrances or restrictions specifically related to use of lands so furnished. Owner will obtain and pay for easements for permanent structures or permanent changes in existing facilities.

3.1.5 Limitation on Owner’s Duties.

3.1.5.1 Owner will not supervise, direct, control or have authority over or be responsible for Contractor’s means, methods, technologies, sequences or procedures of construction or the safety precautions and programs incident thereto. Owner is not responsible for any failure of Contractor to comply with laws and regulations applicable to the Work. Owner is not responsible for the failure of Contractor to perform or furnish the Work in accordance with the Contract Documents. Except as provided in Section 2.5, Owner is not responsible for the acts or omissions of Contractor, or any of its Subcontractors, suppliers or of any other person or organization performing or furnishing any of the Work on behalf of Contractor.

3.1.5.2 Owner will not take any action in contravention of a design decision made by A/E in preparation of the Contract Documents, when such actions are in conflict with statutes under which A/E is licensed for the protection of the public health and safety.

3.2 Role of Architect/Engineer. Unless specified otherwise in the Contract between Owner and Contractor, A/E shall provide general administration services for Owner during the construction phase of the project. Written correspondence, requests for information, and Shop Drawings/submittals shall be directed to A/E for action. A/E has the authority to act on behalf of Owner to the extent provided in the Contract Documents, unless otherwise modified by written instrument, which will be furnished to Contractor by ODR, upon request.

3.2.1 Site Visits.

3.2.1.1 A/E will make visits to the Site at intervals as provided in the A/E’s Contract with Owner, to observe the progress and the quality of the various aspects of Contractor’s executed Work and report findings to Owner.

3.2.1.2 A/E has the authority to interpret Contract Documents and inspect the Work for compliance and conformance with the Contract. Except as referenced in Paragraph 3.1.5.2, Owner retains the sole authority to accept or reject Work and issue direction for correction,
3.2.2 Clarifications and Interpretations. It may be determined that clarifications or interpretations of the Contract Documents are necessary. Upon direction by ODR, such clarifications or interpretations will be provided by A/E consistent with the intent of the Contract Documents. A/E will issue these clarifications with reasonable promptness to Contractor as A/E’s supplemental instruction (“ASI”) or similar instrument. If Contractor believes that such clarification or interpretation justifies an adjustment in the Contract Sum or the Contract Time, Contractor shall so notify Owner in accordance with the provisions of Article 11.

3.2.3 Limitations on Architect/Engineer Authority. A/E is not responsible for:

3.2.3.1 Contractor’s means, methods, techniques, sequences, procedures, safety, or programs incident to the Project, nor will A/E supervise, direct, control or have authority over the same;

3.2.3.2 The failure of Contractor to comply with laws and regulations applicable to the furnishing or performing the Work;

3.2.3.3 Contractor’s failure to perform or furnish the Work in accordance with the Contract Documents; or

3.2.3.4 Acts or omissions of Contractor, or of any other person or organization performing or furnishing any of the Work.

3.3 Contractor’s General Responsibilities. Contractor is solely responsible for implementing the Work in full compliance with all applicable laws and the Contract Documents and shall supervise and direct the Work using the best skill and attention to assure that each element of the Work conforms to the Contract requirements. Contractor is solely responsible for all construction means, methods, techniques, safety, sequences, coordination, procedures and protection of the installed work as part of the contract until substantial completion of the project. Contractor remains responsible for the care and protection of materials and Work in the areas where punch list items are completed until Final Completion.

3.3.1 Project Administration. Contractor shall provide Project administration for all Subcontractors, vendors, suppliers, and others involved in implementing the Work and shall coordinate administration efforts with those of A/E and ODR in accordance with these general conditions and other provisions of the Contract, and as outlined in the preconstruction conference. Contractor’s Project Administration includes periodic daily reporting on weather, work progress, labor, materials, equipment, obstructions to prosecution of the work, accidents and injuries in accordance with the Contract and transmitted no less frequently than on a weekly basis.

3.3.2 Contractor’s Management Personnel. Contractor shall employ a competent person or persons who will be present at the Project Site during the progress
of the Work to supervise or oversee the work. The competent persons are subject to the approval of ODR through the submittal process stated in Owner's Special Conditions. Contractor shall not change approved staff during the course of the project without the written approval of ODR unless the staff member leaves the employment of Contractor. Contractor shall provide additional quality control, safety and other staff as stated in the Supplementary General Conditions.

3.3.3 Labor. Contractor shall provide competent, suitably qualified personnel to survey, lay-out, and construct the Work as required by the Contract Documents and maintain good discipline and order at the Site at all times.

3.3.4 Services, Materials, and Equipment. Unless otherwise specified, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities, incidentals, and services necessary for the construction, performance, testing, start-up, inspection and completion of the Work.

3.3.5 Contractor General Responsibility. For Owner furnished equipment or material that will be in the care, custody, and control of Contractor, Contractor is responsible for damage or loss. Owner shall deliver to Contractor a complete list and respective values of such materials or equipment and make an equitable adjustment to the contract amount for any increase in cost of Builder's Risk insurance.

3.3.6 Non-Compliant Work. Should A/E and/or ODR identify Work as non-compliant with the Contract Documents, A/E and/or ODR shall communicate the finding to Contractor, and Contractor shall correct such Work at no additional cost to the Owner. The approval of Work by either A/E or ODR does not relieve Contractor from the obligation to comply with all requirements of the Contract Documents.

3.3.7 Subcontractors. Contractor shall not employ any Subcontractor, supplier or other person or organization, whether initially or as a substitute, against whom Owner shall have reasonable objection. Owner will communicate such objections in writing within ten (10) days of receipt of Contractor's intent to use such Subcontractor, supplier, or other person or organization. Contractor is not required to employ any Subcontractor, supplier or other person or organization to furnish any of the work to whom Contractor has reasonable objection. Contractor shall not substitute Subcontractors without the acceptance of Owner. Pursuant to Tex. Gov't Code § 2269.256(b), if the Contractor reviews, evaluates and recommends that the Owner accept a bid or proposal from a Subcontractor but the Owner requires another bid or proposal to be accepted, Owner shall compensate the Contractor by a change in price, time or guaranteed maximum cost for any additional cost or risk the Contractor will incur because of Owner's requirement to select another bid or proposal rather than the one recommended.
3.3.7.1 All Subcontracts and supply contracts shall be consistent with and bind the Subcontractors and suppliers to the terms and conditions of the Contract Documents including provisions of the Contract between Contractor and Owner.

3.3.7.2 Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with Contractor. Require all Subcontractors, suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with Owner only through Contractor. Contractor shall furnish to Owner a copy, at Owner’s request, of each first-tier subcontract promptly after its execution. Contractor agrees that Owner has no obligation to review or approve the content of such contracts and that providing Owner such copies in no way relieves Contractor of any of the terms and conditions of the Contract, including, without limitation, any provisions of the Contract which require the Subcontractor to be bound to Contractor in the same manner in which Contractor is bound to Owner.

3.3.8 Continuing the Work. Contractor shall carry on the Work and adhere to the progress schedule during all disputes, disagreements, or alternative resolution processes with Owner. Contractor shall not delay or postpone any Work because of pending unresolved disputes, disagreements or alternative resolution processes, except as Owner and Contractor may agree in writing.

3.3.9 Cleaning. Contractor shall at all times, keep the Site and the Work clean and free from accumulation of waste materials or rubbish caused by the construction activities under the Contract. Contractor shall ensure that the entire Project is thoroughly cleaned prior to requesting Substantial Completion inspection and, again, upon completion of the Project prior to the final inspection.

3.3.10 Acts and Omissions of Contractor, its Subcontractors, and Employees. Contractor shall be responsible for acts and omissions of his employees and all its Subcontractors, their agents and employees. Owner may, in writing, require Contractor to remove from the Project any of Contractor’s or its Subcontractor’s employees whom ODR finds to be careless, incompetent, unsafe, uncooperative, disruptive, or otherwise objectionable.

3.3.11 Acts or Omissions. Contractor shall indemnify and hold harmless the State of Texas and Customers, AND/OR THEIR OFFICERS, AGENTS, EMPLOYEES, REPRESENTATIVES, CONTRACTORS, ASSIGNEES, AND/OR DESIGNEES FROM ANY AND ALL LIABILITY, ACTIONS, CLAIMS, DEMANDS, OR SUITS, AND ALL RELATED COSTS, ATTORNEY FEES, AND EXPENSES arising out of, or resulting from any acts or omissions of Contractor or its agents, employees, subcontractors, Order
Fulfillers, or suppliers of subcontractors in the execution or performance of the Contract and any Purchase Orders issued under the Contract. THE DEFENSE SHALL BE COORDINATED BY CONTRACTOR WITH THE OFFICE OF THE ATTORNEY GENERAL WHEN TEXAS STATE AGENCIES ARE NAMED DEFENDANTS IN ANY LAWSUIT AND CONTRACTOR MAY NOT AGREE TO ANY SETTLEMENT WITHOUT FIRST OBTAINING THE CONCURRENCE FROM THE OFFICE OF THE ATTORNEY GENERAL. CONTRACTOR AND OWNER AGREE TO FURNISH TIMELY WRITTEN NOTICE TO EACH OTHER OF ANY SUCH CLAIM.

3.3.12 Infringements.

3.3.12.1 Contractor shall indemnify and hold harmless the State of Texas and Customers, AND/OR THEIR EMPLOYEES, AGENTS, REPRESENTATIVES, CONTRACTORS, ASSIGNEES, AND/OR DESIGNEES from any and all third party claims involving infringement of United States patents, copyrights, trade and service marks, and any other intellectual or intangible property rights in connection with the PERFORMANCES OR ACTIONS OF CONTRACTOR PURSUANT TO THIS CONTRACT. CONTRACTOR AND THE CUSTOMER AGREE TO FURNISH TIMELY WRITTEN NOTICE TO EACH OTHER OF ANY SUCH CLAIM. CONTRACTOR SHALL BE LIABLE TO PAY ALL COSTS OF DEFENSE INCLUDING ATTORNEYS’ FEES. THE DEFENSE SHALL BE COORDINATED BY CONTRACTOR WITH THE OFFICE OF THE ATTORNEY GENERAL WHEN TEXAS STATE AGENCIES ARE NAMED DEFENDANTS IN ANY LAWSUIT AND CONTRACTOR MAY NOT AGREE TO ANY SETTLEMENT WITHOUT FIRST OBTAINING THE CONCURRENCE FROM THE OFFICE OF THE ATTORNEY GENERAL.

3.3.12.2 Contractor shall have no liability under this section if the alleged infringement is caused in whole or in part by: (i) use of the product or service for a purpose or in a manner for which the product or service was not designed, (ii) any modification made to the product without Contractor’s written approval, (iii) any modifications made to the product by Contractor pursuant to Customer’s specific instructions, (iv) any intellectual property right owned by or licensed to Customer, or (v) any use of the product or service by Customer that is not in conformity with the terms of any applicable license agreement.

3.3.12.3 If Contractor becomes aware of an actual or potential claim, or Customer provides Contractor with notice of an actual or potential claim, Contractor may (or in the case of an injunction against Customer, shall), at Contractor’s sole option and expense; (i) procure for the Customer the right to continue to use the affected portion of the product or service, or (ii) modify or replace the affected portion of the product or service with functionally equivalent or superior product
or service so that Customer's use is non-infringing.

3.3.12.4 **Taxes/Workers' Compensation/Unemployment Insurance—Including Indemnity.**

3.3.12.4.1 CONTRACTOR AGREES AND ACKNOWLEDGES THAT DURING THE EXISTENCE OF THIS CONTRACT, CONTRACTOR SHALL BE ENTIRELY RESPONSIBLE FOR THE LIABILITY AND PAYMENT OF CONTRACTOR'S AND CONTRACTOR'S EMPLOYEES' TAXES OF WHATEVER KIND, ARISING OUT OF THE PERFORMANCES IN THIS CONTRACT. CONTRACTOR AGREES TO COMPLY WITH ALL STATE AND FEDERAL LAWS APPLICABLE TO ANY SUCH PERSONS, INCLUDING LAWS REGARDING WAGES, TAXES, INSURANCE, AND WORKERS' COMPENSATION. THE CUSTOMER AND/OR THE STATE SHALL NOT BE LIABLE TO CONTRACTOR, ITS EMPLOYEES, AGENTS, OR OTHERS FOR THE PAYMENT OF TAXES OR THE PROVISION OF UNEMPLOYMENT INSURANCE AND/OR WORKERS' COMPENSATION OR ANY BENEFIT AVAILABLE TO A STATE EMPLOYEE OR EMPLOYEE OF ANOTHER GOVERNMENTAL ENTITY CUSTOMER.

3.3.12.4.1 CONTRACTOR AGREES TO INDEMNIFY AND HOLD HARMLESS OWNER, THE STATE OF TEXAS AND/OR THEIR EMPLOYEES, AGENTS, REPRESENTATIVES, CONTRACTORS, AND/OR ASSIGNEES FROM ANY AND ALL LIABILITY, ACTIONS, CLAIMS, DEMANDS, OR SUITS, AND ALL RELATED COSTS, ATTORNEYS' FEES, AND EXPENSES, RELATING TO TAX LIABILITY, UNEMPLOYMENT INSURANCE AND/OR WORKERS' COMPENSATION IN ITS PERFORMANCE UNDER THIS CONTRACT. CONTRACTOR SHALL BE LIABLE TO PAY ALL COSTS OF DEFENSE INCLUDING ATTORNEYS' FEES. THE DEFENSE SHALL BE COORDINATED BY CONTRACTOR WITH THE OFFICE OF THE ATTORNEY GENERAL WHEN TEXAS STATE AGENCIES ARE NAMED DEFENDANTS IN ANY LAWSUIT.
AND VENDOR MAY NOT AGREE TO ANY SETTLEMENT WITHOUT FIRST OBTAINING THE CONCURRENCE FROM THE OFFICE OF THE ATTORNEY GENERAL. CONTRACTOR AND OWNER AGREE TO FURNISH TIMELY WRITTEN NOTICE TO EACH OTHER OF ANY SUCH CLAIM.

3.3.12.5 The provisions of this indemnification are solely for the benefit of the parties hereto and not intended to create or grant any rights, contractual or otherwise, to any other person or entity.

3.3.12.6 Contractor shall promptly advise Owner in writing of any claim or demand against Owner or against Contractor which involves Owner and known to Contractor and related to or arising out of Contractor’s activities under this Contract.

3.3.13 **Ancillary Areas.** Operate and maintain operations and associated storage areas at the site of the Work in accordance with the following:

3.3.13.1 Confine all Contractor operations, including storage of materials and employee parking upon the Site of Work, to areas designated by Owner.

3.3.13.2 Contractor may erect, at its own expense, temporary buildings that will remain its property. Remove such buildings and associated utility service lines upon completion of the Work, unless Contractor requests and Owner provides written consent that it may abandon such buildings and utilities in place.

3.3.13.3 Use only established roadways or construct and use such temporary roadways as may be authorized by Owner. Do not allow load limits of vehicles to exceed the limits prescribed by appropriate regulations or law. Provide protection to road surfaces, curbs, sidewalks, trees, shrubbery, sprinkler systems, drainage structures and other like existing improvements to prevent damage and repair any damage thereto at the expense of Contractor.

3.3.13.4 Owner may restrict Contractor’s entry to the Site to specifically assigned entrances and routes.

3.3.14 **Separate Contracts.** Owner reserves the right to award other contracts in connection with other portions of the Project under these same or substantially similar contract conditions, including those portions related to insurance and waiver of subrogation. Owner reserves the right to perform operations related to the Project with Owner’s own forces.

3.3.15 Under a system of separate contracts, the conditions described herein continue to apply except as may be amended by change order.
3.3.16 Contractor shall cooperate with other contractors or forces employed on the Project by Owner, including providing access to Site and Project information as requested.

3.3.17 Owner shall be reimbursed by Contractor for costs incurred by Owner which are payable to a separate contractor because of delays, improperly timed activities, or defective construction by Contractor. Owner will equitably adjust the Contract by Change Order for costs incurred by Contractor because of delays, improperly timed activities, damage to the Work or defective construction by a separate contractor.
Article 4. Historically Underutilized Business (HUB) Subcontracting Plan

4.1 General Description. The purpose of the Historically Underutilized Business (HUB) program is to promote equal business opportunities for economically disadvantaged persons (as defined by Tex. Gov’t Code, Ch. 2161) to contract with the State of Texas in accordance with the goals specified in the State of Texas Disparity Study. The HUB program annual procurement utilization goals are defined in 34 T.A.C. § 20.13(b).

4.1.1 State agencies are required by statute to make a good faith effort to assist HUBs in participating in contract awards issued by the State. 34 T.A.C. § 20.13(b) outlines the State’s policy to encourage the utilization of HUBs in State contracting opportunities through race, ethnic and gender neutral means.

4.1.2 A Contractor who contracts with the State in an amount of $100,000 or greater is required to make a good faith effort to award subcontracts to HUBs in accordance with 34 T.A.C. § 20.14(a)(2)(A) by submitting a HUB subcontracting plan within twenty-four (24) hours after the bid or response is due and complying with the HUB subcontracting plan after it is accepted by Owner and during the term of the Contract. Unless stated otherwise in the contract documents, the HUB subcontracting plan shall be submitted with the bid or response on or before the specified due date and time for the bid or response.

4.2 Compliance with Approved HUB Subcontracting Plan. Contractor, having been awarded this Contract in part by complying with the HUB program statute and rules, hereby covenants to continue to comply with the HUB program as follows:

4.2.1 Prior to adding or substituting a Subcontractor, promptly notify Owner in the event a change is required for any reason to the accepted HUB subcontracting plan.

4.2.2 Conduct the good-faith effort activities required and provide Owner with necessary documentation to justify approval of a change to the approved HUB subcontracting plan.

4.2.3 Cooperate in the execution of a Change Order or such other approval of the change in the HUB subcontracting plans as Contractor and Owner may agree to.

4.2.4 Maintain and make available to Owner upon request business records documenting compliance with the accepted HUB subcontracting plan.

4.2.5 Upon receipt of payment for performance of Work, submit to Owner a compliance report, in the format required by Owner that demonstrates Contractor’s performance of the HUB subcontracting plan. TPWD requires submission of a copy of the compliance report with the Application for Payment for work performed.
4.2.5.1 Progress Assessment Report (PAR): monthly compliance reports to Owner (contracting agency), verifying their compliance with the HUB subcontracting plan, including the use/expenditures they have made to Subcontractors. The PAR is available at in the Index Forms Library on the Facilities Design & Construction page of the Texas Facilities Commission website. Contractor shall submit a PAR to TPWD HUB Administration no later than the 5th day of the month. Contractor shall submit a copy of the current month's PAR with the Application for Payment.

4.2.6 Promptly and accurately explain and provide supplemental information to Owner to assist in Owner's investigation of Contractor's good-faith effort to fulfill the HUB subcontracting plan and the requirements under 34 T.A.C. § 20.14(a)(1).

4.3 Failure to Demonstrate Good-Faith Effort. Upon a determination by Owner that Contractor has failed to demonstrate a good-faith effort to fulfill the HUB subcontracting plan or any Contract covenant detailed above, Owner may, in addition to all other remedies available to it, report the failure to perform to the Comptroller of Public Accounts, Texas Procurement and Support Services Division, Historically Underutilized Business Program and may bar Contractor from future contracting opportunities with Owner.
Article 5. Bonds and Insurance

5.1 Construction Bonds. Contractor is required to tender to Owner, prior to commencing the Work, performance and payment bonds, as required by Tex. Gov’t Code, Ch. 2253. On Construction Manager-at-Risk and Design-Build Projects the Owner shall require a security bond, as described in Subsection 5.1.2 below.

5.1.1 Bond Requirements. Each bond shall be executed by a corporate surety or sureties authorized to do business in the State of Texas and acceptable to Owner, on Owner’s form, and in compliance with the relevant provisions of the Texas Insurance Code. If any bond is for more than ten (10) percent of the surety’s capital and surplus, Owner may require certification that the company has reinsured the excess portion with one or more reinsurers authorized to do business in the State. A reinsurer may not reinsure for more than ten (10) percent of its capital and surplus. If a surety upon a bond loses its authority to do business in the State, Contractor shall, within thirty (30) days after such loss, furnish a replacement bond at no added cost to Owner.

5.1.1.1 A Performance bond is required if the Contract Sum is in excess of $100,000. The performance bond is solely for the protection of Owner. The performance bond is to be for the Contract Sum to guarantee the faithful performance of the Work in accordance with the Contract Documents. The form of the bond shall be approved by the Office of the Attorney General of Texas. The performance bond shall be effective through Contractor’s warranty period.

5.1.1.2 A Payment bond is required if the Contract price is in excess of $25,000. The payment bond is to be for the Contract Sum and is payable to Owner solely for the protection and use of payment bond beneficiaries. The form of the bond shall be approved by the Office of the Attorney General of Texas.

5.1.2 Security Bond. The security bond provides protection to Owner if Contractor presents an acceptable guaranteed maximum price (“GMP”) to Owner and 1) fails to execute the GMP; or 2) fails to deliver the required payment and performance bonds within the time period stated below.

5.1.3 When Bonds Are Due.

5.1.3.1 Security bonds are due within ten (10) days of signing a Construction Manager-at-Risk or Design-Build Contract, unless stated otherwise in the contract documents.

5.1.3.2 Payment and performance bonds are due within ten (10) days of Contractor’s receipt of a fully executed GMP on a Construction Manager-at-Risk project or the Contract Sum for a Design-Build project, or within ten (10) days of Contractor’s receipt of a fully executed Contract on competitively bid or competitive sealed
5.1.4 **Power of Attorney.** Each bond shall be accompanied by a valid power of attorney (issued by the surety company and attached, signed and sealed with the corporate embossed seal, to the bond) authorizing the attorney-in-fact who signs the bond to commit the company to the terms of the bond, and stating any limit in the amount for which the attorney can issue a single bond.

5.1.5 **Bond Indemnification.** The process of requiring and accepting bonds and making claims there under shall be conducted in compliance with Tex. Gov’t Code, Ch. 2253. IF FOR ANY REASON A STATUTORY PAYMENT OR PERFORMANCE BOND IS NOT HONORED BY THE SURETY, CONTRACTOR SHALL FULLY INDEMNIFY AND HOLD OWNER HARMLESS OF AND FROM ANY COSTS, LOSSES, OBLIGATIONS OR LIABILITIES IT INCURS AS A RESULT.

5.1.6 **Furnishing Bond Information.** Owner shall furnish certified copies of the payment bond and the related Contract to any qualified person seeking copies who complies with Tex. Gov’t Code § 2253.026.

5.1.7 **Claims on Payment Bonds.** Claims on payment bonds must be sent directly to Contractor and his surety in accordance with Tex. Gov’t Code § 2253.041. All payment bond claimants are cautioned that no lien exists on the funds unpaid to Contractor on such Contract, and that reliance on notices sent to Owner may result in loss of their rights against Contractor and/or his surety. Owner is not responsible in any manner to a claimant for collection of unpaid bills, and accepts no such responsibility because of any representation by any agent or employee.

5.1.8 **Payment Claims when Payment Bond not Required.** The rights of Subcontractors regarding payment are governed by Tex. Prop. Code §§ 53.231 – 53.239 when the value of the Contract between Owner and Contractor is less than $25,000.00. These provisions set out the requirements for filing a valid lien on funds unpaid to Contractor as of the time of filing the claim, actions necessary to release the lien and satisfaction of such claim.

5.1.9 **Sureties.** A surety shall be listed on the US Department of the Treasury’s Listing of Approved Sureties maintained by the Bureau of Financial Management Service (FMS), www.fms.treas.gov/c570, stating companies holding Certificates of Authority as acceptable sureties on Federal bonds and acceptable reinsuring companies (FMS Circular 570).

5.2 **Insurance Requirements.** Contractor shall carry insurance in the types and amounts indicated in this Article for the duration of the Contract. The insurance shall be evidenced by delivery to Owner of certificates of insurance executed by the insurer or its authorized agent stating coverages, limits, expiration dates and compliance with all applicable required provisions. Upon request, Owner, and/or its agents, shall be entitled to receive without expense, copies of the policies and all endorsements. Contractor shall update all expired policies prior to submission for monthly payment.
Failure to update policies shall be reason for withholding of payment until renewal is provided to Owner.

5.2.1 Contractor shall provide and maintain all insurance coverage with the minimum amounts described below until the end of the warranty period unless otherwise stated in Supplementary General Conditions or Special Conditions. Failure to maintain insurance coverage, as required, is grounds for suspension of Work for cause pursuant to Article 14.

5.2.2 Contractor shall deliver to Owner true and complete copies of certificates and corresponding policy endorsements prior to the issuance of any Notice to Proceed.

5.2.3 Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

5.2.4 The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.2.5 The insurance coverage and limits established herein shall not be interpreted as any representation or warranty that the insurance coverage and limits necessarily will be adequate to protect Contractor.

5.2.6 Coverage shall be written on an occurrence basis by companies authorized and admitted to do business in the State of Texas and rated A or better by A.M. Best Company or similar rating company or otherwise acceptable to Owner.

5.2.2.1 Insurance Coverage Required.

5.2.2.1.1 Workers' Compensation. Insurance with limits as required by the Texas Workers' Compensation Act, with the policy endorsed to provide a waiver of subrogation in favor of Owner, employer's liability insurance of not less than:

$1,000,000 each accident;

$1,000,000 disease each employee; and

$1,000,000 disease policy limit.

5.2.2.1.2 Commercial General Liability Insurance. Including premises, operations, independent contractor's liability, products and completed operations and contractual liability, covering, but not limited to, the liability assumed under the indemnification provisions of this Contract, fully insuring Contractor's liability for bodily injury.
(including death) and property damage with a minimum limit of:

$1,000,000 per occurrence;

$2,000,000 general aggregate;

$5,000 Medical Expense each person;

$1,000,000 Personal Injury and Advertising Liability;

$2,000,000 products and completed operations aggregate;

$50,000 Damage to Premises Rented to You; and

Coverage shall be on an "occurrence" basis.

The policy shall include coverage extended to apply to completed operations and explosion, collapse, and underground hazards. The policy shall include endorsement CG2503 Amendment of Aggregate Limits of Insurance (per Project) or its equivalent.

If the Work involves any activities within fifty (50) feet of any railroad, railroad protective insurance as may be required by the affected railroad, written for not less than the limits required by such railroad.

5.2.2.1.3 **Asbestos Abatement Liability Insurance**, including coverage for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos containing materials. *This requirement applies if the Work or the Project includes asbestos containing materials.*

The combined single limit for bodily injury and property damage will be a minimum of $1,000,000 per occurrence.

*Sspecific requirement for claims-made form: Required period of coverage will be determined by the following formula: continuous coverage for life of the Contract, plus one (1) year (to provide coverage for the warranty period), and an extended discovery period for a minimum of five (5) years which shall begin at the end of the warranty period.

Employer's liability limits for asbestos abatement will be:
$500,000 each accident;

$500,000 disease each employee; and

$500,000 disease policy limit.

If this Contract is for asbestos abatement only, the Special Form builder’s risk or Special Form installation floater (e) is not required.

5.2.2.1.4 Comprehensive Automobile Liability Insurance, covering owned, hired, and non-owned vehicles, with a minimum combined single limit for bodily injury (including death) and property damage of $1,000,000 per accident. No aggregate shall be permitted for this type of coverage.

Such insurance is to include coverage for loading and unloading hazards.

5.2.2.1.5 Special Form Builder’s Risk Insurance, if applicable (or Special Form installation floater for instances in which the project involves solely the installation of material and/or equipment). Coverage shall be Special Form, including, but not limited to, fire, extended coverage, vandalism and malicious mischief, theft and, if applicable, flood, earth movement and named storm. Builder’s risk and installation floater limits shall be equal to 100 percent of the Contract Sum plus, if any, existing property and Owner-furnished equipment specified by Owner. The policy shall be written jointly in the names of Owner and Contractor. Subcontractors shall be named as additional insureds. The policy shall have endorsements as follows:

5.2.2.1.5.1 This insurance shall be specific as to coverage and not contributing insurance with any permanent insurance maintained on the property.

5.2.2.1.5.2 This insurance shall not contain an occupancy clause suspending or reducing coverage should Owner partially occupy the Site and before the parties have determined Substantial Completion.

5.2.2.1.5.3 Loss, if any, shall be adjusted with and made payable to Owner as trustee for the insureds as their interests may appear. Owner shall be named as loss payee.
5.2.2.1.5.4 For renovation projects or projects that involve portions of Work contained within an existing structure, refer to Supplementary General and Special Conditions for possible additional builder's risk insurance requirements.

5.2.2.1.5.5 For Owner furnished equipment or materials that will be in care, custody or control of Contractor, Contractor will be responsible for damage and loss.

5.2.2.1.5.6 For those properties located within a Tier 1 or 2 windstorm area, named storm coverage must be provided with limits specified by Owner.

5.2.2.1.5.7 For those properties located in flood prone areas, flood insurance coverage must be provided with limits specified by Owner.

5.2.2.1.5.8 Builder's risk insurance policy shall remain in effect until Substantial Completion.

5.2.2.1.6 “Umbrella” Liability Insurance. Contractor shall obtain, pay for and maintain umbrella liability insurance during the Contract term, insuring Contractor for an amount of not less than amount specified in the Supplementary General Conditions or Special Conditions that provides coverage at least as broad as and applies in excess and follows form of the primary liability coverages required hereinafore. The policy shall provide “drop down” coverage where underlying primary insurance coverage limits are insufficient or exhausted.

5.2.3 Policies must include the following clauses, as applicable:

5.2.3.1 This insurance shall not be canceled, materially changed, or non-renewed except after thirty (30) days written notice has been given to Owner.

5.2.3.2 It is agreed that Contractor's insurance shall be deemed primary with respect to any insurance or self insurance carried by Owner for liability arising out of operations under the Contract with Owner.

5.2.3.3 Owner, its officials, directors, employees, representatives, and volunteers are added as additional insureds as respects operations and activities of, or on behalf of the named insured performed under Contract with Owner. The additional insured status must cover
completed operations as well. This is not applicable to workers’ compensation policies.

5.2.3.4 A waiver of subrogation in favor of Owner shall be provided in all policies.

5.2.4 Without limiting any of the other obligations or liabilities of Contractor, Contractor shall require each Subcontractor performing work under the Contract, at Subcontractor’s own expense, to maintain during the term of the Contract, the same stipulated minimum insurance including the required provisions and additional policy conditions as shown above. As an alternative, Contractor may include its Subcontractors as additional insureds on its own coverage as prescribed under these requirements. Contractor’s certificate of insurance shall note in such event that Subcontractors are included as additional insureds and that Contractor agrees to provide workers’ compensation for Subcontractors and their employees. Contractor shall obtain and monitor the certificates of insurance from each Subcontractor in order to assure compliance with the insurance requirements. Contractor must retain the certificates of insurance for the duration of the Contract plus five (5) years and shall have the responsibility of enforcing these insurance requirements among its Subcontractors. Owner shall be entitled, upon request and without expense, to receive copies of these certificates.

5.2.5 Workers’ compensation insurance coverage must be provided for all workers at all tier levels and meet the statutory requirements of Tex. Lab. Code § 401.011(44) and specific to construction projects for public entities as required by Tex. Lab. Code § 406.096.
Article 6. Construction Documents, Coordination Documents, and Record Documents

6.1 Drawings and Specifications.

6.1.1 Copies Furnished. Contractor will be furnished, free of charge, the number of complete sets of the Drawings, Specifications, and Addenda as provided in the Supplementary General Conditions or Special Conditions. Additional complete sets of Drawings and Specifications, if requested, will be furnished at reproduction cost to the entity requesting such additional sets. Electronic copies of such documents will be provided to Contractor without charge. **Unless otherwise called for in the Special Conditions, four (4) sets of drawings and specifications will be furnished to the Contractor free of charge upon justification of need.**

6.1.2 Ownership of Drawings and Specifications. All Drawings, Specifications and copies thereof furnished by A/E are to remain A/E’s property unless the Owner and A/E agree otherwise. These documents are not to be used on any other project, and with the exception of the Contract record set and electronic versions needed for warranty operations, are to be returned to the A/E, upon request, following completion of the Work.

6.1.3 Interrelation of Documents. The Contract Documents as referenced in the Contract between Owner and Contractor are complimentary, and what is required by one shall be as binding as if required by all.

6.1.4 Resolution of Conflicts in Documents. Where conflicts may exist within the Contract Documents, the documents shall govern in the following order: (a) Change Orders, addenda, and written amendments to the Contract; (b) the Contract; (c) Drawings; (d) Specifications (but Specifications shall control over Drawings as to quality of materials and workmanship); and (e) other Contract Documents. Among categories of documents having the same order of precedence, the term or provision that includes the latest date shall control and more specific requirements shall govern over general requirements. Contractor shall notify A/E and ODR for resolution of the issue prior to executing the Work in question.

6.1.5 Contractor’s Duty to Review Contract Documents. In order to facilitate its responsibilities for completion of the Work in accordance with and as reasonably inferable from the Contract Documents, prior to commencing the Work, Contractor shall examine and compare the Contract Documents, information furnished by Owner, relevant field measurements made by Contractor and any visible or reasonably anticipated conditions at the Site affecting the Work. This duty extends throughout the construction phase prior to commencing each particular work activity and/or system installation.
6.1.6 Discrepancies and Omissions in Drawings and Specifications.

6.1.6.1 Promptly report to ODR and to A/E the discovery of any apparent error, omission or inconsistency in the Contract Documents prior to execution of the Work. The Owner does not warrant or make any representations as to the accuracy or completeness of the information furnished to the Contractor by the Owner.

6.1.6.2 It is recognized that Contractor is not acting in the capacity of a licensed design professional, unless it is performing as a Design-Build firm.

6.1.6.3 It is further recognized that Contractor's examination of Contract Documents is to facilitate construction and does not create an affirmative responsibility to detect errors, omissions or inconsistencies or to ascertain compliance with applicable laws, building codes or regulations, unless it is performing as a Design-Build firm or a Construction Manager-at-Risk.

6.1.6.4 When performing as a Design-Build firm, Contractor has sole responsibility for discrepancies, errors, and omissions in the Drawings and Specifications.

6.1.6.5 When performing as a Construction Manager-at-Risk, Contractor has a shared responsibility with A/E for discovery and resolution of discrepancies, errors, and omissions in the Contract Documents. In such case, Contractor's responsibility pertains to review, coordination, and recommendation of resolution strategies within budget constraints.

6.1.6.6 Contractor has no liability for errors, omissions, or inconsistencies unless Contractor knowingly failed to report a recognized problem to Owner or the Work is executed under a Design-Build or Construction Manager-at-Risk Contract as outlined above. Should Contractor fail to perform the examination and reporting obligations of these provisions, Contractor is responsible for avoidable costs and direct and/or consequential damages.

6.2 Requirements for Record Documents. Contractor shall:

6.2.1 Maintain at the Site one copy of all Drawings, Specifications, addenda, approved submittals, Contract modifications, and all Project correspondence. Keep current and maintain Drawings and Specifications in good order with postings and markings to record actual conditions of Work and show and reference all changes made during construction. Provide Owner and A/E access to these documents.
6.2.2 Maintain the Record Documents As-Builds including Drawings, Specifications and other materials which reflect the actual field conditions and representations of the Work performed, whether it be directed by addendum, Change Order or otherwise. Make available all records prescribed herein for reference and examination by Owner and its representatives and agents.

6.2.3 Update the Record Documents As-Builds at least monthly prior to submission of periodic partial pay estimates. Failure to maintain current Record Documents constitutes cause for denial of a progress payment otherwise due.

6.2.4 Prior to requesting Substantial Completion inspection Contractor shall furnish a copy of its marked-up Record Documents As-Builds and a preliminary copy of each instructional manual, maintenance and operating manual, parts catalog, wiring diagrams, spare parts, specified written warranties and like publications, or parts for all installed equipment, systems, and like items and as described in the Contract Documents. (Unexecuted samples of the aforementioned documentation may be reviewed by ODR when the absence of substantial completion transactions preclude execution; however, Contractor remains obligated to provide fully executed copies of such materials prior to final payment.)

6.2.5 Once determined acceptable by ODR with input from A/E, provide one (1) reproducible copy and one (1) electronic media copy of all Record Documents As-Built documents unless otherwise required by the Supplementary General Conditions or Special Conditions.

6.2.6 Contractor shall be responsible for updating the Record As-Built Documents for all Contractor initiated documents and changes to the Contract Documents due to coordination and actual field conditions, including RFIs.

6.2.7 A/E shall be responsible for updating the Record As-Built Documents for any addenda, Change Orders, A/E supplemental instructions and any other alterations to the Contract Documents generated by A/E or Owner. A/E shall be responsible for compiling all As-Built documentation (as produced both by the Contractor and by the A/E) into the Record Documents.
Article 7. Construction Safety

7.1 General. It is the duty and responsibility of Contractor and all of its Subcontractors to be familiar with, enforce and comply with all requirements of Public Law No. 91-596, 29 U.S.C. § 651 et. seq., the Occupational Safety and Health Act of 1970, (OSHA) and all amendments thereto. Contractor shall prepare a safety plan specific to the Project and submit it to ODR and A/E prior to commencing Work. In addition, Contractor and all of its Subcontractors shall comply with all applicable laws and regulations of any public body having jurisdiction for safety of persons or property to protect them from damage, injury or loss and erect and maintain all necessary safeguards for such safety and protection.

7.2 Notices. Contractor shall provide notices as follows:

7.2.1 Notify owners of adjacent property including those that own or operate utility services and/or underground facilities, and utility owners, when prosecution of the Work may affect them or their facilities, and cooperate with them in the protection, removal, relocation and replacement, and access to their facilities and/or utilities.

7.2.2 Coordinate the exchange of material safety data sheets (MSDSs) or other hazard communication information required to be made available to or exchanged between or among employers at the site in connection with laws and regulations. Maintain a complete file of MSDSs for all materials in use on site throughout the construction phase and make such file available to Owner and its agents as requested.

7.3 Emergencies. In any emergency affecting the safety of persons or property, Contractor shall act to minimize, mitigate, and prevent threatened damage, injury or loss.

7.3.1 Have authorized agents of Contractor respond immediately upon call at any time of day or night when circumstances warrant the presence of Contractor to protect the Work or adjacent property from damage or to take such action pertaining to the Work as may be necessary to provide for the safety of the public.

7.3.2 Give ODR and A/E prompt notice of all such events.

7.3.3 If Contractor believes that any changes in the Work or variations from Contract Documents have been caused by its emergency response, promptly notify Owner within seventy-two (72) hours of the emergency response event.

7.3.4 Should Contractor fail to respond, Owner is authorized to direct other forces to take action as necessary and Owner may deduct any cost of remedial action from funds otherwise due Contractor.
7.4 **Injuries.** In the event of an incident or accident involving outside medical care for an individual on or near the Work, Contractor shall notify ODR and other parties as may be directed promptly, but no later than twenty-four (24) hours after Contractor learns that an event required medical care.

7.4.1 Record the location of the event and the circumstances surrounding it, by using photography or other means, and gather witness statements and other documentation which describes the event.

7.4.2 Supply ODR and A/E with an incident report no later than thirty-six (36) hours after the occurrence of the event. In the event of a catastrophic incident (one (1) fatality or three (3) workers hospitalized), barricade and leave intact the scene of the incident until all investigations are complete. A full set of incident investigation documents, including facts, finding of cause, and remedial plans shall be provided within one (1) week after occurrence, unless otherwise directed by legal counsel. Contractor shall provide ODR with written notification within one week of such catastrophic event if legal counsel delays submission of full report.

7.5 **Environmental Safety.** Upon encountering any previously unknown potentially hazardous material, or other materials potentially contaminated by hazardous material, Contractor shall immediately stop work activities impacted by the discovery, secure the affected area, and notify ODR immediately.

7.5.1 Bind all Subcontractors to the same duty.

7.5.2 Upon receiving such notice, ODR will promptly engage qualified experts to make such investigations and conduct such tests as may be reasonably necessary to determine the existence or extent of any environmental hazard. Upon completion of this investigation, ODR will issue a written report to Contractor identifying the material(s) found and indicate any necessary steps to be taken to treat, handle, transport or dispose of the material.

7.5.3 Owner may hire third-party Contractors to perform any or all such steps.

7.5.4 Should compliance with ODR’s instructions result in an increase in Contractor’s cost of performance, or delay the Work, Owner will make an equitable adjustment to the Contract Sum and/or the time of completion, and modify the Contract in writing accordingly.

7.6 **Trenching Plan.** When the project requires excavation which either exceeds a depth of four (4) feet, or results in any worker’s upper body being positioned below grade level, Contractor is required to submit a trenching plan to ODR prior to commencing trenching operations unless an engineered plan is part of the Contract Documents. The plan is required to be prepared and sealed by a professional engineer registered in the State of Texas, and hired or employed by Contractor or Subcontractor to perform the work. Said engineer cannot be anyone who is otherwise either directly or indirectly engaged on this project.
Article 8. Quality Control

8.1 Materials & Workmanship. Contractor shall execute Work in a good and workmanlike matter in accordance with the Contract Documents. Contractor shall develop and provide a quality control plan specific to this Project and acceptable to Owner. Where Contract Documents do not specify quality standards, complete and construct all Work in compliance with generally accepted construction industry standards. Unless otherwise specified, incorporate all new materials and equipment into the Work under the Contract.

8.2 Testing.

8.2.1 Owner is responsible for coordinating and paying for routine and special tests required to confirm compliance with quality and performance requirements, except as stated below or otherwise required by the Contract Documents. Contractor shall provide the following testing:

8.2.1.1 Any test of basic material or fabricated equipment included as part of a submittal for a required item in order to establish compliance with the Contract Documents.

8.2.1.2 Any test of basic material or fabricated equipment offered as a substitute for a specified item on which a test may be required in order to establish compliance with the Contract Documents.

8.2.1.3 Preliminary, start-up, pre-functional and operational testing of building equipment and systems as necessary to confirm operational compliance with requirements of the Contract Documents.

8.2.1.4 All subsequent tests on original or replaced materials conducted as a result of prior testing failure.

8.2.2 All testing shall be performed in accordance with standard test procedures by an accredited laboratory, or special consultant as appropriate, acceptable to Owner. Results of all tests shall be provided promptly to ODR, A/E, and Contractor.

8.2.3 Non-Compliance (Test Results). Should any of the tests indicate that a material and/or system does not comply with the Contract requirements, the burden of proof remains with Contractor, subject to:

8.2.3.1 Contractor selection and submission of the laboratory for Owner acceptance.

8.2.3.2 Acceptance by Owner of the quality and nature of tests.

8.2.3.3 All tests taken in the presence of A/E and/or ODR, or their representatives.
8.2.3.4 If tests confirm that the material/systems comply with Contract Documents, Owner will pay the cost of the test.

8.2.3.5 If tests reveal noncompliance, Contractor will pay those laboratory fees and costs of that particular test and all future tests, of that failing Work, necessary to eventually confirm compliance with Contract Documents.

8.2.3.6 Proof of noncompliance with the Contract Documents will make Contractor liable for any corrective action which ODR determines appropriate, including complete removal and replacement of non-compliant work or material.

8.2.4 Notice of Testing. Contractor shall give ODR and A/E timely notice of its readiness and the date arranged so ODR and A/E may observe such inspection, testing, or approval. **Contractor shall give Owner a minimum of five (5) working days advance notice prior to testing.**

8.2.5 Test Samples. Contractor is responsible for providing Samples of sufficient size for test purposes and for coordinating such tests with their Work Progress Schedule to avoid delay.

8.2.6 Covering Up Work. If Contractor covers up any Work without providing Owner an opportunity to inspect, Contractor shall, if requested by ODR, uncover and recover the work at Contractor’s expense.

8.3 Submittals.

8.3.1 Contractor’s Submittals. Contractor shall submit with reasonable promptness consistent with the Project schedule and in orderly sequence all Shop Drawings, Samples, or other information required by the Contract Documents, or subsequently required by Change Order. Prior to submitting, Contractor shall review each submittal for general compliance with Contract Documents and approve submittals for review by A/E and Owner by an approval stamp affixed to each copy. Submittal data presented without Contractor’s stamp will be returned without review or comment, and any delay resulting from failure is Contractor’s responsibility.

8.3.1.1 Contractor shall within twenty-one (21) days of the effective date of the Notice To Proceed with construction, submit to ODR and A/E, a submittal schedule/register, organized by specification section, listing all items to be furnished for review and approval by A/E and Owner. The list shall include Shop Drawings, manufacturer’s literature, certificates of compliance, materials Samples, materials colors, guarantees, and all other items identified throughout the Specifications.

8.3.1.2 Contractor shall indicate the type of item, Contract requirements reference, and Contractor’s scheduled dates for submitting the item along with the requested dates for approval answers from A/E and
Owner. The submittal register shall indicate the projected dates for procurement of all included items and shall be updated at least monthly with actual approval and procurement dates. Contractor’s Submittal Register must be reasonable in terms of the review time for complex submittals. Contractor’s submittal schedule must be consistent with the Work Progress Schedule and identify critical submittals. Show and allow a minimum of fifteen (15) calendar days duration after receipt by A/E and ODR for review and approval. If resubmittal required, allow a minimum of an additional fifteen (15) calendar days for review. Submit the updated Submittal Register with each request for progress payment. Owner may establish routine review procedures and schedules for submittals at the preconstruction conference and/or elsewhere in the Contract Documents. If Contractor fails to update and provide the Submittal Register as required, Owner may, after seven (7) days notice to Contractor withhold a reasonable sum of money that would otherwise be due Contractor.

8.3.1.3 Contractor shall coordinate the Submittal Register with the Work Progress Schedule. Do not schedule Work requiring a submittal to begin prior to scheduling review and approval of the related submittal. Revise and/or update both schedules monthly to ensure consistency and current project data. Provide to ODR the updated Submittal Register and schedule with each application for progress payment. Refer to requirements for the Work Progress Schedule for inclusion of procurement activities therein. Regardless, the Submittal Register shall identify dates submitted and returned and shall be used to confirm status and disposition of particular items submitted, including approval or other action taken and other information not conveniently tracked through the Work Progress Schedule.

8.3.1.4 By submitting Shop Drawings, Samples or other required information, Contractor represents that it has determined and verified all applicable field measurements, field construction criteria, materials, catalog numbers and similar data to the extent possible from existing conditions and design information provided by A/E prior to fabrication; and has checked and coordinated each Shop Drawing and Sample with the requirements of the Work and the Contract Documents.

8.3.2 Review of Submittals. A/E and ODR review is only for conformance with the design concept and the information provided in the Contract Documents. Responses to submittals will be in writing. The approval of a separate item does not indicate approval of an assembly in which the item functions. The approval of a submittal does not relieve Contractor of responsibility for any deviation from the requirements of the Contract unless Contractor informs A/E and ODR of such deviation in a clear, conspicuous, and written manner on the submittal transmittal and at the time of submission, and obtains Owner’s
written specific approval of the particular deviation.

8.3.3 **Correction and Resubmission.** Contractor shall make any corrections required to a submittal and resubmit the required number of corrected copies promptly so as to avoid delay, until submittal approval. Direct attention in writing to A/E and ODR, when applicable, to any new revisions other than the corrections requested on previous submissions.

8.3.4 **Limits on Shop Drawing Review.** Contractor shall not commence any Work requiring a submittal until review of the submittal *is fully executed* under Subsection 8.3.2. Construct all such work in accordance with reviewed submittals. Comments incorporated as part of the review in Subsection 8.3.2 of Shop Drawings and Samples is not authorization to Contractor to perform extra work or changed work unless authorized through a Change Order. A/E’s and ODR’s review, if any, does not relieve Contractor from responsibility for defects in the Work resulting from errors or omissions of any kind on the submittal, regardless of any approval action. A/E or ODR shall not make formal changes to the Contract Documents via the submittal process. Changes to the Construction Documents shall be accomplished via Section 3.2.2 and Article 11 Changes.

8.3.5 **No Substitutions Without Approval.** ODR and A/E may receive and consider Contractor’s request for substitution when Contractor agrees to reimburse Owner for review costs and satisfies the requirements of this section. If Contractor does not satisfy these conditions, ODR and A/E will return the request without action except to record noncompliance with these requirements. Owner will not consider the request if Contractor cannot provide the product or method because of failure to pursue the Work promptly or coordinate activities properly. Contractor’s request for a substitution may be considered by ODR and A/E when:

8.3.5.1 **The Contract Documents do not require extensive revisions; and**

8.3.5.2 **Proposed changes are in keeping with the general intent of the Contract Documents and the design intent of A/E and do not result in an increase in cost to Owner; and**

8.3.5.3 **The request is timely, fully documented, properly submitted and one or more of the following apply:**

8.3.5.3.1 **Contractor cannot provide the specified product, assembly or method of construction within the Contract Time;**

8.3.5.3.2 **The request directly relates to an “or-equal” clause or similar language in the Contract Documents;**

8.3.5.3.3 **The request directly relates to a “product design standard” or “performance standard” clause in the Contract**
Documents;

8.3.5.3.4 The requested substitution offers Owner a substantial advantage in cost, time, energy conservation or other considerations, after deducting additional responsibilities Owner must assume;

8.3.5.3.5 The specified product or method of construction cannot receive necessary approval by an authority having jurisdiction, and ODR can approve the requested substitution;

8.3.5.3.6 Contractor cannot provide the specified product, assembly or method of construction in a manner that is compatible with other materials and where Contractor certifies that the substitution will overcome the incompatibility;

8.3.5.3.7 Contractor cannot coordinate the specified product, assembly or method of construction with other materials and where Contractor certifies they can coordinate the proposed substitution; or

8.3.5.3.8 The specified product, assembly or method of construction cannot provide a warranty required by the Contract Documents and where Contractor certifies that the proposed substitution provides the required warranty.

8.3.5.3.9 The manufacturer of the specified product has been removed from production due to cancellation or obsolescence.

8.3.6 Unauthorized Substitutions at Contractor’s Risk. Contractor is financially responsible for any additional costs or delays resulting from unauthorized substitution of materials, equipment or fixtures other than those specified. Contractor shall reimburse Owner for any increased design or contract administration costs resulting from such unauthorized substitutions.

8.4 Field Mock-up.

8.4.1 Mock-ups shall be constructed prior to commencement of a specified scope of work to confirm acceptable workmanship.

8.4.1.1 As a minimum, field mock-ups shall be constructed for roofing systems, exterior veneer / finish systems, glazing systems, and any other Work requiring a mock-up as identified throughout the Contract Documents. Mock-ups for systems not part of the Project scope shall not be required.

8.4.1.2 Mock-ups may be incorporated into the Work if allowed by the
Contract Documents and if acceptable to ODR. If mock-ups are freestanding, they shall remain in place until otherwise directed by Owner.

8.4.1.3 Contractor shall include field mock-ups in their Work Progress Schedule and shall notify ODR and A/E of readiness for review sufficiently in advance to coordinate review without delay.

8.5 Inspection During Construction.

8.5.1 Contractor shall provide sufficient, safe, and proper facilities, including equipment as necessary for safe access, at all reasonable times for observation and/or inspection of the Work by Owner and its agents. “Reasonable times” of inspection allow for sufficient monitoring of the quality of materials and installation without substantially impeding the progress of the Work.

8.5.2 Contractor shall not cover up any Work with finishing materials or other building components prior to providing Owner and its agents an opportunity to perform an inspection of the Work.

8.5.2.1 Should corrections of the Work be required for approval, Contractor shall not cover-up corrected Work until Owner indicates approval.

8.5.2.2 Contractor shall provide notification of at least five (5) working days or otherwise as mutually agreed, to ODR of the anticipated need for a cover-up inspection. Should ODR fail to make the necessary inspection within the agreed period, Contractor may proceed with cover-up Work after making every reasonable effort to contact the ODR and after documenting the Work, but is not relieved of responsibility for Work to comply with requirements of the Contract Documents.
Article 9. Construction Schedules

9.1 **Contract Time.** **TIME IS AN ESSENTIAL ELEMENT OF THE CONTRACT.** The Contract Time is the time between the dates indicated in the Notice to Proceed for commencement of the Work and for achieving Substantial Completion. The Contract Time can be modified only by Change Order. Failure to achieve Substantial Completion within the Contract Time as otherwise agreed to in writing will cause damage to Owner and may subject Contractor to liquidated damages as provided in the Contract Documents. If Contractor fails to achieve Final Completion within thirty (30) calendar days after Substantial Completion or a mutually agreed upon longer period of time between Contractor and Owner, Contractor shall be responsible for Owner's additional inspection, project management, and maintenance cost to the extent caused by Contractor's failure to achieve Final Completion.

9.2 **Notice to Proceed.** Owner will issue a Notice to Proceed which shall state the dates for beginning Work and for achieving Substantial Completion of the Work.

9.3 **Work Progress Schedule.** Refer to Supplementary General Conditions or Special Conditions for additional schedule requirements. Unless indicated otherwise in those documents, Contractor shall submit their initial Work Progress Schedule for the Work in relation to the entire Project not later than twenty-one (21) days after the effective date of the Notice to Proceed to ODR and A/E. Unless otherwise indicated in the Contract Documents, the Work Progress Schedule shall be computerized Critical Path Method (CPM) with fully editable logic. This initial schedule shall indicate the dates for starting and completing the various aspects required to complete the Work, including mobilization, procurement, installation, testing, inspection, delivery of Close-out Documents and acceptance of all the Work of the Contract. When acceptable to Owner, the initially accepted schedule shall be the Baseline Schedule for comparison to actual conditions throughout the Contract duration.

9.3.1 **Schedule Requirements.** Contractor shall submit electronic and paper copy of the initial Work Progress Schedule reflecting accurate and reliable representations of the planned progress of the Work, the Work to date if any, and of Contractor's actual plans for its completion. Contractor shall organize and provide adequate detail so the schedule is capable of measuring and forecasting the effect of delaying events on completed and uncompleted activities.

9.3.1.1 Contractor shall resubmit initial schedule as required to address review comments from A/E and ODR until such schedule is accepted as the Baseline Schedule.

9.3.1.2 Submittal of a schedule, schedule revision or schedule update constitutes Contractor's representation to Owner of the accurate depiction of all progress to date and that Contractor will follow the schedule as submitted in performing the Work.
9.3.2 Schedule Updates. Contractor shall update the Work Progress Schedule and the Submittal Register monthly, as a minimum, to reflect progress to date and current plans for completing the Work, while maintaining original schedule as Baseline Schedule and submit paper and electronic copies of the update to A/E and ODR as directed, but as a minimum with each request for payment. Owner has no duty to make progress payments unless accompanied by the updated Work Progress Schedule. Show the anticipated date of completion reflecting all extensions of time granted through Change Order as of the date of the update. Contractor may revise the Work Progress Schedule when in Contractor's judgment it becomes necessary for the management of the Work. Contractor shall identify all proposed changes to schedule logic to Owner and to A/E via an executive summary accompanying the updated schedule for review prior to final implementation of revisions into a revised Baseline Schedule. Schedule changes that materially impact Owner's operations shall be communicated promptly to ODR and shall not be incorporated into the revised Baseline Schedule without ODR's consent.

9.3.3 The Work Progress Schedule is for Contractor's use in managing the Work and submittal of the schedule, and successive updates or revisions, is for the information of Owner and to demonstrate that Contractor has complied with requirements for planning the Work. Owner’s acceptance of a schedule, schedule update or revision constitutes Owner’s agreement to coordinate its own activities with Contractor’s activities as shown on the schedule.

9.3.3.1 Acceptance of the Work Progress Schedule, or update and/or revision thereto does not indicate any approval of Contractor’s proposed sequences and duration.

9.3.3.2 Acceptance of a Work Progress Schedule update or revision indicating early or late completion does not constitute Owner’s consent, alter the terms of the Contract, or waive either Contractor’s responsibility for timely completion or Owner’s right to damages for Contractor’s failure to do so.

9.3.3.3 Contractor’s scheduled dates for completion of any activity or the entire Work do not constitute a change in terms of the Contract. Change Orders are the only method of modifying the Substantial Completion Date(s) and Contract Time.

9.4 Ownership of Float. Unless indicated otherwise in the Contract Documents, Contractor shall develop its schedule, pricing, and execution plan to provide a minimum of ten (10) percent total float at acceptance of the Baseline Schedule. Float time contained in the Work Progress Schedule is not for the exclusive benefit of Contractor or Owner, but belongs to the Project and may be consumed by either party as needed on a first-used basis.

9.5 Completion of Work. Contractor is accountable for completing the Work within the Contract Time stated in the Contract, or as otherwise amended by Change Order.
9.5.1 If, in the judgment of Owner, the work is behind schedule and the rate of placement of work is inadequate to regain scheduled progress to insure timely completion of the entire work or a separable portion thereof, Contractor, when so informed by Owner, shall immediately take action to increase the rate of work placement by:

9.5.1.1 An increase in working forces.
9.5.1.2 An increase in equipment or tools.
9.5.1.3 An increase in hours of work or number of shifts.
9.5.1.4 Expedite delivery of materials.
9.5.1.5 Other action proposed if acceptable to Owner.

9.5.2 Within ten (10) days after such notice from ODR, Contractor shall notify ODR in writing of the specific measures taken and/or planned to increase the rate of progress. Contractor shall include an estimate as to the date of scheduled progress recovery and an updated Work Progress Schedule illustrating Contractor’s plan for achieving timely completion of the Project. Should ODR deem the plan of action inadequate, Contractor shall take additional steps or make adjustments as necessary to its plan of action until it meets with ODR’s approval.

9.6 Modification of the Contract Time.

9.6.1 Delays and extension of time as hereinafter described are valid only if executed in accordance with provisions set forth in Article 11.

9.6.2 When a delay defined herein as excusable prevents Contractor from completing the Work within the Contract Time, Contractor is entitled to an extension of time. Owner will make an equitable adjustment and extend the number of days lost because of excusable delay or Weather Days, as measured by Contractor’s progress schedule. All extensions of time will be granted in calendar days. In no event, however, will an extension of time be granted for delays that merely extend the duration of non-critical activities, or which only consume float without delaying the project Substantial Completion date(s).

9.6.2.1 A “Weather Day” is a day on which Contractor’s current schedule indicates Work is to be done, and on which inclement weather and/or related site conditions prevent Contractor from performing seven (7) continuous hours of Work on the critical path between the hours of 7:00 a.m. and 6:00 p.m. Weather days are excusable delays. When weather conditions at the site prevent work from proceeding, Contractor shall immediately notify ODR for confirmation of the conditions. At the end of each calendar month, submit to ODR and A/E a list of Weather Days occurring in that month along with documentation of the impact on critical activities. Based on
confirmation by ODR, any time extension granted will be issued by Change Order. If Contractor and Owner cannot agree on the time extension, Owner may issue a ULCO for fair and reasonable time extension.

9.6.2.2 Excusable Delay. Contractor is entitled to an equitable adjustment of the Contract Time, issued via change order, for delays caused by the following:

9.6.2.2.1 Errors, omissions and imperfections in design, which A/E corrects by means of changes in the Drawings and Specifications.

9.6.2.2.2 Unanticipated physical conditions at the Site, which A/E corrects by means of changes to the Drawings and Specifications or for which ODR directs changes in the Work identified in the Contract Documents.

9.6.2.2.3 Failure of Owner to have secured property, right-of-way or easements necessary for Work to begin or progress.

9.6.2.2.4 Changes in the Work that effect activities identified in Contractor’s schedule as “critical” to completion of the entire Work, if such changes are ordered by ODR or recommended by A/E and ordered by ODR.

9.6.2.2.5 Suspension of Work for unexpected natural events, Force Majeure (sometimes called “acts of God”), civil unrest, strikes or other events which are not within the reasonable control of Contractor.

9.6.2.2.6 Suspension of Work for convenience of ODR, which prevents Contractor from completing the Work within the Contract Time.

9.6.2.2.7 Administrative delays caused by activities or approval requirements related to an Authority Having Jurisdiction.

9.6.3 Contractor’s relief in the event of such delays is the time impact to the critical path as determined by analysis of Contractor’s schedule. In the event that Contractor incurs additional direct costs because of the excusable delays other than described in Subparagraph 9.6.2.2.4 and within the reasonable control of Owner, the Contract price and Contract Time are to be equitably adjusted by Owner pursuant to the provisions of Article 11.

9.7 No Damages for Delay. Contractor has no claim for monetary damages for delay or hindrances to the work from any cause, including without limitation any act or omission of Owner.
9.8 **Concurrent Delay.** When the completion of the Work is simultaneously delayed by an excusable delay and a delay arising from a cause not designated as excusable, Contractor may not be entitled to a time extension for the period of concurrent delay.

9.9 **Other Time Extension Requests.** Time extensions requested in association with changes to the Work directed or requested by Owner shall be included with Contractor’s proposed costs for such change. Time extensions requested for inclement weather are covered by Paragraph 9.6.2.1 above. If Contractor believes that the completion of the Work is delayed by a circumstance other than for changes directed to the Work or weather, they shall give ODR written notice, stating the nature of the delay and the activities potentially affected, within five (5) days after the onset of the event or circumstance giving rise to the excusable delay. Contractor shall provide sufficient written evidence to document the delay. In the case of a continuing cause of delay, only one claim is necessary. State claims for extensions of time in numbers of whole or half days.

9.9.1 Within ten (10) days after the cessation of the delay, Contractor shall formalize its request for extension of time in writing to include a full analysis of the schedule impact of the delay and substantiation of the excusable nature of the delay. All changes to the Contract Time or made as a result of such claims is by Change Order, as set forth in Article 11.

9.9.2 No extension of time releases Contractor or the Surety furnishing a performance or payment bond from any obligations under the Contract or such a bond. Those obligations remain in full force until the discharge of the Contract.

9.9.3 **Contents of Time Extension Requests.** Contractor shall provide with each Time Extension Request a quantitative demonstration of the impact of the delay on project completion time, based on the Work Progress Schedule. Contractor shall include with Time Extension Requests a reasonably detailed narrative setting forth:

9.9.3.1 The nature of the delay and its cause; the basis of Contractor’s claim of entitlement to a time extension.

9.9.3.2 Documentation of the actual impacts of the claimed delay on the critical path indicated in Contractor’s Work Progress Schedule, and any concurrent delays.

9.9.3.3 Description and documentation of steps taken by Contractor to mitigate the effect of the claimed delay, including, when appropriate, the modification of the Work Progress Schedule.

9.9.4 **Owner’s Response.** Owner will respond to the Time Extension Request by providing to Contractor written notice of the number of days granted, if any, and giving its reason if this number differs from the number of days requested by Contractor.

9.9.4.1 Owner will not grant time extensions for delays that do not affect the
9.9.4.2 Owner will respond to each properly submitted Time Extension Request within fifteen (15) days following receipt. If Owner cannot reasonably make a determination about Contractor's entitlement to a time extension within that time, Owner will notify Contractor in writing. Unless otherwise agreed by Contractor, Owner has no more than fifteen (15) additional days to prepare a final response. If Owner fails to respond within forty-five (45) days from the date the Time Extension Request is received, Contractor is entitled to a time extension in the amount requested.

9.10 Failure to Complete Work Within the Contract Time. **TIME IS AN ESSENTIAL ELEMENT OF THE CONTRACT.** Contractor's failure to substantially complete the Work within the Contract Time or to achieve Substantial Completion as required will cause damage to Owner. These damages shall be liquidated by agreement of Contractor and Owner, in the amount per day as set forth in the Contract Documents.

9.11 Liquidated Damages. Owner may collect liquidated damages due from Contractor directly or indirectly by reducing the Contract Sum in the amount of liquidated damages stated in the Supplementary General Conditions or Special Conditions.
Article 10. Payments

10.1 Schedule of Values. Contractor shall submit to ODR and A/E for acceptance a Schedule of Values accurately itemizing material and labor for the various classifications of the Work based on the organization of the specification sections and of sufficient detail acceptable to ODR. The accepted Schedule of Values will be the basis for the progress payments under the Contract.

10.1.1 No progress payments will be made prior to receipt and acceptance of the Schedule of Values, provided in such detail as required by ODR, and submitted not less than twenty-one (21) days prior to the first request for payment. The Schedule of Values shall follow the order of trade divisions of the Specifications and include itemized costs for general conditions, costs for preparing close out documents, staff training, if required, fees, contingencies, and Owner cash allowances, if applicable, so that the sum of the items will equal the Contract price. As appropriate, assign each item labor and/or material values, the subtotal thereof equaling the value of the work in place when complete.

10.1.1.1 Owner requires that the Work items be inclusive of the cost of the Work items only. Any contract markups for overhead and profit, general conditions, etc., shall be contained within separate line items for those specific purposes which shall be divided into at least two (2) lines, one (1) for labor and one (1) for materials.

10.1.2 Contractor shall retain a copy of all worksheets used in preparation of its bid or proposal, supported by a notarized statement that the worksheets are true and complete copies of the documents used to prepare the bid or proposal. Make the worksheets available to ODR at the time of Contract execution. Thereafter Contractor shall grant Owner during normal business hours access to said copy of worksheets at any time during the period commencing upon execution of the Contract and ending one year after final payment.

10.2. Progress Payments. Contractor will receive periodic progress payments for Work performed, materials in place, suitably stored on Site, or as otherwise agreed to by Owner and Contractor. Payment is not due until receipt by ODR or his designee of a correct and complete Pay Application in electronic and/or hard copy format as set forth in Supplementary General Conditions, Special Conditions, and certified by A/E. Progress payments are made provisionally and do not constitute acceptance of work not in accordance with the Contract Documents. Owner will not process progress payment applications for Change Order Work until all parties execute the Change Order.

10.2.1 Preliminary Pay Worksheet. Once each month that a progress payment is to be requested, the Contractor shall submit to A/E and ODR a complete, clean copy of a preliminary pay worksheet or preliminary pay application, to include the following:
10.2.1.1 Contractor’s estimate of the amount of Work performed, labor furnished and materials incorporated into the Work, using the established Schedule of Values;

10.2.1.2 An updated Work Progress Schedule including the executive summary and all required schedule reports;

10.2.1.3 HUB subcontracting plan Progress Assessment Report as required in Paragraph 4.2.5.1;

10.2.1.4 Such additional documentation as Owner may require as set forth in the Supplementary General Conditions or elsewhere in the Contract Documents; and

10.2.1.5 Construction payment affidavit. The referenced affidavit is the Contractor’s Progress Payment Affidavit

10.2.2 Contractor’s Application for Payment. As soon as practicable, but in no event later than seven (7) days after receipt of the preliminary pay worksheet, A/E and ODR will meet with Contractor to review the preliminary pay worksheet and to observe the condition of the Work. Based on this review, ODR and A/E may require modifications to the preliminary pay worksheet prior to the submittal of an Application for Payment, and will promptly notify Contractor of revisions necessary for approval. As soon as practicable, Contractor shall submit its Application for Payment on the appropriate and completed form, reflecting the required modifications to the Schedule of Values required by A/E and/or ODR. Attach all additional documentation required by ODR and/or A/E, as well as an affidavit affirming that all payrolls, bills for labor, materials, equipment, subcontracted work and other indebtedness connected with Contractor’s Application for Payment are paid or will be paid within the time specified in Tex. Gov’t Code, Ch. 2251. No Application for Payment is complete unless it fully reflects all required modifications, and attaches all required documentation including Contractor’s affidavit.

10.2.3 Certification by Architect/Engineer. Within five (5) days or earlier following A/E’s receipt of Contractor’s formal Application for Payment, A/E will review the Application for Payment for completeness, and forward it to ODR. A/E will certify that the application is complete and payable, or that it is incomplete, stating in particular what is missing. If the Application for Payment is incomplete, Contractor shall make the required corrections and resubmit the Application for Payment for processing.

10.3 Owner’s Duty to Pay. Owner has no duty to pay the Contractor except on receipt by ODR of: 1) a complete Application for Payment certified by A/E; 2) Contractor’s updated Work Progress Schedule; and 3) confirmation that Contractor’s record documentation at the Site is kept current.
10.3.1 Payment for stored materials and/or equipment confirmed by Owner and A/E to be on-site or otherwise properly stored is limited to eighty-five (85) percent of the invoice price or eighty-five (85) percent of the scheduled value for the materials or equipment, whichever is less.

10.3.2 **Retainage.** Owner will withhold from each progress payment, as retainage, five (5) percent of the total earned amount, the amount authorized by law, or as otherwise set forth in the Supplementary General Conditions or Special Conditions. Retainage is managed in conformance with Tex. Gov’t Code, Ch. 2252, Subch. B. *The Owner shall withhold as retainage ten percent (10%) of the amount of each progress payment on all contracts estimated at time of execution to cost less than $400,000 and five percent (5%) of the amount of each progress payment on all contracts estimated at the time of execution to cost $400,000 or more.*

10.3.2.1 Contractor shall provide written consent of its surety for any request for reduction or release of retainage.

10.3.2.2 At least sixty-five (65) percent of the Contract, or such other discrete Work phase as set forth in Subsection 12.1.6 or Work package delineated in the Contract Documents, must be completed before Owner can consider a retainage reduction or release.

10.3.2.3 Contractor shall not withhold retainage from their Subcontractors and suppliers in amounts that are any percentage greater than that withheld in its Contract with Owner under this subsection, unless otherwise acceptable to Owner.

10.3.3 **Price Reduction to Cover Loss.** Owner may reduce any Application for Payment, prior to payment to the extent necessary to protect Owner from loss on account of actions of Contractor including, but not limited to, the following:

10.3.3.1 Defective or incomplete Work not remedied;

10.3.3.2 Damage to Work of a separate Contractor;

10.3.3.3 Failure to maintain scheduled progress or reasonable evidence that the Work will not be completed within the Contract Time;

10.3.3.4 Persistent failure to carry out the Work in accordance with the Contract Documents;

10.3.3.5 Reasonable evidence that the Work cannot be completed for the unpaid portion of the Contract Sum;

10.3.3.6 Assessment of fines for violations of prevailing wage rate law; or

10.3.3.7 Failure to include the appropriate amount of retainage for that
periodic progress payment.

10.3.8 Failure to maintain or allow Owner’s inspection of payroll records.

10.3.4 Title to all material and Work covered by progress payments transfers to Owner upon payment.

10.3.4.1 Transfer of title to Owner does not relieve Contractor and its Subcontractors of the sole responsibility for the care and protection of materials and Work upon which payments have been made until substantial completion, responsibility for the care and protection of materials and Work in areas where punch list items are completed until final completion or the restoration of any damaged Work, or waive the right of Owner to require the fulfillment of all the terms of the Contract.

10.4 Progress Payments. Progress payments to Contractor do not release Contractor or its surety from any obligations under the Contract.

10.4.1 Upon Owner’s request, Contractor shall furnish manifest proof of the status of Subcontractor’s accounts in a form acceptable to Owner.

10.4.2 Pay estimate certificates must be signed by a corporate officer or a representative duly authorized by Contractor.

10.4.3 Provide copies of bills of lading, invoices, delivery receipts or other evidence of the location and value of such materials in requesting payment for materials.

10.4.4 For purposes of Tex. Gov’t Code § 2251.021(a)(2), the date the performance of service is complete is the date when ODR approves the Application for Payment.

10.5 Off-Site Storage. With prior approval by Owner and in the event Contractor elects to store materials at an off-site location, abide by the following conditions, unless otherwise agreed to in writing by Owner.

10.5.1 Store materials in a commercial warehouse meeting the criteria stated below.

10.5.2 Provide insurance coverage adequate not only to cover materials while in storage, but also in transit from the off-site storage areas to the Project Site. Copies of duly authenticated certificates of insurance, made out to insure the State agency which is signatory to the Contract, must be filed with Owner’s representative.

10.5.3 Inspection by Owner’s representative is allowed at any time. Owner’s inspectors must be satisfied with the security, control, maintenance, and preservation measures.
10.5.4 Materials for this Project are physically separated and marked for the Project in a sectioned-off area. Only materials which have been approved through the submittal process are to be considered for payment.

10.5.5 Owner reserves the right to reject materials at any time prior to final acceptance of the complete Contract if they do not meet Contract requirements regardless of any previous progress payment made.

10.5.6 With each monthly payment estimate, submit a report to ODR and A/E listing the quantities of materials already paid for and still stored in the off-site location.

10.5.7 Make warehouse records, receipts and invoices available to Owner’s representatives, upon request, to verify the quantities and their disposition.

10.5.8 In the event of Contract termination or default by Contractor, the items in storage off-site, upon which payment has been made, will be promptly turned over to Owner or Owner’s agents at a location near the jobsite as directed by ODR. The full provisions of performance and payment bonds on this Project cover the materials off-site in every respect as though they were stored on the Project Site.

10.6 Time for Payment by Contractor Pursuant to Tex. Gov’t Code § 2255.022.

10.6.1 Contractor who receives a payment from a governmental entity shall pay Subcontractor the appropriate share of the payment not later than the tenth (10th) day after the date Contractor receives the payment.

10.6.2 The appropriate share is overdue on the eleventh (11th) day after the date Contractor receives the payment.
Article 11. Changes

11.1 Change Orders. A Change Order issued after execution of the Contract is a written order to Contractor, signed by ODR, Contractor, and A/E, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time can only be changed by Change Order. A Change Order signed by Contractor indicates his agreement therewith, including the adjustment in the Contract Sum and/or the Contract Time. ODR may issue a written authorization for Contractor to proceed with Work of a Change Order in advance of final execution by all parties in accordance with Section 11.9.

11.1.1 Owner, without invalidating the Contract, and without approval of the Contractor's Surety, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, and the Contract Sum and the Contract Time will be adjusted accordingly. All such changes in the Work shall be authorized by Change Order or ULCO, and shall be performed under the applicable conditions of the Contract Documents. If such changes cause an increase or decrease in Contractor's cost of, or time required for, performance of the Contract, an equitable adjustment shall be made and confirmed in writing in a Change Order or a ULCO.

11.1.2 It is recognized by the parties hereto and agreed by them that the Specifications and Drawings may not be complete or free from errors, omissions and imperfections or that they may require changes or additions in order for the Work to be completed to the satisfaction of Owner and that, accordingly, it is the express intention of the parties, notwithstanding any other provisions in this Contract, that any errors, omissions or imperfections in such Specifications and Drawings, or any changes in or additions to same or to the Work ordered by Owner and any resulting delays in the Work or increases in Contractor's costs and expenses arising out of such errors, shall not constitute or give rise to any claim, demand or cause of action of any nature whatsoever in favor of Contractor, whether for breach of Contract, or otherwise; provided, however, that Owner shall be liable to Contractor for the sum stated to be due Contractor in any Change Order approved and signed by both parties, it being agreed hereby that such sum, together with any extension of time contained in said Change Order, shall constitute full compensation to Contractor for all costs, expenses and damages to Contractor, as permitted under Tex. Gov't Code, Ch. 2260.

11.1.3 Procedures for administration of Change Orders shall be established by Owner and stated in Supplementary General Conditions, Special Conditions, or elsewhere in the Contract Documents. Procedures for administration of Change Orders will be provided at the Pre-Construction Conference.

11.1.4 No verbal order, verbal statement, or verbal direction of Owner or his duly appointed representative shall be treated as a change under this article or entitle Contractor to an adjustment.
11.1.5 Contractor agrees that Owner or any of its duly authorized representatives shall have access and the right to examine any directly pertinent books, documents, papers, and records of Contractor. Further, Contractor agrees to include in all its subcontracts a provision to the effect that Subcontractor agrees that Owner or any of its duly authorized representatives shall have access to and the right to examine any directly pertinent books, documents, papers and records of such Subcontractor relating to any claim arising from the Contract, whether or not the Subcontractor is a party to the claim. The period of access and examination described herein which relates to appeals under the Disputes article of the Contract, litigation, or the settlement of claims arising out of the performance of the Contract shall continue until final disposition of such claims, appeals or litigation.

11.2 **Unit Prices.** If unit prices are stated in the Contract Documents or subsequently agreed upon, and if the quantities originally contemplated are so changed in a Proposed Change Order that application of the agreed unit prices to the quantities of work proposed will cause substantial inequity to Owner or Contractor, the applicable unit prices shall be equitably adjusted as provided in the Supplementary General Conditions or Special Conditions or as agreed to by the parties and incorporated into a Change Order.

11.3 **Claims for Additional Costs.**

11.3.1 If Contractor wishes to make a claim for an increase in the Contract Sum not related to a requested change, they shall give Owner and A/E written notice thereof within twenty-one (21) days after the occurrence of the event giving rise to such claim, but, in any case before proceeding to execute the Work considered to be additional cost or time, except in an emergency endangering life or property in which case Contractor shall act in accordance with Subsection 7.2.1. No such claim shall be valid unless so made. If Owner and Contractor cannot agree on the amount of the adjustment in the Contract Sum, it shall be determined as set forth under Article 15. Any change in the Contract Sum resulting from such claim shall be authorized by a Change Order or a ULCO.

11.3.2 If Contractor claims that additional cost is involved because of, but not limited to, 1) any written interpretation of the Contract Documents, 2) any order by Owner to stop the Work pursuant to Article 14 where Contractor was not at fault, or 3) any written order for a minor change in the Work issued pursuant to Section 11.4, Contractor shall make such claim as provided in Subsection 11.3.1.

11.3.3 Should Contractor or his Subcontractors fail to call attention of A/E to discrepancies or omissions in the Contract Documents, but claim additional costs for corrective Work after Contract award, Owner may assume intent to circumvent competitive bidding for necessary corrective Work. In such case, Owner may choose to let a separate Contract for the corrective Work, or issue a ULCO to require performance by Contractor. Claims for time extensions or
11.4 Minor Changes. A/E, with concurrence of ODR, will have authority to order minor changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time. Such changes shall be effected by written order which Contractor shall carry out promptly and record on As-Built record documents.

11.5 Concealed Site Conditions. Contractor is responsible for visiting the Site and being familiar with local conditions such as the location, accessibility, and general character of the Site and/or building. If, in the performance of the Contract, subsurface, latent, or concealed conditions at the Site are found to be materially different from the information included in the Contract Documents, or if unknown conditions of an unusual nature are disclosed differing materially from the conditions usually inherent in Work of the character shown and specified, ODR and A/E shall be notified in writing of such conditions before they are further disturbed or subsequent related work proceeds. Upon such notice, or upon its own observation of such conditions, A/E, with the approval of ODR, will promptly make such changes in the Drawings and Specifications as they deem necessary to conform to the different conditions, and any increase or decrease in the cost of the Work, or in the time within which the Work is to be completed, resulting from such changes will be adjusted by Change Order, subject to the prior approval of ODR.

11.6 Extension of Time. All changes to the Contract Time shall be made as a consequence of requests as required under Section 9.6, and as documented by Change Order as provided under Section 11.1.

11.7 Administration of Change Order Requests. All changes in the Contract shall be administered in accordance with procedures approved by Owner, and when required, make use of such electronic information management system(s) as Owner may employ.

11.7.1 Routine changes in the construction Contract shall be formally initiated by A/E by means of a PCO form detailing requirements of the proposed change for pricing by Contractor. This action may be preceded by communications between Contractor, A/E and ODR concerning the need and nature of the change, but such communications shall not constitute a basis for beginning the proposed Work by Contractor. Except for emergency conditions described below, approval of Contractor’s cost proposal by A/E and ODR will be required for authorization to proceed with the Work being changed. Owner will not be responsible for the cost of Work changed without prior approval and Contractor may be required to remove Work so installed.

11.7.2 All proposed costs for change order Work must be supported by itemized accounting of material, equipment and associated itemized installation costs in sufficient detail, following the outline and organization of the established Schedule of Values, to permit analysis by A/E and ODR using current estimating guides and/or practices. Photocopies of Subcontractor and vendor proposals shall be furnished unless specifically waived by ODR. Contractor
shall provide written response to a change request within twenty-one (21) days of receipt.

11.7.3 Any unexpected circumstance which necessitates an immediate change in order to avoid a delay in progress of the Work may be expedited by verbal communication and authorization between Contractor and Owner, with written confirmation following within twenty-four (24) hours. A limited scope not-to-exceed estimate of cost and time will be requested prior to authorizing Work to proceed. Should the estimate be impractical for any reason, ODR may authorize the use of detailed cost records of such work to establish and confirm the actual costs and time for documentation in a formal Change Order.

11.7.4 Emergency changes to save life or property may be initiated by Contractor alone (see Section 7.3) with the claimed cost and/or time of such work to be fully documented as to necessity and detail of the reported costs and/or time.

11.7.5 The method of incorporating approved Change Orders into the parameters of the accepted Schedule of Values must be coordinated and administered in a manner acceptable to ODR.

11.8 Pricing Change Order Work. The amounts that Contractor and/or its Subcontractor adds to a Change Order for profit and overhead will also be considered by Owner before approval is given. The amounts established hereinafter are the maximums that are acceptable to Owner.

11.8.1 For Work performed by its forces, Contractor will be allowed their actual costs for materials, the total amount of wages (including benefits) paid for labor, plus the total cost of State and Federal payroll taxes and of worker's compensation and comprehensive general liability insurance, plus additional bond and builders risk insurance cost if the change results in an increase in the premium paid by Contractor. To the total of the above costs, Contractor will be allowed to add a percentage as noted below to cover overhead and profit combined. Allowable percentages for overhead and profit on any specific change shall not exceed fifteen (15) percent for the first $10,000 of value for self-performed work or portion thereof, ten (10) percent for the second $10,000 of value for self-performed work or portion thereof and seven and a half (7.5) percent for any value of the self-performed work that exceeds $20,000.

11.8.2 For subcontracted Work each affected Subcontractor shall figure its costs, overhead and profit as described above for Contractor’s Work, all Subcontractor costs shall be combined, and to that total Subcontractor cost Contractor will be allowed to add a maximum mark-up of ten (10) percent for the first $10,000 of subcontracted Work value or portion thereof, seven and half (7.5) percent for the second $10,000 of subcontracted Work value or portion thereof, and five (5) percent for any value of the subcontracted Work exceeding $20,000.

11.8.3 On changes involving both additions and deletions, percentages for overhead and profit will be allowed only on the net addition. Owner does
not accept and will not pay for additional Contract cost identified as indirect or consequential damages.

11.8.4 For Contracts based on a Guaranteed Maximum Price (GMP), the Construction Manager-at-Risk or Design Builder shall NOT be entitled to a percentage mark-up on any Change Order Work unless the Change Order increases the Guaranteed Maximum Price.

11.8.5 If the parties cannot agree on an equitable adjustment for labor hours attributable to a change, they shall use the Means Facility Cost Data as a guide for labor hours as a basis of negotiation.

11.9 Unilateral Change Order (ULCO). Owner may issue a written ULCO directing a change in the Work prior to reaching agreement with Contractor on the adjustment, if any, in the Contract price and/or the Contract Time.

11.9.1 Owner and Contractor shall negotiate for appropriate adjustments, as applicable, to the Contract Sum or the Contract Time arising out of a ULCO. As the changed Work is performed, Contractor shall submit its costs for such Work with its Application for Payment beginning with the next Application for Payment within thirty (30) days of the issuance of the ULCO. The Parties reserve their rights as to the disputed amount, subject to Article 15.

11.10 Final Resolution of Changes. Upon execution of a Change Order and/or a ULCO by Owner, Contractor and A/E, all costs and time issues regarding that change are final and not subject to additive adjustments.
Article 12. Project Completion and Acceptance

12.1 Closing Inspections.

12.1.1 Substantial Completion Inspection. When Contractor considers the entire Work or part thereof Substantially Complete, it shall notify ODR in writing fifteen (15) working days prior to the Substantial Completion inspection that the Work will be ready for Substantial Completion inspection on a specific date. Contractor shall include with this notice Contractor’s Punchlist to indicate that it has previously inspected all the Work associated with the request for inspection, noting items it has corrected and included all remaining work items with date scheduled for completion or correction prior to final inspection. The failure to include any items on this list does not alter the responsibility of Contractor to complete all Work in accordance with the Contract Documents. If any of the items on this list prevents the Project from being used as intended, Contractor shall not request a Substantial Completion Inspection. Owner and its representatives will review the list of items and schedule the requested inspection, or inform Contractor in writing that such an inspection is premature because the Work is not sufficiently advanced or conditions are not as represented on Contractor’s list.

12.1.1.1 Prior to the Substantial Completion inspection and as specified in the Special Conditions, Contractor shall furnish a copy of its marked-up Record As-Built Documents and a preliminary copy of each instructional manual, maintenance and operating manual, parts catalog, wiring diagrams, spare parts, specified written warranties, and like publications or parts for all installed equipment, systems, and like items as described in the Contract Documents. Delivery of these items is a prerequisite for requesting the Substantial Completion inspection.

12.1.1.2 On the date requested by Contractor, or as mutually agreed upon pending the status of the Open Items List, A/E, ODR, Contractor, and other Owner representatives as determined by Owner will jointly attend the Substantial Completion inspection, which shall be conducted by ODR or their delegate. If ODR determines that the Work is Substantially Complete, ODR will issue a Certificate of Substantial Completion to be signed by A/E, Owner, and Contractor establishing the date of Substantial Completion and identifying responsibilities for security, maintenance, insurance and utilities. A/E will provide with this certificate a consolidated list of Punchlist items (the pre-final Punchlist including all items noted by the various inspecting parties) for completion prior to final inspection. This list may include items in addition to those on Contractor’s Punchlist, which the inspection team deems necessary to correct or complete prior to final inspection. The failure to include any items on this list does not alter the responsibility of Contractor to complete all Work in accordance with the Contract Documents. If Owner
occupies the Project upon determination of Substantial Completion, Contractor shall complete all corrective Work at the convenience of Owner, without disruption to Owner's use of the Project for its intended purposes.

12.1.2 Final Inspection. Contractor shall complete the list of items identified on the pre-final Punchlist prior to requesting a final inspection. Unless otherwise specified, or otherwise agreed in writing by the parties as documented on the Certificate of Substantial Completion, Contractor shall complete and/or correct all Work within thirty (30) days of the Substantial Completion date. Upon completion of the pre-final Punchlist work, Contractor shall give written notice to ODR and A/E that the Work will be ready for final inspection on a specific date. Contractor shall accompany this notice with a copy of the updated pre-final Punchlist indicating resolution of all items. On the date specified or as soon thereafter as is practicable, ODR, A/E and Contractor will inspect the Work. A/E will submit to Contractor a final Punchlist of open items that the inspection team requires corrected or completed before final acceptance of the Work.

12.1.2.1 Correct or complete all items on the final Punchlist before requesting Final Payment. Unless otherwise agreed to in writing by the parties, complete this work within seven (7) days of receiving the final Punchlist. Upon completion of the final Punchlist, notify A/E and ODR in writing stating the disposition of each final Punchlist item. A/E, Owner, and Contractor shall promptly inspect the completed items. When the final Punchlist is complete, and the Contract is fully satisfied according to the Contract Documents ODR will issue a certificate establishing the date of Final Completion. Completion of all Work is a condition precedent to Contractor's right to receive Final Payment.

12.1.3 Annotation. Any Certificate issued under this Article may be annotated to indicate that it is not applicable to specified portions of the Work, or that it is subject to any limitation as determined by Owner.

12.1.4 Purpose of Inspection. Inspection is for determining the completion of the Work, and does not relieve Contractor of its overall responsibility for completing the Work in a good and competent fashion, in compliance with the Contract. Work accepted with incomplete Punchlist items or failure of Owner or other parties to identify Work that does not comply with the Contract Documents or is defective in operation or workmanship does not constitute a waiver of Owner's rights under the Contract or relieve Contractor of its responsibility for performance or warranties.

12.1.5 Additional Inspections.

12.1.5.1 If Owner's inspection team determines that the Work is not substantially complete at the Substantial Completion inspection, ODR or A/E will give Contractor written notice listing cause(s) of
the rejection. Contractor will set a time for completion of incomplete
or defective work acceptable to ODR. Contractor shall complete or
correct all work so designated prior to requesting a second
Substantial Completion inspection.

12.1.5.2 If Owner’s inspection team determines that the Work is not complete
at the final inspection, ODR or A/E will give Contractor written
notice listing the cause(s) of the rejection. Contractor will set a time
for completion of incomplete or defective work acceptable to ODR.
Contractor shall complete or correct all Work so designated prior to
again requesting a final inspection.

12.1.5.3 The Contract contemplates three (3) comprehensive inspections: the
Substantial Completion inspection, the Final Completion inspection,
and the inspection of completed final Punchlist items. The cost to
Owner of additional inspections resulting from the Work not being
ready for one or more of these inspections is the responsibility of
Contractor. Owner may issue a ULCO deducting these costs from
Final Payment. Upon Contractor’s written request, Owner will
furnish documentation of any costs so deducted. Work added to the
Contract by Change Order after Substantial Completion inspection is
not corrective Work for purposes of determining timely completion,
or assessing the cost of additional inspections.

12.1.6 Phased Completion. The Contract may provide, or Project conditions may
warrant, as determined by ODR, that designated elements or parts of the Work
be completed in phases. Where phased completion is required or specifically
agreed to by the parties, the provisions of the Contract related to closing
inspections, occupancy, and acceptance apply independently to each
designated element or part of the Work. For all other purposes, unless
otherwise agreed by the parties in writing, Substantial Completion of the
Work as a whole is the date on which the last element or part of the Work
completed receives a Substantial Completion certificate.

Final Completion of the Work as a whole is the date on which the last element
or part of the Work completed receives a Final Completion certificate.

12.2 Owner’s Right of Occupancy. Owner may occupy or use all or any portion of the
Work following Substantial Completion, or at any earlier stage of completion. Should
Owner wish to use or occupy the Work, or part thereof, prior to Substantial
Completion, ODR will notify Contractor in writing and identify responsibilities for
security, maintenance, insurance and utilities. Work performed on the premises by
third parties on Owner’s behalf does not constitute occupation or use of the Work
by Owner for purposes of this Article. All Work performed by Contractor after
occupancy, whether in part or in whole, shall be at the convenience of Owner so as to
not disrupt Owner’s use of, or access to occupied areas of the Project.

12.3 Acceptance and Payment
12.3.1 Request for Final Payment. Following the certified completion of all work, including all final Punchlist items, cleanup, and the delivery of recorded As-Built documents, Contractor shall submit a certified Application for Final Payment and include all sums held as retainage and forward to A/E and ODR for review and approval.

12.3.2 Final Payment Documentation. Contractor shall submit, prior to or with the Application for Final Payment, final copies of all close out documents, maintenance and operating instructions, guarantees and warranties, certificates, recorded As-Built Documents and all other items required by the Contract. Contractor shall submit evidence of return of access keys and cards, evidence of delivery to Owner of attic stock, spare parts, and other specified materials. Contractor shall submit consent of surety to Final Payment form and an affidavit that all payrolls, bills for materials and equipment, subcontracted work and other indebtedness connected with the Work, except as specifically noted, are paid, will be paid, after payment from Owner or otherwise satisfied within the period of time required by Tex. Gov’t Code, Ch. 2251. Contractor shall furnish documentation establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of claims and liens arising out of the Contract. Contractor may not subsequently submit a claim on behalf of Subcontractor or vendor unless Contractor’s affidavit notes that claim as an exception. The Affidavit referred to above is the Contractor’s Final Payment Affidavit.

12.3.3 Architect/Engineer Approval. A/E will review a submitted Application for Final Payment promptly but in no event later than ten (10) days after its receipt. Prior to the expiration of this deadline, A/E will either: 1) return the Application for Final Payment to Contractor with corrections for action and resubmission; or 2) accept it, note their approval, and send to Owner.

12.3.4 Offsets and Deductions. Owner may deduct from the Final Payment all sums due from Contractor. If the Certificate of Final Completion notes any Work remaining, incomplete, or defects not remedied, Owner may deduct the cost of remedying such deficiencies from the Final Payment. On such deductions, Owner will identify each deduction, the amount, and the explanation of the deduction on or by the twenty-first (21st) day after Owner’s receipt of an approved Application for Final Payment. Such offsets and deductions shall be incorporated via a final Change Order, including a ULCO as may be applicable.

12.3.5 Final Payment Due. Final Payment is due and payable by Owner, subject to all allowable offsets and deductions, on the thirtieth (30th) day following Owner’s approval of the Application for Payment. If Contractor disputes any amount deducted by Owner, Contractor shall give notice of the dispute on or before the thirtieth (30th) day following receipt of Final Payment. Failure to do so will bar any subsequent claim for payment of amounts deducted.

12.3.6 Effect of Final Payment. Final Payment constitutes a waiver of all claims by Owner, relating to the condition of the Work except those arising from:

12.3.6.1 Faulty or defective Work appearing after Substantial Completion.
12.3.6.2 Failure of the Work to comply with the requirements of the Contract Documents;

12.3.6.3 Terms of any warranties required by the Contract, or implied by law; or

12.3.6.4 Claims arising from personal injury or property damage to third parties.

12.3.7 Waiver of Claims. Final payment constitutes a waiver of all claims and liens by Contractor except those specifically identified in writing and submitted to ODR prior to the application for Final Payment.

12.3.8 Effect on Warranty. Regardless of approval and issuance of Final Payment, the Contract is not deemed fully performed by Contractor and closed until the expiration of all warranty periods. Issuance of Final Payment does not alter Contractor’s contractual obligations during the warranty period.
Article 13. Warranty and Guarantee

13.1 Contractor's General Warranty and Guarantee. Contractor warrants to Owner that all Work is executed in accordance with the Contract, complete in all parts and in accordance with approved practices and customs, and of the required finish and workmanship. Contractor further warrants that unless otherwise specified, all materials and equipment incorporated in the Work under the Contract are new. Owner may, at its option, agree in writing to waive any failure of the Work to conform to the Contract, and to accept a reduction in the Contract price for the cost of repair or diminution in value of the Work by reason of such defect. Absent such a written agreement, Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute and is not waived by any inspection or observation by Owner, A/E or others, by making any progress payment or final payment, by the use or occupancy of the Work or any portion thereof by Owner, at any time, or by any repair or correction of such defect made by Owner.

13.2 Warranty Period. Except as may be otherwise specified or agreed, Contractor shall repair all defects in materials, equipment, or workmanship appearing within one year from the date of Substantial Completion of the Work or at Final Completion if no Substantial Completion Inspection is held. If Substantial Completion occurs by phase, then the warranty period for that particular Work begins on the date of such occurrence, or as otherwise stipulated on the Certificate of Substantial Completion for the particular Work.

13.3 Limits on Warranty. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

13.3.1 Modification or improper maintenance or operation by persons other than Contractor, Subcontractors, or any other individual or entity for whom Contractor is not responsible, unless Owner is compelled to undertake maintenance or operation due to the neglect of Contractor.

13.3.2 Normal wear and tear under normal usage after acceptance of the Work by Owner.

13.4 Events Not Affecting Warranty. Contractor's obligation to perform and complete the Work in a good and workmanlike manner in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of defective Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

13.4.1 Observations by Owner and/or A/E;

13.4.2 Recommendation to pay any progress or final payment by A/E;

13.4.3 The issuance of a certificate of Substantial Completion or any payment by Owner to Contractor under the Contract Documents;
13.4.4 Use or occupancy of the Work or any part thereof by Owner;

13.4.5 Any acceptance by Owner or any failure to do so;

13.4.6 Any review of a Shop Drawing or sample submittal; or

13.4.7 Any inspection, test or approval by others.

13.5 Separate Warranties. If a particular piece of equipment or component of the Work for which the Contract requires a separate warranty is placed in continuous service before Substantial Completion, the warranty period for that equipment or component will not begin until Substantial Completion, regardless of any warranty agreements in place between suppliers and/or Subcontractors and Contractor. ODR will certify the date of service commencement in the Substantial Completion certificate.

13.5.1 In addition to Contractor’s warranty and duty to repair, Contractor expressly assumes all warranty obligations required under the Contract for specific building components, systems and equipment.

13.5.2 Contractor may satisfy any such obligation by obtaining and assigning to Owner a complying warranty from a manufacturer, supplier, or Subcontractor. Where an assigned warranty is tendered and accepted by Owner which does not fully comply with the requirements of the Contract, Contractor remains liable to Owner on all elements of the required warranty not provided by the assigned warranty.

13.6 Correction of Defects. Upon receipt of written notice from Owner, or any agent of Owner designated as responsible for management of the warranty period, of the discovery of a defect, Contractor shall promptly remedy the defect(s), and provide written notice to Owner and designated agent indicating action taken. In case of emergency where delay would cause serious risk of loss or damage to Owner, or if Contractor fails to remedy within thirty (30) days, or within another period agreed to in writing, Owner may correct the defect and be reimbursed the cost of remedying the defect from Contractor or its surety.

13.7 Certification of No Asbestos Containing Materials or Work. Contractor shall ensure compliance with the Asbestos Hazard Emergency Response Act (AHERA—40 C.F.R § 763-99(7)) from all Subcontractors and materials suppliers, and shall provide a notarized certification to Owner that all equipment and materials used in fulfillment of their Contract responsibilities are non-Asbestos Containing Building Materials (ACBM). This certification must be provided no later than Contractor’s application for Final Payment.
Article 14. Suspension and Termination

14.1 Suspension of Work for Cause. Owner may, at any time without prior notice, suspend all or any part of the Work, if after reasonable observation and/or investigation, Owner determines it is necessary to do so to prevent or correct any condition of the Work, which constitutes an immediate safety hazard, or which may reasonably be expected to impair the integrity, usefulness or longevity of the Work when completed.

14.1.1 Owner will give Contractor a written notice of suspension for cause, setting forth the reason for the suspension and identifying the Work suspended. Upon receipt of such notice, Contractor shall immediately stop the Work so identified. As soon as practicable following the issuance of such a notice, Owner will initiate and complete a further investigation of the circumstances giving rise to the suspension, and issue a written determination of the findings.

14.1.2 If it is confirmed that the cause was within the control of Contractor, Contractor will not be entitled to an extension of time or any compensation for delay resulting from the suspension. If the cause is determined not to have been within the control of Contractor, and the suspension has prevented Contractor from completing the Work within the Contract Time, the suspension is an excusable delay and a time extension will be granted through a Change Order.

14.1.3 Suspension of Work under this provision will be no longer than is reasonably necessary to remedy the conditions giving rise to the suspension.

14.2 Suspension of Work for Owner’s Convenience. Upon seven (7) days written notice to Contractor, Owner may at any time without breach of the Contract suspend all or any portion of the Work for a period of up to thirty (30) days for its own convenience. Owner will give Contractor a written notice of suspension for convenience, which sets forth the number of suspension days for which the Work, or any portion of it, and the date on which the suspension of Work will cease. When such a suspension prevents Contractor from completing the Work within the Contract Time, it is an excusable delay. A notice of suspension for convenience may be modified by Owner at any time on seven (7) days written notice to Contractor. If Owner suspends the Work for its convenience for more than sixty (60) consecutive days, Contractor may elect to terminate the Contract pursuant to the provisions of the Contract.

14.3 Termination by Owner for Cause.

14.3.1 Upon written notice to Contractor and its surety, Owner may, without prejudice to any right or remedy, terminate the Contract and take possession of the Site and of all materials, equipment, tools, construction equipment, and machinery thereon owned by Contractor under any of the following circumstances:
14.3.1.1 Persistent or repeated failure or refusal, except during complete or partial suspensions of work authorized under the Contract, to supply enough properly skilled workmen or proper materials;

14.3.1.2 Persistent disregard of laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, including ODR;

14.3.1.3 Persistent failure to prosecute the Work in accordance with the Contract, and to ensure its completion within the time, or any approved extension thereof, specified in the Contract;

14.3.1.4 Failure to remedy defective work condemned by ODR;

14.3.1.5 Failure to pay Subcontractors, laborers, and material suppliers pursuant to Tex. Gov't Code, Ch. 2251;

14.3.1.6 Persistent endangerment to the safety of labor or of the Work;

14.3.1.7 Failure to supply or maintain statutory bonds or to maintain required insurance, pursuant to the Contract;

14.3.1.8 Any material breach of the Contract; or

14.3.1.9 Contractor's insolvency, bankruptcy, or demonstrated financial inability to perform the Work.

14.3.2 Failure by Owner to exercise the right to terminate in any instance is not a waiver of the right to do so in any other instance.

14.3.3 Should Owner decide to terminate the Contract under the provisions of Section 14.3, it will provide to Contractor and its surety thirty (30) days prior written notice.

14.3.4 Should Contractor or its surety, after having received notice of termination, demonstrate to the satisfaction of Owner that Contractor or its surety are proceeding to correct such default with diligence and promptness, upon which the notice of termination was based, the notice of termination may be rescinded in writing by Owner. If so rescinded, the Work may continue without an extension of time.

14.3.5 If Contractor or its surety fails, after written notice from Owner to commence and continue correction of such default with diligence and promptness to the satisfaction of Owner within thirty (30) days following receipt of notice, Owner may arrange for completion of the Work and deduct the cost of completion from the unpaid Contract Sum.

14.3.5.1 This amount includes the cost of additional Owner costs such as A/E services, other consultants, and contract administration.
14.3.5.2 Owner will make no further payment to Contractor or its surety unless the costs to complete the Work are less than the Contract balance, then the difference shall be paid to Contractor or its surety. If such costs exceed the unpaid balance, Contractor or its surety will pay the difference to Owner.

14.3.5.3 This obligation for payment survives the termination of the Contract.

14.3.5.4 Owner reserves the right in termination for cause to take assignment of all the Contracts between Contractor and its Subcontractors, vendors, and suppliers. ODR will promptly notify Contractor of the contracts Owner elects to assume. Upon receipt of such notice, Contractor shall promptly take all steps necessary to effect such assignment.

14.4 Conversion to Termination for Convenience. In the event that any termination of Contractor for cause under Section 14.3 is later determined to have been improper, the termination shall automatically convert to a termination for convenience under Section 14.5 and Contractor's recovery for termination shall be strictly limited to the payments allowable under Section 14.5.

14.5 Termination for Convenience of Owner. Owner reserves the right, without breach, to terminate the Contract prior to, or during the performance of the Work, for any reason. Upon such an occurrence, the following shall apply:

14.5.1 Owner will immediately notify Contractor and A/E in writing, specifying the reason for and the effective date of the Contract termination. Such notice may also contain instructions necessary for the protection, storage or decommissioning of incomplete work or systems, and for safety.

14.5.2 Upon receipt of the notice of termination, Contractor shall immediately proceed with the following obligations, regardless of any delay in determining or adjusting any amounts due at that point in the Contract:

14.5.2.1 Stop all work.

14.5.2.2 Place no further subcontracts or orders for materials or services.

14.5.2.3 Terminate all subcontracts for convenience.

14.5.2.4 Cancel all materials and equipment orders as applicable.

14.5.2.5 Take action that is necessary to protect and preserve all property related to the Contract which is in the possession of Contractor.

14.5.3 When the Contract is terminated for Owner's convenience, Contractor may recover from Owner payment for all Work executed. Contractor may not claim lost profits on other work or lost business opportunities.
14.6 **Termination By Contractor.** If the Work is stopped for a period of ninety (90) days under an order of any court or other public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency making materials unavailable, through no act or fault of Contractor or Subcontractor or their agents or employees or any other persons performing any of the Work under a contract with Contractor, then Contractor may, upon thirty (30) additional days written notice to ODR, terminate the Contract and recover from Owner payment for all Work executed, but not lost profits on other work or lost business opportunities. If the cause of the Work stoppage is removed prior to the end of the thirty (30) day notice period, Contractor may not terminate the Contract.

14.7 **Settlement on Termination.** When the Contract is terminated for any reason, at any time prior to one hundred eighty (180) days after the effective date of termination, Contractor shall submit a final termination settlement proposal to Owner based upon recoverable costs as provided under the Contract. If Contractor fails to submit the proposal within the time allowed, Owner may determine the amount due to Contractor because of the termination and pay the determined amount to Contractor.
Article 15. Dispute Resolution

15.1 **Unresolved Contractor Disputes.** The dispute resolution process provided for in Tex. Gov't Code, Ch. 2260, and the procedures provided in Title 31, Part 2, Chapter 51, Subchapter J of the Texas Administrative Code or Tex. Civ. Prac. & Rem. Code, Ch. 114, shall be used by Contractor to attempt to resolve any claim for breach of Contract made by Contractor that is not resolved under procedures described throughout the Uniform General Conditions, Supplementary Conditions, or Special Conditions of the Contract.

15.2 **Alternative Dispute Resolution Process.** Owner may establish a dispute resolution process to be utilized in advance of that outlined in Tex. Gov't Code, Ch. 2260 or Tex. Civ. Prac. & Rem. Code, Ch. 114.

15.3 Nothing herein shall hinder, prevent, or be construed as a waiver of Owner's right to seek redress on any disputed matter in a court of competent jurisdiction.

15.4 Nothing herein shall waive or be construed as a waiver of the State's sovereign immunity.
Article 16. Miscellaneous

16.1 Supplementary General and Special Conditions. When the Work contemplated by Owner is of such a character that the foregoing Uniform General Conditions of the Contract cannot adequately cover necessary and additional contractual relationships, the Contract may include Supplementary General and Special Conditions as described below:

16.1.1 Supplementary General Conditions may describe the standard procedures and requirements of contract administration followed by a contracting agency of the State. Supplementary General Conditions may expand upon matters covered by the Uniform General Conditions, where necessary, provided the expansion does not weaken the character or intent of the Uniform General Conditions. Supplementary General Conditions are of such a character that it is to be anticipated that a contracting agency of the State will normally use the same, or similar, conditions to supplement each of its several projects.

16.1.2 Special Conditions shall relate to a particular Project and be unique to that Project but shall not weaken the character or intent of the Uniform General Conditions.

16.2 Federally Funded Projects. On Federally funded projects, Owner may waive, suspend or modify any Article in these Uniform General Conditions which conflicts with any Federal statute, rule, regulation or procedure, where such waiver, suspension or modification is essential to receipt by Owner of such Federal funds for the Project. In the case of any Project wholly financed by Federal funds, any standards required by the enabling Federal statute, or any Federal rules, regulations or procedures adopted pursuant thereto, shall be controlling.

16.3 Internet-based Project Management Systems. At its option, Owner may administer its design and construction management through an Internet-based management system. In such cases, Contractor shall conduct communication through this media and perform all Project related functions utilizing this database system. This includes correspondence, submittals, Requests for Information, vouchers or payment requests and processing, amendment, Change Orders and other administrative activities.

16.3.1 Accessibility and Administration.

16.3.1.1 When used, Owner will make the software accessible via the Internet to all Project team members.

16.3.1.2 Owner shall administer the software.

16.3.2 Training. When used, Owner shall provide training to the Project team members.

16.4 Administrative Inspections and Audits. Contractor agrees that all relevant records related to this Contract or any work product under this Contract, including practices of
its Subcontractors, shall be subject, at any reasonable time, to inspection, examination, review, audit, and copying at any office or location of Contractor where such records may be found, with or without notice by the Texas State Auditor's Office ("SAO"), the contracting agency or its contracted examiners, or the Office of the Texas Attorney General, and with regard to any federal funding, the relevant federal agency, the Comptroller General, the General Accounting Office, the Office of the Inspector General, or any of their authorized representatives. All Subcontracts shall reflect the requirements of this section. In addition, pursuant to Tex. Gov't Code§ 2262.003 the SAO may conduct an audit or investigation of any entity receiving funds under this Contract, including direct payments to Contractor and indirect payments under a Subcontract to this Contract; acceptance of such monies acts as acceptance of SAO authority, under legislative audit committee direction, to audit and investigate related to those funds and the entity subject to the audit or investigation must provide SAO with access to any information SAO considers relevant to the scope of the audit or investigation.

End of Uniform General Conditions
2018 SUPPLEMENTARY GENERAL CONDITIONS
TO THE STATE OF TEXAS 2015 EDITION OF THE UNIFORM
GENERAL CONDITIONS FOR CONSTRUCTION CONTRACTS

The following Supplementary General Conditions amend and/or supplement the 2015 edition of the Uniform General Conditions for Construction Contracts.

Article 5. Bonds and Insurance

5.2 Insurance Requirements.

Subsection 5.2.4 is supplemented to add the following new paragraphs:

5.2.4.1 Contractor shall deliver to Owner true and complete copies of the General Contractor’s certificates prior to the issuance of any Notice to Proceed.

5.2.4.2 Failure of Owner to demand such certificates or other evidence of Contractor’s full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor’s obligation to maintain such insurance.

5.2.4.3 The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor’s liability under the indemnities granted to Owner in the Contract Documents.

5.2.4.4 The insurance coverage and limits established in the Uniform General Conditions, Supplementary General Conditions, or Special Conditions shall not be interpreted as any representation or warranty that the insurance coverage and limits necessarily will be adequate to protect Contractor.

Article 2. Wage Rates and Other Laws Governing Construction

Add Section 2.7 as follows:

2.7 Buy America Requirements for Iron and Steel Used in Construction. In accordance with Texas Government Code 2252, Section 2252.202, all iron or steel products (i.e., rolled structural shapes including wide flange beams and columns, angles, bars, plates, sheets, hollow structural sections, pipe, etc.) shall be produced, manufactured and fabricated in the United States.

End of Supplementary General Conditions

1
TEXAS PARKS AND WILDLIFE

PREVAILING WAGE RATE DETERMINATION INFORMATION

Chapter 2258, Texas Government Code, Title 10 requires that state agencies, (including universities), cities, counties, independent school districts, and all other political subdivisions that engage in public works construction projects produce and include prevailing wage rate determinations in the project bidding and contract documents.

Chapter 2258 requires that the contractor who is awarded a contract by a public body and a contractor's subcontractor shall pay not less than the rates determined by such state agencies to workers employed for the execution of such work. Pursuant to Chapter 2258, Texas Parks and Wildlife has ascertained the following wages to be paid for the various classifications of workers, in the locality of this project. In determining these wages, TPWD has utilized the Prevailing Wage Rates as determined by the U.S. DOL in accordance with the Davis-Bacon Act.

See attached wage rate document.

General Decision Number: TX190254 02/08/2019 TX254
Superseded General Decision Number: TX20180304
State: Texas
Construction Type: Building
County: Hays 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 $10.60 for calendar year 2019 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 $10.60 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 2019. 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.
Modification Number | Publication Date  
--- | ---  
0 | 01/04/2019  
1 | 01/18/2019  
2 | 02/08/2019

ASBE0087-014 01/01/2018

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BOIL0074-003 01/01/2017

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* ELEC0520-004 01/07/2019

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ELEV0133-002 01/01/2019

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Footnote:

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.


ENGI0450-002 04/01/2014

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IRON0084-011 06/01/2018

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IRON0482-012 06/01/2017

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PLUM0286-009 06/04/2018

OF_0500_081_WGE_RTS (013007)
HVAC MECHANIC (HVAC Unit Installation Only) ................... $ 28.03 12.43
PIPE FITTER (Including HVAC Pipe Installation)............... $ 29.50 12.82

SPRINKLER FITTER (Fire Sprinklers).......................................... $ 29.03 15.84

SHEET METAL WORKER (Excludes HVAC Duct Installation)........ $ 25.76 15.10

BRICKLAYER.......................................................... $ 20.86 0.00
CARPENTER (Acoustical Ceiling Installation Only)................. $ 14.00 0.00
CARPENTER (Form Work Only)............................................ $ 15.62 0.05
CARPENTER, Excludes Acoustical Ceiling Installation, Drywall Hanging, Form Work, and Metal Stud Installation.......................... $ 13.99 0.00
CEMENT MASON/CONCRETE FINISHER........................................ $ 15.71 0.00
DRYWALL FINISHER/TAPER.................................................. $ 16.96 4.34
DRYWALL HANGER AND METAL STUD INSTALLER........................ $ 14.00 0.00
ELECTRICAL INSTALLER (Sound and Communication Systems Only)Excludes Wiring........................... $ 12.50 0.65
ELECTRICIAN, Excludes Low Voltage Wiring................................. $ 24.00 3.66
FLOOR LAYER: Carpet.................................................. $ 21.88 0.00
GLAZIER................................................................. $ 12.83 0.00
IRONWORKER, REINFORCING............................................... $ 12.27 0.00
LABORER: Common or General.............................................. $ 10.43 0.00
LABORER: Mason Tender - Brick....................................... $ 11.00 0.00
LABORER: Mason Tender -
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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.
Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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

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

Union Rate Identifiers

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

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

Survey Rate Identifiers

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

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

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

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

-------------------------------------------------------------------------------------------------

WAGE DETERMINATION APPEALS PROCESS

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

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

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour 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.

END OF GENERAL DECISION
AGREEMENT BETWEEN OWNER AND CONTRACTOR

STATE OF TEXAS

COUNTY OF TRAVIS

THIS AGREEMENT, made this ___ day of __________, 20___ by and between the STATE OF TEXAS, acting through the TEXAS PARKS AND WILDLIFE DEPARTMENT, hereinafter called the OWNER, and INSERT CONTRACTOR COMPANY NAME, hereinafter called the CONTRACTOR.

WITNESSETH: That for and in consideration of the payments and agreements hereinafter described, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with the OWNER to commence and complete certain public works described as: Project No. 1210289 – Analytical Services Lab Building HVAC Replacement, A. E. Wood Fish Hatchery, Hays County, Texas, for the use and benefit of the OWNER as described in the Invitation for Bids and Contract Documents and Contract Documents prepared by TEXAS PARKS AND WILDLIFE DEPARTMENT. Contract Documents include all parts of this Invitation for Bids, including but not limited to, Specifications, Scope of Work, Uniform General and Supplementary General Conditions, and Special Conditions for Project Number 1210289. The Contract Documents are hereby incorporated by reference into this Contract Number ________.

In the event that there is a conflict, this contract and its attachments take priority over all other documents. Following the contract in order of priority are the Special Conditions; Supplementary General Conditions, Uniform General Conditions; Invitation for Bids and Contract Documents, and Contractor’s Bid.

The consideration to be paid by the OWNER to the CONTRACTOR for furnishing all the materials, supplies, machinery, equipment, tools, labor, superintendent, insurance, and other accessories and services necessary to complete the said Project in accordance with the Contract Documents is the not to exceed amount of INSERT AMOUNT Dollars and No Cents ($xxxx,xxx.xx).

The CONTRACTOR hereby agrees to complete all work within One Hundred Eighty (180) calendar days, commencing on the date specified in OWNER’S written "Notice to Proceed." Time is of the essence with this contract.

The CONTRACTOR further agrees to comply with applicable statutes governing construction contracts including the provisions of V.T.C.A., Texas Government Code, Title 10, Subtitle F, Chapter 2253 requiring Payment Bonds and Performance Bonds; and to comply with all of the Terms and Conditions of this contract.

Payments by OWNER shall be warrants issued by the Comptroller of Public Accounts out of monies appropriated to the Texas Parks and Wildlife Department for such purpose and shall be made upon OWNER’S acceptance of all portions of work as prescribed in the Specifications.

The dispute resolution process provided for in Tex. Gov’t Code, Chapter 2260, and the procedures provided in Title 31, Part 2, Chapter 51, Subchapter J of the Texas Administrative Code shall be used by the Owner and the Contractor to attempt to resolve any claim for breach of contract in an amount less than $250,000.00 made by the Contractor, that is not resolved under procedures described throughout the Terms and Conditions of the Contract. Contract disputes for a claim of $250,000.00 or more shall be governed by Civil Practice and Remedies Code, Chapter 114.

The venue of any suit brought for any breach of this Contract is hereby fixed in any court of competent jurisdiction in Travis County, Texas. All payments under this Contract shall be due and payable in Travis County, Texas.
The Contractor hereby assigns to Owner any and all claims for overcharges associated with this Contract which arise under the antitrust laws of the United States 15 U.S.C.A. SEC. 1 et. seq. (1973).

This Agreement is subject to cancellation, without penalty, either in whole or in part, if funds are not appropriated by the Texas Legislature or otherwise made available to the Texas Parks and Wildlife Department for the specified services under this Agreement.

The said parties for themselves, their heirs, successors, executors, administrators, and assigns, do hereby agree to full performance of the covenants herein contained.

IN WITNESS WHEREOF, the parties to these presents have executed this Contract in two (2) counterparts, each of which shall be deemed an original, in the day and year first above written.

**Contractor:**

By: ____________________________________________ Date: ______________________________

Title: __________________________________________

**Owner:** Texas Parks and Wildlife Department

By: ____________________________________________ Date: ______________________________

Title: __________________________________________
STATE OF TEXAS

COUNTY OF ________________

KNOW ALL MEN BY THESE PRESENTS:

That we, ________________________________________, as PRINCIPAL,

and ____________________________________________, as SURETY(IES),

are hereby held and firmly bound unto the State of Texas in the penal sum of:

$_________ for the payment, whereof, the said PRINCIPAL and SURETY(IES) bind themselves, their heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

The conditions of this obligation are such that whereas the PRINCIPAL entered into a certain contract dated ____________, 20__, here to attached, and made a part hereof, with the State of Texas, acting by and through the Texas Parks and Wildlife Department, to commence and complete certain public works described as:

Project No. 1210289 – Analytical Services Lab Building HVAC Replacement, A. E. Wood Fish Hatchery, Hays County, Texas.

NOW THEREFORE, the conditions of this obligation are such that, if the PRINCIPAL shall faithfully perform the contract in accordance with the plans, specifications, and contract documents, and as provided in TITLE 10, TEXAS GOVERNMENT CODE, CHAPTER 2253 shall fully indemnify and save harmless the State of Texas from all cost and damage which the State of Texas may suffer by reason of the PRINCIPAL's default or failure to do so and shall fully reimburse and repay the State of Texas all outlay and expense which the State of Texas may incur in making any such default, then obligation shall be null and void, otherwise it shall remain in full force and effect.

Provided further, that if any legal action be filed upon this bond, venue shall lie in Travis County, Texas and that the said surety(ies) for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to the work to be performed thereunder, or the Specifications accompanying the same, shall in anywise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition, to the items of the Contract or to the work or to the Specifications.

In the event PRINCIPAL is in default under the contract as defined herein, SURETY(IES) will within fifteen (15) days of determination of such default take over and assume completion of said contract and become entitled to the payment of the balance of the contract price.

IN WITNESS WHEREOF, the above bound parties have executed this instrument under their several seals this _____ day of _____________, 20__, the name and corporation seal of each corporate party being here to affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

PRINCIPAL

BY________________________________________

SURETY

BY________________________________________

PerformanceBond_OF_068_2015
STATE OF TEXAS

COUNTY OF ____________________________

KNOW ALL MEN BY THESE PRESENTS:

That we, ________________________________, as PRINCIPAL,

and ________________________________, as SURETY(IES),

are hereby held and firmly bound unto the State of Texas in the penal sum of: ____________________________ Dollars ($__________) for the payment, whereof, the said PRINCIPAL and SURETY(IES) bind themselves, their heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents.

The conditions of this obligation are such that whereas the PRINCIPAL entered into a certain contract dated ______________________, 20____, hereto attached, and made a part hereof, with the State of Texas acting by and through the Texas Parks and Wildlife Department, to commence and complete certain public works described as:

Project No. 1210289 – Analytical Services Lab Building HVAC Replacement, A. E. Wood Fish Hatchery, Hays County, Texas

NOW THEREFORE, the conditions of this obligation are such that, if the PRINCIPAL shall promptly make payment to all claimants as defined in TITLE 10, TEXAS GOVERNMENT CODE, CHAPTER 2253, as amended, supplying labor and materials in the prosecution of the work provided for in said contract and any and all duly authorized changes to said contract that may hereafter be made, notice of such changes to the SURETY(IES) being hereby waived, then, this obligation shall be null and void, otherwise it shall remain in full force and effect.

This bond is made and entered into solely for the protection of all claimants supplying labor and materials in the prosecution of the work provided for in said contract, and all such claimants shall have a direct right to action under the bond as provided in TITLE 10, TEXAS GOVERNMENT CODE, CHAPTER 2253, as amended.

IN WITNESS WHEREOF, the above bound parties have executed this instrument under their several seals this _____ day of ______________, 20____, the name and corporation seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

PRINCIPAL

BY __________________________________________

SURETY

BY __________________________________________
TEXAS PARKS AND WILDLIFE

CONTRACTOR’S PROGRESS PAYMENT AFFIDAVIT

STATE OF TEXAS
COUNTY OF __________

BEFORE ME THE UNDERSIGNED AUTHORITY, on this day personally appeared ____________________________________________ who being

duly sworn, on oath, says that he/she is a duly authorized representative of ____________________________________________, CONTRACTOR, and all

terms of the Contract for the completion of certain public works described as

Project No. 1210289 – Analytical Services Lab Building HVAC Replacement, A. E. Wood Fish Hatchery, Hays County, Texas.

have been satisfactorily completed to the extent indicated on the attached voucher and that ALL sums of money due for payrolls, bills for material and equipment, and other indebtedness connected with the Work for which OWNER or its property might in any way be responsible, to the best of his/her knowledge and belief have been paid or will be paid or otherwise satisfied within ten days after receipt of the requested payment from the OWNER, or within the period of time required by Title 10, Texas Government Code, Section 2251.022.

Affiant agrees to indemnify and hold Owner harmless from any liens, debts or obligations which arise as a result of labor or materials provided by or through Affiant to the project. Affiant further agrees to indemnify and hold harmless all real property on which the improvements were constructed and all interests in such property, including leasehold interests, from any liens, debts, or obligations arising from any labor or materials provided by or through Affiant to the project.

Payments to subcontractors for labor and/or materials which are pending or disputed as of the date hereof are:

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<th>Individual or Company Name</th>
<th>Mailing Address</th>
<th>Amount Owed</th>
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Instructions: Affidavit must be signed by an individual owner, a partner in a partnership, or by a person authorized by bylaws or Board of Directors to sign for a corporation. If Contractor is a joint venture or partnership of individuals, either may sign, but if a joint venture in which a corporation is a party, separate affidavits must be executed by each corporation and by each individual owner or partnership.

______________________________
Signature

______________________________
Title

Sworn to and subscribed before me this ______ day of ________ 20___.

(SEAL)

______________________________
Notary Public in and for County, Texas

11 Contractor’s Progress Pay Affidavit_OF_038 (2017_0605)
TEXAS PARKS AND WILDLIFE

CONTRACTOR'S FINAL PAYMENT AFFIDAVIT

STATE OF TEXAS

COUNTY OF

PROJECT NUMBER 1210289

CONTRACT NUMBER

BEFORE ME THE UNDERSIGNED AUTHORITY, on this day personally appeared

who being duly sworn, on oath, says that he/she is a duly authorized representative of

CONTRACTOR,

and that all terms of the Contract for the completion of certain public works described as

Project No. 1210289 – Analytical Services Lab Building HVAC Replacement, A. E. Wood Fish Hatchery, Hays County, Texas,

have been satisfactorily completed and that ALL sums of money for payrolls, bills for material and equipment, and other indebtedness connected with the Work for which Owner or its property might in any way be responsible, to the best of his/her knowledge and belief, have been paid or will be paid or otherwise satisfied within ten days after receipt of final payment from the Owner, or within the period of time required by Title 10, Texas Government Code, Section 2251.022. Payments not made in full at the date of this affidavit are listed below.

Affiant hereby waives all claims against the Owner. (List any exceptions):

Affiant agrees to indemnify and hold Owner harmless from any liens, debts or obligations which arise as a result of labor or materials provided by or through Affiant to the project. Affiant further agrees to indemnify and hold harmless all real property on which the improvements were constructed and all interests in such property, including leasehold interests, from any liens, debts, or obligations arising from any labor or materials provided by or through Affiant to the project.

Final payments to subcontractors for labor and/or materials which are pending or disputed as of the date hereof are:

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<th>Individual or Company Name</th>
<th>Mailing Address</th>
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INSTRUCTIONS: Affidavit must be signed by an individual owner, or partner in a partnership, or by a person authorized by bylaws or Board of Directors to sign for a corporation. If Contractor is a joint venture or partnership of individuals, either may sign, but if a joint venture in which a corporation is a party, separate affidavits must be executed by each corporation and by each individual owner or partnership. In the event subcontractors, laborers, or materialmen have not been paid in full, Contractor shall list hereon the amount owed and the name and address of each subcontractor, laborer, or materialman to whom such payment is owed. Add additional pages if required.

Sworn to and subscribed before me this _____ day of _______ 20____

(SEAL)

Signature

Title

Notary Public in and for

________________________ County, Texas

12 Final Pay Affidavit_OF_039 (120516)
TEXAS PARKS AND WILDLIFE

CONSENT OF SURETY COMPANY TO FINAL PAYMENT

PROJECT NO. 1210289 CONTRACT NO. 

TITLE OF PROJECT Analytical Services Lab Building HVAC Replacement

PROJECT LOCATION A. E. Wood Fish Hatchery CONTRACT DATE 

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

CONTRACTOR: 
(Name)
(Address)
(City, State, Zip Code)

SURETY COMPANY: 
(Name)
(Address)
(City, State, Zip Code)

on bond of _____________, Contractor, hereby approves of the final payment by Owner to Contractor on the above Contract, and agrees that final payment to the Contractor shall not relieve Surety Company of any of its obligations to Owner as set forth in said Surety Company's bond.

IN WITNESS WHEREOF, Surety Company has hereunto set its hand this _____ day of _____________, 20__.

SURETY COMPANY:

By: ________________________________
(Signature)

_______________________________
(Printed Name)

_______________________________
(Title)

Consent of Surety_OF_ 040 (03/2004)
NON-USE OF ASBESTOS CONTAINING MATERIALS AFFIDAVIT - CONTRACTOR

STATE OF TEXAS §

COUNTY OF ____________ §

Project Name: A. E. Wood FH - Analytical Services Lab Building HVAC Replacement

Project Number: 1210289

By the signature below, the signatory for the Contractor certifies that neither he nor the firm, corporation, partnership or institution represented by the signatory or anyone acting for the firm providing Construction Services for this project, including Subcontractors, have utilized materials, procedures or processes that knowingly or intentionally contain asbestos materials.

Signature:

Printed Name:__________________________________________________________

Title:______________________________________________________________

Company:___________________________________________________________

Date:_____________________________________________________________

State of Texas
County of ____________

Sworn to and subscribed before me on the ______ day of ________, 20___ by __________________ (name/signature of signer) the undersigned authority on behalf of said Contractor.

(Personalized Seal)

____________________________
Notary Public’s Signature

My commission expires: ___________

Revised August 2007
CONSTRUCTION DOCUMENTS
DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01000 – SPECIAL CONDITIONS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS:

Drawings and general provisions of Contract, including Uniform General and Supplementary General Conditions and other Division 1 specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

Furnish all labor, materials, tools, equipment and incidentals necessary for performance of all work associated with Project Number 1210289, Analytical Services Lab Building HVAC Replacement, A. E. Wood Fish Hatchery, Hays County, Texas, such work being as more particularly described in these Special Conditions, the drawings, and elsewhere in these Invitation for Bids and Contract Documents.

1.03 INQUIRIES:

All inquiries regarding the Invitation for Bids and Contract Documents, including any apparent discrepancies thereto and administration of the contract, shall be directed to the Texas Parks and Wildlife Department, Infrastructure Division, 4200 Smith School Road, Austin, Texas 78744, Gisela Alanis, Contract Manager, 512/389-4480 or gisela.alanis@tpwd.texas.gov.

1.04 EXAMINATION OF SITE:

Bidders should visit the site and be thoroughly familiar with job conditions such as the location, accessibility, and general character of the site and/or building prior to submitting a bid. Visits shall be scheduled with Chuck Blue, Construction Manager, at 512/627-4337. Failure to give proper consideration to site conditions when preparing bids will not constitute grounds for additional compensation. (See UGC, Article 3).

1.05 INTENT OF THE CONTRACT DOCUMENTS: (See also UGC, Article 6)

A. The intent of the Contract Documents is to include all of the work for the contract price and within the contract time. Contract Documents are to be considered as cooperative. All work not specified and/or not shown on the drawings but which is necessary for the completion and/or functioning and operation of the project, shall be understood and implied as part of the contract to be performed by the Contractor for the contract price. Such work shall be executed by the Contractor in the same manner and with the same character of material as other portions of the contract without extra compensation.

B. It is the intention of the Contract Documents to call for finished work, tested, and ready for operation.

1. Any apparatus, material or work described in the Contract Documents and any incidental accessories necessary to make the work complete in all respects and ready for operation (even though not particularly specified) shall be furnished, delivered, and installed by the Contractor without additional expense to the Owner.
2. Minor details not usually shown or specified but necessary for proper installation and operation are included in the work just as if herein specified or shown.

C. All work shall be performed and furnished by the Contractor in accordance with accepted construction industry practices.

D. A duplication of work is not intended by the Contract Documents and any duplication shall not become a basis for extra cost to the Owner.

E. Explanatory notes on the drawings shall take precedence over conflicting drawn-out indications. Figured dimensions on drawings shall take precedence over scale measurements. Where figures are lacking, scale measurements may be followed, but in all cases the measurements are to be checked from the work in place and those measured dimensions taken at the site shall take precedence over scale dimensions in drawings.

F. Upon discovery by Contractor of errors, omissions or inconsistencies in the Contract Documents, Contractor shall promptly report them to the Owner and shall wait for instruction from Owner prior to proceeding with the work.

G. In the event of conflict between the Special Conditions, the Supplementary Conditions, and the Uniform General Conditions, the following priority order shall apply in resolving such conflicts: Special Conditions, Supplementary Conditions, and then Uniform General Conditions.

H. The drawings consist of all project drawings and any drawings issued by addenda.

1.06 ADDENDA:

Any addenda issued in writing by the Owner during the period of bidding shall be included in the bid and Bidder's receipt of addenda shall be acknowledged in the bid form. Such addenda shall become a part of the contract and shall modify the Contract Documents accordingly. Oral changes in the work made during the period of bidding will not be binding. **BIDDER'S FAILURE TO ACKNOWLEDGE RECEIPT OF ADDENDA MAY RESULT IN REJECTION OF BID.**

1.07 PERMITS AND LAWS (See also UGC Article 3):

Contractor shall comply with all laws, ordinances, statutes, rules and regulations applicable to the project, including but not limited to those pertaining to the collection, transportation and disposal of trash and refuse and shall obtain such permits, licenses or other authorizations as may be required.

If applicable governmental laws, rules, regulations or ordinances conflict with the Contract Documents, then such laws, rules, regulations, or ordinances shall govern instead of the Contract Documents, except in such cases where the Contract Documents exceed them in quality of materials or labor, then the Contract Documents shall be followed.

1.08 PRECONSTRUCTION CONFERENCE AND PROGRESS MEETINGS: (See also UGC Article 3)

After issuance of the Notice to Proceed letter, approval of Pre-Construction (PR) submittals and prior to start of work, a conference between the Owner and the Contractor will be held to discuss provisions of the Contract Documents and to coordinate the work effort. Attendance by Contractor and Contractor's superintendent(s) is required, along with major trades if requested by Owner. Construction progress
meetings may be called at any time by the Owner’s Project Manager, On-Site ODR, or the Contractor to review job progress or problems.

1.09 SUBMITTALS:

A. GENERAL (See also UGC Article 8):

1. A TPWD standard Submittal Cover Sheet must accompany each numbered submittal set. One Submittal per Submittal Cover Sheet.

2. The number of copies of submittals required for each item shall be not less than one (1) electronic copy, unless specified otherwise, for Owner’s use, plus the number of additional copies that the Contractor desires for his own use.

3. The Contractor must double-check and sign all submittals before forwarding them to the Owner for review and action.

4. The Architect/Engineer and the Owner will review the submittal data. If there are no exceptions taken to the submittal, the original and three copies will be retained by the Owner. All remaining copies will be returned to the Contractor. The Contractor must keep one copy at the jobsite at all times.

5. If further action is required by the Contractor, Owner will retain three copies of the submittal data for the Owner’s use and return all remaining copies to the Contractor.

6. Any and all costs, direct or indirect, incurred by Owner in reviewing submittals in excess of two (2) times will be charged to the Contractor and deducted from the total price for the work.

7. Owner’s approval of shop drawings and/or any aspects of the work shall not act to transfer Contractor’s responsibility for, nor relieve Contractor from the performance of any of Contractor’s duties set forth in the contract documents.

B. PRE-CONSTRUCTION SUBMITTALS: The following PR Submittals shall be submitted by the Contractor for the Owner’s review and approval. Contractor’s failure to obtain approval of PR submittals will not constitute grounds for additional time. Owner will provide more specific clarification regarding the requirements for each PR Submittal.

1. Submittal PR-1 – To be submitted by the Contractor for the Owner’s review and approval within twenty-one (21) calendar days from receipt of Notice of Selection. Owner’s Approval of PR 1 submittals is a prerequisite to the scheduling of the pre-construction meeting and start of construction activities. Contractor’s failure to obtain approval of PR submittals will not constitute grounds for additional time (See also UGC Article 3)

   a. Contractor’s Superintendent: List of name and qualifications of the person designated as project superintendent.

   b. Subcontractors/Materials Suppliers: List of all subcontractors and major material/equipment suppliers that Contractor and Contractor’s major subcontractors propose to use. This list shall include correct names, mailing addresses and phone numbers.

   c. Contractor’s Authorized Representatives: List of names and titles of Contractor’s representatives authorized to sign contractual documents and construction vouchers.

   d. Licensed Craftspersons: List of names, qualifications and licenses of all licensed crafts required by the contract documents.
2. Submittal PR-2 – To be submitted by the Contractor for the Owner’s review and approval within twenty-one (21) calendar days from receipt of Notice of Selection. Owner’s Approval of PR 2 submittals is required prior to requesting payment. Contractor’s failure to obtain approval of PR submittals will not constitute grounds for additional time (See also UGC Article 3)

   a. Schedule of Values, itemizing material and labor for each classification of work. (See also UGC, Article 10)
      1. Owner will provide forms entitled “Schedule of Values” for the Contractor’s use in preparing the breakdown. After contract award, the Owner will also provide further clarification including an example.

   2. Itemization of material and labor costs is required so the Owner may make progress payments on materials delivered. For each bid item or classification of work to be listed in the “Type of Work” column on the Schedule of Values, the Contractor shall multiply the unit bid price by the estimated quantity for each bid item to arrive at the “Contract Cost” for each such bid item. Contractor shall separately itemize material and labor costs for each such bid item in the “Type of Work” column.

   b. Work Progress Schedule (in duplicate) of Contractor’s Proposed Construction Schedule for work tasks in relation to the entire project. (See also UGC, Article 9) Owner will provide a schedule bar chart form to aid the Contractor in preparing a schedule. The Contractor shall follow this format and must indicate all work tasks as well as differentiate critical path work tasks from non-critical path tasks showing the beginning and ending dates for each critical and non-critical path work task.

   c. Submittal Register: Submittal Register shall be organized by specification section, listing all items to be furnished for review and approval by the A/E and the Owner, including anticipated sequence and submittal dates. (Refer to Article 8, specifically 8.3.1.3, of the Uniform General Conditions.)

C. MATERIAL SUBMITTALS: To be submitted to Owner prior to the installation of any materials. It is the Contractor’s responsibility to incorporate lead time required for review, resubmittal, ordering, manufacturing, fabrication and delivery. Contractor is responsible if a delay in lead time planning affects the critical path.

   1. Contractor shall submit manufacturer’s information on all materials and equipment, regardless of whether substitutions are being requested.

   2. Substitution requests must be submitted early enough to allow time for evaluation by the Owner and for re-submittal, if required. Contractor’s substitution requests shall address the following factors which will be considered in evaluating the proposed substitution:

      a. Whether the evaluation and acceptance of the proposed substitution will prejudice the Contractor’s achievement of Substantial Completion on time;

      b. Whether acceptance of the substitution for use in the work will require a change in any of the Contract Documents to adapt the design to the proposed substitution.
c. Whether incorporation or use of the substitution in connection with the work is subject to payment of any license fee or royalty.

d. Whether all variations of the proposed substitution from the items originally specified are identified.

e. Whether available maintenance, repair, and replacement service are indicated. The manufacturer shall have a local service agency (within 50 miles of the site) which maintains properly trained personnel and adequate spare parts and is able to respond and complete repairs within 24 hours.

f. Whether an itemized estimate is included of all costs that will result directly or indirectly from acceptance of such substitution, including cost of redesign and claims of other contractors affected by the resulting change.

g. Whether the proposed substitute item meets or exceeds the experience and/or equivalency requirements listed in the appropriate technical specifications.

3. No materials shall be ordered or installed until submittals for such materials have been received and acted upon by the Owner.

1.10 QUALITY ASSURANCE (See also UGC Article 8):

A. The Owner’s On-Site ODR will periodically inspect and observe the construction progress, procedures, and materials of the Contractor. The Contractor shall coordinate all efforts with the On-Site ODR, offer full cooperation to facilitate such observations, and shall be responsive to questions from such On-Site ODR regarding methods, equipment, materials, and intentions in pursuing the work or any particular thereof. Such observation by the Owner shall not be construed as construction supervision nor indication of approval of the manner or location in which the work is being performed as being a safe practice or place.

B. The On-Site ODR’s responsibilities include but are not limited to:

1. Providing quality assurance for the Owner.
2. Submitting written reports concerning the current status of the work.
3. Reviewing, and verifying to the Owner the amounts shown on the Contractor’s monthly Construction Voucher.
4. Requesting and receiving payroll and materials invoice amounts from the Contractor.
5. Witnessing testing and confirming in writing to the Owner the results of all tests.

C. Inspections, Notification, and Scheduling:

1. The Contractor shall notify the On-Site ODR when work is ready for inspection or testing. The Contractor shall give such notifications sufficiently in advance of other work to prevent delays. A minimum of five (5) working days advance notice is required, and Contractor shall include in his work schedule such notice periods for inspections and/or testing.
2. Tests cannot be conducted and work cannot be covered-up until the On-Site ODR observes and authorizes continuation of work. The Contractor shall bear all costs for re-tests and for removal and replacement of construction resulting from unauthorized continuation.
3. Should ODR fail to make the necessary inspection within the agreed period, Contractor may proceed with cover-up Work after making every reasonable effort to contact the ODR and
after documenting the Work, but is not relieved of responsibility for Work to comply with requirements of the Contract Documents.

D. All permanent utilities shall be connected before final tests are conducted for equipment and systems. Final operational tests shall be conducted prior to project acceptance by the Owner. The Contractor shall provide the materials, energy, equipment and personnel to conduct the tests required in the contract.

E. Contractor’s failure to provide notification to Owner of inspection or testing requirements shall void any certifications of testing and shall require the Contractor to re-test at the Owner’s request. All expenses for re-testing shall be paid by the Contractor.

F. The Owner (including Owner’s On-Site ODR) may reject work not conforming to the contract documents. If the Owner rejects work and/or materials incorporated into the project, Contractor shall bear all expenses associated with testing to prove compliance with the Contract Documents, including but not limited to engineering/architectural expenses associated with such testing. Any and all such expenses that are paid directly by Owner shall be deducted or withheld from subsequent payment(s) to the Contractor.

1.11 INVOICES/PAY REQUESTS AND CHANGE ORDERS:

A. All work items for which Contractor requests payment shall reflect the project number with which those work items are associated. Change Order pricing for items that are already priced in the contractor’s bid shall be limited to such price(s) set forth in such bid and shall not be entitled to additional mark-up for overhead and profit.

B. Contractor is required to submit an original Progress Assessment Report (PAR) to TPWD HUB Administration no later than the 5th day of the month. Contractor shall submit a copy of the current month’s PAR to the Owner with the application for payment (construction voucher). The PAR is the monthly compliance report verifying Contractor’s compliance with the HUB Subcontracting Plan (HSP) including the expenditures the Contractor has made to Subcontractors during the prior month.

1.12 CONTRACT COMPLETION: (See also UGC, Article 9)

A. Contract Period: This contract must be completed within the specified number of days commencing on the date cited in the Notice to Proceed letter.

   1. Unless specifically stated as “working day,” the term “day” or “calendar day” shall mean every day of the calendar year. Along with the Work Progress Schedule, the Contractor shall submit his schedule for normal working days.

   2. Claims for extension of time shall be made in accordance with the provisions of Article 9 of the Uniform General Conditions.

B. Liquidated Damages: The Owner has determined that the completion of the work in this contract is critical to the proper operation of the facility, and the Contractor’s failure to complete the work within such time will cause damage to the Owner. Since exact damages are difficult to determine or forecast, the sum of $339.22 per calendar day is hereby established by the parties as a reasonable estimate of just compensation to the Owner for the failure of the Contractor to complete the work by the time set forth in the contract or authorized extension thereto. Said sum will be deducted from the money due or to become due to the Contractor, not as a penalty but as
liquidated damages from added expense, including administrative and inspection costs, for each and every calendar day the work or any portion thereof remains incomplete after the expiration of the time limit set in the contract or authorized extension.

C. Charges for liquidated damages will begin accumulating on the first calendar day following the final contract completion date and continue until the date of final acceptance as established by the Owner. Final acceptance will not be issued until all punch list items have been completed.

1.13 CONTRACT CLOSE-OUT: (See also UGC Article 12)

A. Notification: The Contractor shall provide Owner 15-days' written notice requesting final inspection.

B. Final Submittals: At the time of the Contractor's request for final inspection, Contractor shall provide to Owner the following material (in addition to final payment documents also required by UGC Article 12 and set forth below in subsection D) which the Contractor shall have accumulated and retained during the course of the project:

1. Two (2) hard copies and two (2) electronic sets of all project submittals and all equipment and material warranties/guarantees as provided by all appropriate suppliers or manufacturers.

2. One set of one (1) hard copy and one (1) electronic set of "as-built documents" showing all revisions to the original Contract Documents. Drawings shall also show routing of underground outside utilities and conduits with actual dimensions from buildings or other known landmarks.

3. Any and all other documents, keys, manuals, etc. required by the Contract Documents.

C. Clean-up: At completion of the job, the Contractor shall remove all waste products, dust, dirt, debris, packaging, trash, fingerprints, grease containers, and other deleterious materials and marks from the site. Refer to individual specification sections for special cleaning required by that section. Contractor is expected to leave the project in spotless, "like new" condition.

D. Final Payment: Submit final construction voucher, Consent of Surety Company to Final Payment, and the Contractor's Final Payment Affidavit.

1.14 CONTRACTOR'S RESPONSIBILITY DURING THE WARRANTY PERIOD (See also UGC, Article 13):

A. Warranties: The Contractor shall guarantee all work against defects in materials, equipment, or workmanship for a period of one year from the date of final acceptance. The Contractor shall also provide any additional warranties and guarantees of work items and components as hereinafter specified.

B. Service: All necessary service to each electrical and mechanical system and other work requiring specialized training shall be furnished by the Contractor at no cost to the Owner for a period running concurrently with the one-year warranty period specified above. Such service shall not include repair of damage due to storm, vandalism or other factors entirely beyond the control of the Contractor.

C. The Contractor will receive no additional compensation for work performed during the one-year warranty period.
1.15 REFERENCES AND STANDARDS:

All contractors, including sub-contractors shall ensure all personnel follow the adopted Standardized Building Codes in all design and construction work.

1.16 NON-APPROPRIATION OF FUNDS:

Any contract resulting from this solicitation is subject to termination or cancellation, without penalty to TPWD, either in whole or in part, subject to the availability of state funds. TPWD is a state agency whose authority and appropriations are subject to actions of the Texas Legislature. If TPWD becomes subject to a legislative change, revocation of statutory authority, or lack of appropriated funds which would render TPWD’s or contractor’s delivery or performance under the contract impossible or unnecessary, the contract will be terminated or cancelled and be deemed null and void. In the event of a termination or cancellation under this Section, TPWD will not be liable to contractor for any damages, which are caused or associated with such termination, or cancellation and TPWD will not be required to give prior notice.

1.17 ANTIQUITIES:

Contractor shall take precaution to avoid disturbing primitive records and antiquities of archaeological, paleontological or historical significance. No objects of this nature shall be disturbed without written permission of Owner and the Texas Historical Commission. When such objects are uncovered unexpectedly, the Contractor shall stop all Work in close proximity and notify the ODR and the Texas Historical Commission of their presence and shall not disturb them until written permission and permit to do so is granted. All primitive rights and antiquities, as defined in Chapter 191, Texas Natural Resource Code, discovered on the Owner’s property shall remain property of State of Texas, the Texas Historical Commission. It is determined by Owner, in consultation with the Texas Historical Commission that exploration or excavation of primitive records or antiquities on Project Site is necessary to avoid loss, Contractor shall cooperate in salvage work attendant to preservation.

1.18 PROPRIETARY OR CONFIDENTIAL INFORMATION; TEXAS PUBLIC INFORMATION ACT:

A. Any proprietary, trade secret or otherwise confidential information Bidder includes in its Bid must be clearly labeled as proprietary or confidential information, and Bidder must identify the specific exception to disclosure in the Public Information Act (PIA). Merely making a blanket claim the entire Bid is protected from disclosure because it contains some proprietary information is not acceptable and shall make the entire Bid subject to release under the PIA. In order for the Owner to initial the process of seeking an Attorney General opinion on the release of proprietary or confidential information, the specific provisions of the Bid that are considered by the Bidder to be proprietary or confidential must be clearly labeled as described herein. Any information which is not clearly identified as proprietary or confidential shall be deemed to be subject to disclosure pursuant to the PIA.

B. Information the Bidder provides to the Owner in response to this solicitation will be considered public and subject to disclosure under the Texas Public Information Act.

C. Contractor is required to make any information created or exchanged with the state pursuant to this contract, and not otherwise excepted from disclosure under the Texas Public Information Act, available in a format that is accessible by the public at no charge to the state. Contractor will make sure information not excepted from disclosure available in an electronic format that is accessible to the public unless Contractor receives written approval from Owner to provide information in a different format, and such approval becomes a part of this Contract.
1.19 RIGHT TO AUDIT/RECORDS RETENTION:

Contractor understands that acceptance of funds under this contract acts as acceptance of the authority of the State Auditor’s Office, TPWD or any successor agency, to conduct an audit or investigation in connection with those funds. Contractor further agrees to cooperate fully with the above parties in the conduct of the audit or investigation, including providing all records requested. Contractor shall ensure that this paragraph concerning the State’s authority to audit funds received indirectly by subcontractors through Contractor and the requirement to cooperate is included in any subcontract it awards. Contractor shall maintain and retain supporting fiscal and any other documents relevant to showing that any payments under this Contract funds were expended in accordance with the laws and regulations of the State of Texas, including but not limited to, requirements of the Comptroller of the State of Texas and the State Auditor. Contractor shall maintain all such documents and other records relating to this Contract and the State’s property for a period of seven (7) years after the date of submission of the final invoices or until a resolution of all billing questions, whichever is later. Contractor shall make available at reasonable times and upon reasonable notice, and for reasonable periods, all documents and other information related to the work of this Contract. Contractor and the subcontractors shall provide the State Auditor with any information that the State Auditor deems relevant to any investigation or audit. Contractor must retain all work and other supporting documents pertaining to this Contract, for purposes of inspecting, monitoring, auditing, or evaluating by TPWD and any authorized agency of the State of Texas, including an investigation or audit by the State Auditor. Contractor shall cooperate with any authorized agents of the State of Texas and shall provide them with prompt access to all of such State’s work as requested. Contractor’s failure to comply with this Section shall constitute a material breach of this Contract and shall authorize TPWD and the State of Texas to immediately assess appropriate damages for such failure.

1.20 IMMIGRATION REFORM:

The Contractor represents and warrants that it shall comply with the requirements of the Immigration Reform and Control Act of 1986 and 1990 regarding employment verification and retention of verification forms for any individuals hired on or after November 6, 1986, who will perform any labor or services under the Contract and the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA) enacted on September 30, 1996.

1.21 CIVIL RIGHTS:

The Contractor agrees that no person shall, on the ground of race, color, religion, sex, national origin, age, disability, political affiliation, or religious belief, be excluded from the participation in, be denied the benefits of, be subjected to discrimination under, or be denied employment in the administration of, or in connection with, any program or activity funded in whole or in part with funds available under this Contract. The Contract shall comply with Executive Order 11246, “Equal Employment Opportunity,” as amended by Executive Order 11375, “Amending Executive Order 11246 relating to Equal Employment Opportunity,” and as supplemented by regulations at 41 C.F.R. Part 60, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity Department of Labor.”

1.22 FEDERAL, STATE AND LOCAL REQUIREMENTS:

Contractor shall demonstrate on-site compliance with the Federal Tax Reform Act of 1986, Section 1706, amending Section 530 of the Revenue Act of 1978, dealing with issuance of Form W-2’s to common law employees. Contractor is responsible for both federal and State unemployment insurance coverage and standard Worker’s Compensation insurance coverage. Contractor shall comply with all federal and State tax laws and withholding requirements. The State of Texas shall not be liable to Contractor or its
employees for any Unemployment or Worker's Compensation coverage or federal or State withholding requirements. Contractor shall indemnify the State of Texas and shall pay all costs, penalties or losses resulting from Contractor's omission or breach of this Section.

1.23 SEVERABILITY CLAUSE:

If any provision of this Contract is construed to be illegal or invalid, such construction will not affect the legality or validity of any of its other provisions. The illegal or invalid provision will be deemed severable and stricken from the contract as if it had never been incorporated herein, but all other provisions will remain in full force and effect.

1.24 NO WAIVER:

Nothing in this Contract shall be construed as a waiver of the state’s sovereign immunity. This Contract shall not constitute or be construed as a waiver of any of the privileges, rights, defenses, remedies or immunities available to the State of Texas. The failure to enforce or any delay in the enforcement of any privileges, rights, defenses, remedies or immunities available to the State of Texas under this Contract or under applicable law shall not constitute a waiver of such privileges, rights, defenses, remedies or immunities or be considered as a basis for estoppel. The Owner does not waive any privileges, rights, defenses or immunities available to the Owner by entering into this Contract or by its conduct prior to or subsequent to entering into this Contract.

1.25 DECEPTIVE TRADE PRACTICES; UNFAIR BUSINESS PRACTICES:

Contractor represents and warrants that it has not been the subject of allegations of Deceptive Trade Practices violations under Tex. Bus. & Com Code, Chapter 17 or allegations of any unfair business practice in any administrative hearing or court suit and that Contractor has not been found to be liable for such practices in such proceedings. Contractor certifies that it has no officers who have served as officers of other entities who have been the subject allegations of Deceptive Trade Practices violations or allegations of any unfair business practices in an administrative hearing or court suit, and that such officers have not been found to be liable for such practices in such proceedings.

1.26 FELONY CRIMINAL CONVICTIONS:

Contractor represents and warrants that Contractor has not and Contractor's employees have not been convicted of a felony criminal offense or that if such a conviction has occurred, Contractor has fully advised the Owner as to the facts and circumstances surrounding the conviction.

1.27 ASSIGNMENTS:

The Contractor shall not assign its rights under the Contract or delegate the performance of its duties under the Contract without prior written approval from the Owner.

1.28 INDEPENDENT CONTRACTOR:

The Contractor shall not render the Contractor to an employee, officer or agent of the Owner for any purpose. The Contractor is and shall remain an independent contractor in relationship to the Owner. The Owner shall not be responsible for withholding taxes from payments made under the Contract. The Contractor shall have no claim against the Owner for vacation pay, sick leave, retirement benefits, social security, worker’s compensation, health or disability benefits, unemployment insurance benefits, or employee benefits of any kind.
1.29 PATENTS, TRADEMARKS OR COPYRIGHTS:

Contract agrees to defend and indemnify the Owner and State from claims involving infringement or violation of patents, trademarks, copyrights, trade secrets, or other proprietary rights, arising out of the Owner’s or the State’s use of any good or service provided by the Contractor as a result of this solicitation.

1.30 FORCE MAJEURE:

The Owner may grant relief from performance of contract if the Contractor is prevented from performance by an act of war, order of legal authority, act of God, or other unavoidable cause not attributable to the fault or negligence of Contractor. The burden of proof for the need of such relief shall rest upon the Contractor. To obtain release based on force majeure, the Contractor shall file a written request with the Owner.

1.31 U.S. DEPARTMENT OF HOMELAND SECURITY’S E-VERIFY SYSTEM:

By entering into this Contract, the Contractor certifies and ensures that it utilizes and will continue to utilize, for the term of this Contract, the U.S. Department of Homeland Security’s E-Verify system to determine the eligibility of:

A. All persons employed to perform duties within Texas, during the term of the Contract; and

B. All persons (including subcontractors) assigned by the Respondent to perform work pursuant to the Contract, within the United States of America.

The Contractor shall provide, upon request of Texas Parks and Wildlife Department, an electronic or hardcopy screenshot of the confirmation or tentative non-confirmation screen containing the E-Verify case verification number for attachment to the Form I-9 for the three most recent hires that match the criteria above, by the Contractor, and Contractor’s subcontractors, as proof that this provision is being followed.

If this certification is falsely made, the Contract may be immediately terminated, at the discretion of the state and at no fault to the state, with no prior notification. The Contractor shall also be responsible for the costs of any re-solicitation that the state must undertake to replace the terminated Contract.

1.32 MINIMUM EXPERIENCE REQUIREMENTS:

CONTRACTOR MUST SHOW EVIDENCE OF THREE (3) SUCCESSFUL CONSTRUCTION PROJECTS SIMILAR TO THIS PROJECT (AS JUDGED BY OWNER) THAT OCCURRED WITHIN THE PAST FIVE (5) YEARS, TWO (2) OF WHICH ARE TO HAVE OCCURRED WITHIN THE LAST TWO (2) YEARS TO BE ELIGIBLE FOR AWARD OF THIS CONTRACT. THIS EXPERIENCE IS MEASURED BACKWARDS FROM THE ISSUE DATE OF THIS SOLICITATION. EXPERIENCE TO INCLUDE RELEVANT VARIANT REFRIGERANT FLOW (VRF) WITH HEAT RECOVERY.

1.33 RESERVED

1.34 RESERVED

1.35 RESERVED
1.36 NON-DISCRIMINATION: The undersigned is subject to Title VI of the Civil Rights Act of 1964, Section 504 or Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and offers all persons the opportunity to participate in programs or activities regardless of race, color, national origin, age, sex or disability. Further, it is agreed that no individual shall be excluded from participating in programs or activities otherwise denied access to or benefit from any program or activity that is directly associated with a program on the basis of race, color, national origin, age, and sex (in educational activities) or disability. The prime contractor shall ensure that this clause is included in all subcontracts.

PART 2 – PRODUCTS

2.01 CONSTRUCTION MATERIALS:

A. Materials:

1. All materials shall be new and of the quality specified. Materials shall be free from defects. Where manufacturer’s names are mentioned in the specifications, it has been done in order to establish a standard of quality and construction, not to preclude the use of equal or superior materials or products of other manufacturers. However, substitutions must have Owner’s prior approval.

2. Unless otherwise indicated in the specifications or drawings, equipment and material shall be installed in accordance with the manufacturer’s recommendations and shall include such tests as manufacturer recommends.

B. Storage and Protection of Materials:

1. All materials shall be suitably stored to be protected from damage. Water-tight storage facilities of suitable size with floors raised above the ground shall be provided for all materials subject to damage from exposure to the weather. Other materials shall be stored on blocks off the ground. Materials shall be stored to permit easy access for inspection and identification. Any material which has deteriorated, become damaged or otherwise unfit for use shall not be used in the work (as judged by Owner). Upon completion of all work, or when directed, the Contractor shall remove storage facilities from the site.

2. During construction, open ends of all drains, piping and conduit, and all openings in equipment, shall be closed before leaving the work at any time so as to prevent the entrance of all foreign matter.

PART 3 – EXECUTION

3.01 CONSTRUCTION SITE AND JOB CONDITIONS:

A. The Contractor’s Superintendent shall be on site at all times that work is in progress.

B. The Contractor will be provided with designated space in the immediate vicinity of the job site for his use during construction. Unauthorized damage to any existing utilities, building facilities, structures, or plant life shall be repaired by the Contractor at no expense to the Owner. The Contractor shall not allow any unsafe or unsanitary conditions to develop as a result of Contractor’s operations.
C. The Contractor shall not allow trash or debris to accumulate on the site. At the end of the contract, the Contractor shall clean the entire area of any litter resulting from Contractor's operations. The Contractor shall maintain the premises as clean and presentable as good construction practices will allow at all times.

D. Utilities: Water is available and will be furnished by the Owner at no charge to the Contractor. **Note:** Electrical power will be furnished by the Owner at no charge to the Contractor for most of the construction phase, however, it is the contractor's responsibility to provide temporary on-site power to ensure freezers have power at all times, if and when power to the rest of the building is disconnected. Also, any temporary connections, appurtenances or extensions shall be provided by the Contractor at no cost to the Owner and removed from the premises at the conclusion of the contract. Contractor shall provide cellular telephone service at all times and shall keep Owner informed of telephone number.

E. Field Office: The Owner will provide the Contractor with a site on which the Contractor may place a small, temporary office structure.

F. Temporary Toilets: The Contractor shall provide and maintain in neat, sanitary condition toilets and other necessary accommodations for employees' use to comply with the regulations of the State Department of Health or other jurisdictions.

G. Project Identification: There shall be no project signs of any size or type allowed on the project site or surrounding Texas Parks and Wildlife Department property at any time.

H. Fire Protection: The Contractor shall take stringent precautions against fire. Open fires are not allowed unless approved in writing by Owner.

3.02 OCCUPATIONAL SAFETY AND HEALTH STANDARDS (See also UGC Article 7):

Prior to trenching below a depth of four (4) feet (if applicable), a Contractor must submit separate pay items for: (i) trench safety to be determined by the linear feet of trench excavated, and (ii) special shoring requirements, if any, to be determined by the square feet of shoring used, pursuant to Texas Government Code, Title 10, Chapter 2166, Section 2166.303. Such pay item(s), following calculation as required above, shall be quoted on the basis of a total lump sum price.

3.03 RESERVED

3.04 SITE OPERATIONS:

During construction of this project the site will remain open to public visitation. It is the responsibility of the Contractor to maintain convenient access and egress to park facilities in a manner to be approved by the Owner. The Contractor shall also be responsible for public safety at the construction site. All temporary fencing, barricades, warning lights, signs, and flagmen shall be provided and maintained by Contractor as needed. The Contractor shall maintain security of construction sites.

3.05 CUTTING AND PATCHING:

A. Where indicated in the Contract Documents, this project requires cutting into existing construction for the performance of the work and requires subsequent fitting and patching to restore the existing work to original condition.
B. Utilities:

1. Contractor shall not cut or patch utilities until all necessary approvals and coordination requirements are accomplished.
2. Before cutting services that are to remain permanently or temporarily in service, Contractor shall provide by-pass system as necessary to maintain service.
3. After by-pass and cutting, Contractor shall cap, valve or plug and tightly seal remaining portion of service piping or conduit to prevent entrance of moisture and foreign matter.

C. Structural Work: Contractor shall not cut or patch structural work in a manner that would result in a reduction of load-carrying capacity or of load-deflection ratio.

D. Inspection:

1. Before cutting, Contractor shall examine items to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, Contractor shall take corrective action before proceeding with the work.
2. Contractor shall meet at the work site with all trades involved in cutting and patching. Contractor shall review areas of potential interference and conflict between the various trades and shall coordinate layout of the work and resolve potential conflicts before proceeding with the work.

3.06. AS-BUILT DOCUMENTS (See also UGC Article 6):

The Contractor shall maintain on a separate set of the Contract Documents a record of all changes made during construction (As-Built Documents). The Contractor shall be responsible for keeping these records and neatly noting with colored pencil or ink all changes. Progress payments will not be made to the Contractor unless such records are maintained. Verification by the On-Site ODR of such records is solely for assurance that the records are being maintained. Such inspections shall not constitute review or approval of the as-built documents for accuracy or completeness.

3.07. SPECIAL CONDITIONS:

Licenses Required: Electrical and HVAC

END OF SECTION
TECHNICAL SPECIFICATIONS

For

A.E. WOOD FISH HATCHERY
ANALYTICAL SERVICES LAB BUILDING
HVAC REPLACEMENT

100% CONSTRUCTION DOCUMENTS

Project Number: 1210289
08 February 2019

Owner
Texas Parks and Wildlife Department
505 Staples Road
San Marcos, Texas 78666

Engineer
EEA Consulting Engineers
6615 Vaught Ranch Road, Suite 100
Austin, Texas 78730-2314
Firm Registration No. 2497
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PART 1 GENERAL

1.1 SECTION INCLUDES
1. Suspended metal grid ceiling system.
2. Acoustical units.

1.2 REFERENCES


B. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2008e1.

C. SCS Indoor Advantage Gold certification for air quality.

D. Green Guard Gold certification for air quality.

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Shop Drawings: Indicate grid layout and related dimensioning.

C. Samples: Submit two samples illustrating material and finish of acoustical units.

D. Provide documentation for recycled content of tile and grid.

E. Provide GREENGUARD Gold Certification or SCS Advantage Gold Certification for ceiling tiles.

PART 2 PRODUCTS

2.1 ACOUSTICAL UNITS

A. Manufacturers:
1. Armstrong World Industries, Inc.
2. CertainTeed Corporation
3. USG
4. Substitutions: With architect approval.

B. Acoustical Units - General: ASTM E1264, Class A.

C. Acoustical Panels – Office, Administrative Storage, and Corridor Areas Armstrong Cortega Lay-In or approved equal
1. Size: 24 x 48 inches (600 x 600 mm).
2. Thickness: 15/16 inches.
3. Composition: Wet felted.
4. Edge: Square.
5. Surface Color: Match existing, adjacent tiles.
7. Tiles to have a NRC of .70 minimum.

D. Acoustical Panels – Labs and Lab storage Areas:
1. Armstrong Optima Health Zone or approved equal.
2. Size: 24 x 48 inches (600 x 600 mm).
3. Thickness: 15/16 inches.
4. Composition: Fiberglass with DuraBrite scrim/ DuraBrite factory applied latex paint.
5. Edge: Square.
7. Suspension System: Exposed grid.
8. Tiles to have a NRC of .95 minimum.

2.2 SUSPENSION SYSTEM(S)

A. Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.

B. Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; intermediate-duty.
1. Profile: Tee; 15/16 inch (24 mm) wide face.
2. Construction: Double web.

2.3 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Perimeter Moldings: Same material and finish as grid.
1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.

C. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.1 INSTALLATION - SUSPENSION SYSTEM

A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

B. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
C. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

E. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

F. Support fixture loads using supplementary hangers located within 6 inches (150 mm) of each corner, or support components independently.

G. Do not eccentrically load system or induce rotation of runners.

H. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.
   2. Overlap and rivet corners.

3.2 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer’s instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install units after above-ceiling work is complete.

E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.

3.3 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet (3 mm in 3 m).

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.4 ATTIC STOCK

A. Provide the Owner with 10% attic stock (extra material) for future material replacement. Deliver to location indicated by the Owner’s Representative.

END OF SECTION
SECTION 09 90 00 – PAINTING AND COATING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Suspended Surface preparation.

B. Field application of paints, stains, varnishes, and other coatings.

C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Exposed surfaces of steel lintels and ledge angles.

D. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Floors, unless specifically so indicated.
   7. Concealed pipes, ducts, and conduits.

1.2 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Product Data: Provide complete list of all products to be used, with the following information for each:
   1. Manufacturer’s name, product name and/or catalog number, and general product category (e.g. “alkyd enamel”).
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens definitely not required.
   2. Allow 30 days for approval process, after receipt of complete samples by Architect..
PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Provide all paint and coating products from the same manufacturer to the greatest extent possible.

B. Paints:

C. Substitutions: With architect approval.

2.2 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
   1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Supply each coating material in quantity required to complete entire project's work from a single production run.
   3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B. Primers: As follows unless other primer is required or recommended by manufacturer of top coats; where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Volatile Organic Compound (VOC) Content:
   1. Provide coatings that comply with the most stringent requirements specified in the following:
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

2.3 PAINT SYSTEMS - EXTERIOR

A. Paint ME-OP-2A - Ferrous Metals, Primed, Alkyd, 2 Coat:
   1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
   2. Semi-gloss: Two coats of alkyd enamel;

B. Paint MgE-OP-3A - Galvanized Metals, Alkyd, 3 Coat:
   1. One coat galvanize primer.
   2. Semi-gloss: Two coats of alkyd enamel;
2.4 PAINT SYSTEMS – INTERIOR

A. Paint I-OP - All Interior Surfaces Indicated to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, wood, plaster, uncoated steel, shop primed steel, and galvanized steel.
   1. Two top coats and one coat primer.
   2. Eggshell: MPI gloss level 3; use this sheen at all locations.
   3. Satin: MPI gloss level 4; use this sheen for items subject to frequent touching by occupants, including door frames and railings.
   4. Primer(s): As recommended by manufacturer of top coats.

B. Paint WI-OP-3L - Wood, Opaque, Latex, 3 Coat:
   1. One coat of latex primer sealer.
   2. Semi-gloss: Two coats of latex enamel;

C. Paint CI-OP-2A - Concrete/Masonry, Opaque, Alkyd, 2 Coat:
   1. One coat of block filler.

D. Paint MI-OP-2L - Ferrous Metals, Primed, Latex, 2 Coat:
   1. Touch-up with latex primer.
   2. Semi-gloss: Two coats of latex enamel;

E. Paint MgI-OP-3L - Galvanized Metals, Latex, 3 Coat:
   1. One coat galvanize primer.
   2. Semi-gloss: Two coats of latex enamel;

F. Paint GI-OP-3L - Gypsum Board/Plaster, Latex, 3 Coat:
   1. One coat of alkyd primer sealer.
   2. Eggshell: Two coats of latex enamel;

2.5 ACCESSORY MATERIALS

A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

G. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

H. Plaster Surfaces to be Painted: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

I. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

J. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand or power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

K. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

L. Interior Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

M. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.

N. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.2 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
C. Apply each coat to uniform appearance.

D. Sand wood and metal surfaces lightly between coats to achieve required finish.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.3 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

END OF SECTION
SECTION 12 36 53 – LABORATORY WORKSURFACES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Epoxy resin worksurfaces, sinks, and accessories.

1.2 REFERENCES

A. ASTM International (ASTM):
   2. D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions pages 3 through 5, Submittals section 1.09, and 2015 Uniform General Conditions.

B. Submittals for Review:
   1. Shop Drawings:
      a. Submit plan, section, elevation and perspective drawings necessary to describe and convey layout, profiles, and product components, including edge conditions, joints, fitting and fixture locations, anchorage, accessories, and finish colors.
      b. Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on Shop Drawings.
      c. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.
   2. Product Data: Manufacturer’s data sheets on each product to be used, including:
      a. Preparation instructions and recommendations.
      b. Storage and handling requirements and recommendations.
      c. Installation methods.
3. Samples:
   a. Selection samples: For each finish product specified, submit complete set of
color chips representing manufacturer's full range of standard colors.
b. Verification samples: For each finish product specified, submit samples
representing actual product color; supplied product color and gloss may vary
slightly from supplied samples.

C. Quality Control Submittals:
   1. Test Reports: Certified test reports or recognized evaluation reports showing
compliance with specified performance characteristics and physical properties.

D. Closeout Submittals:
   1. Maintenance Data:
      a. Provide maintenance, cleaning, and life cycle information.
b. Include recommended cleaning materials and procedures, and list of
materials detrimental to epoxy resin.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract Documents are based on products by Durcon, Incorporated, 206 Allison

2.2 MATERIALS

A. Solid Epoxy Resin:
   1. Sheets cast from modified epoxy resin and non-asbestos inert fillers;
compounded mixture cured and thermoset specifically from formulation to
provide exceptional physical and chemical resistance required in medium to
heavy duty laboratory environments.
   2. Physical properties; minimum acceptable physical performance in accordance
with SEFA 3 testing procedures:
a. Density/specific gravity: Tested to ASTM D792; minimum test rating of
   134.8 PSF or 2.16 gcm.
b. Rockwell hardness: Tested to ASTM D785; minimum M scale rating of 110.
c. Fire resistance: tested to ASTM D635; classified as self-extinguishing.
d. Surface burning characteristics: Tested to ASTM E84; flame spread index
   7.4 and smoke develop index of 221.2.
e. Surface burning characteristics in vertical position: Tested to ASTM D3801;
maximum flame spread index of 7.4 and smoke developed index of 221.2.
f. Coefficient of linear thermal expansion: Tested to ASTM D696; rating of 2.46
   x 10^-5.
g. Heat deflection: Tested to ASTM D648; maximum 205 degrees F or 96
   degrees C.
h. Flexural strength: Tested to ASTM D790; minimum rating 14.9 KPSI or 103
   Mpa.
i. Flexural modulus: Tested to ASTM D790; 2,777,501 PSI or 19.2 Gpa.
j. Water absorption, 24 hours: tested to ASTM D570; maximum 0.008 percent
   by weight.
k. Compression strength: Tested to ASTM D695; minimum 38.4 kpsi or 265 Mpa.


2.3 ACCESSORIES

A. Installation Materials: Manufacturer's joint adhesive, panel adhesive, and sealants as required to suit project conditions.

2.4 FABRICATION

A. Fabricated tops and accessories in accordance with manufacturer's recommendations, approved Shop Drawings, and SEFA 3.

B. Epoxy Resin Worksurfaces:
   1. Thickness:
      a. 1 inch (25 mm) unless otherwise indicated.
      b. Check each sheet at factory for required thickness.
      c. Maximum variation in thickness: plus or minus 1/16 inch (1.6 mm) from corner to corner.
   2. Corner treatment: exposed corners shall be eased slightly for safety.
   3. Back and end splashes:
      a. Supplied loose for field installation.
      b. Same material and thickness as worksurfaces.
      c. Match existing, adjacent splash unless otherwise indicated.
      d. Top-mounted end splash where worksurfaces abut adjacent construction at and locations indicated on Drawings.
   4. Joints: Maximum 1/8 inch (2 mm), bonded with epoxy grout.
   5. Make joints between two benches level.

PART 3 EXECUTION

3.1 PREPARATION

A. Prepare surfaces using methods recommended by manufacturer.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved Shop Drawings.

B. Install tops plumb and level.

C. Scribe to adjacent surfaces in accordance with manufacturer's recommendations.

D. Fasten tops to supporting construction with adhesives appropriate for use with adjoining construction and as recommended by manufacturer.
E. Form field joints using manufacturer's recommended adhesive. Form joints to be inconspicuous and nonporous.

3.3 PROTECTION

A. Protect installed products until completion of Project. Touch up, repair, or replace damaged products.
SECTION 23 00 00 - GENERAL MECHANICAL REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. This Section applies to all Division 23 – Heating, Ventilating, and Air-Conditioning (HVAC) Specification Sections. It is the intent of the contract documents to provide an installation complete in every respect. Work shall be executed in a workmanlike manner and shall include all labor, materials, and supervision essential to provide complete functioning systems as described in the contract documents. In the event that additional details or special construction is required for work indicated, it shall be the responsibility of the Contractor to provide same as well as to provide material and equipment usually furnished with such systems or required to complete the installation at no expense to the Owner.

B. Conflict Resolution: Where conflicts may exist between the minimum requirements of various laws, codes, authorities, and/or within the Contract Documents, the higher quality, greater quantity, more restrictive and/or more expensive requirement shall be the basis of Contractor pricing and the Contractor shall notify the Engineer for the resolution of the issue prior to executing the work in question.

C. Should any errors, omissions, conflicts, or ambiguities exist in the drawings, the Contractor shall bring these to the attention of the Engineer immediately for adjustment in writing before signing the contract or proceeding with the work. Otherwise, he shall at his own expense, supply the proper materials and labor to make good any damage or defect caused by such unintentional error.

D. Contractor is responsible for checking all contract documents, field conditions and dimensions for accuracy, and confirming that the work is buildable as shown and meets all applicable codes before proceeding with construction. If there are any questions regarding these or other coordination issues, the Contractor is responsible for obtaining a clarification from the Engineer before proceeding with the work in question or related work.

E. Contractor shall direct all questions to the TPWD Construction Manager. The Contractor shall verify all working conditions such as starting time, noise and vibration limitations, confined space, etc. Through the TPWD Construction Manager, an approval shall be received to start work. Refer to 2015 Uniform General Conditions, page 5, section 1.30.

F. Field Conditions: The Contractor is responsible for visiting the jobsite and verifying the scope of work required including all existing conditions, locations, dimensions, and quantities as shown and noted on the drawings and the extent and effect of existing systems. The Contractor shall be responsible for field verification of existing conditions and shall perform field measurements prior to fabrication and/or purchase of any material and shall contact the project manager should existing conditions be different from the design drawings for this project. Conflicts arising due to lack of coordination shall be the responsibility and at the expense of the Contractor.
G. Deviations to the intended design or the scope of the work must be approved by the project Engineer prior to commencing work. Failure to do so may result in the work to be removed at no cost to the Owner.

H. All work shall be performed in accordance with all applicable local codes, standards, and amendments and/or other authorities that may have jurisdiction pertaining to the work. In addition, all work shall conform to the standards and practices of the Owner.

I. Coordination:
1. The Contractor shall be responsible for ensuring full coordination with other trades and Contractors to accomplish the work as shown and noted in these contract documents. The Contractor shall compare the drawings of other trades and report any discrepancies to the Owner's representative.
2. The Contractor shall not fabricate or install items as shown on the drawings if there are discrepancies or conflicts between the existing conditions and the information shown on the drawings until such discrepancies have been resolved. Prior to fabrication or installation, the Contractor shall immediately call such discrepancies or conflicts to the attention of the project coordinator.
3. Ductwork, piping, conduit, cabling, etc. shown on drawings shall be coordinated with air distribution devices, special ceiling, floor, and structure construction, etc. Provide additional rises and drops to those indicated on the drawings as required to coordinate with architectural, structural or MEP elements shown on the contract documents. All utilities shall be routed in an orderly manner, grouped together wherever possible, and located so as to conserve building space. Ductwork, piping, conduit, cabling, etc. shown on each plan is run above the ceiling on the floor where it is shown unless otherwise noted.
4. Coordinate locations of new and existing roof penetrations to minimize number of openings. Roof penetrations shall be made within roof curb. Electric and refrigerant lines to use same penetrations where possible.

J. As-Builts: See Texas Parks and Wildlife Department Division 1 - General Requirements, Section 01000 Special Conditions pages 7 and 15, and 2015 Uniform General Conditions pages 31, 53, 56, and 59. The Contractor shall maintain his set of construction drawings on site at all times so that all changes between the drawings and the actual construction can be noted on the drawings. This includes all deviations from the original contract. The Contractor shall indicate all changes from the original plans made during the installation of his work in red ink on two blue line prints. At the end of construction, the Contractor shall sign and date the drawings certifying that they are an accurate reflection of the actual construction. As-built drawings are to be delivered to the Owner's project coordinator after project completion. Note that the final invoice for the contract will not be paid by the Owner until final as-built drawings are received.

K. All work noted "NIC" or "Not in Contract" is to be accomplished by another Contractor and is not to be part of the construction agreement.

1.2 DEFINITIONS

A. Furnish: To purchase and deliver products to the project site and prepare for installation.
B. **Install**: To assemble, erect, secure, connect, and place furnished product into operation.

C. **Provide**: To furnish and install.

D. **Products**: Includes materials, systems, parts, and equipment.

E. **Concealed**: Embedded in or installed behind walls, within partitions, above suspended ceilings, in trenches, in tunnels and crawl spaces.

F. **Exposed**: Not installed underground or "concealed" as defined above.

G. **Specifications**: These specifications plus the Codes and Standards referenced herein.

1.3 **CONTRACTOR QUALIFICATIONS**

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions page 3, and 2015 Uniform General Conditions pages 10 and 14.

B. **General**: The firms that perform the installation of the work under this Division of specifications shall be one that maintains an established, experienced organization with a permanent, manned office within a radius of 150 miles of the project location.

C. **Mechanical Firm’s Proficiency**: The firm's proficiency in the installation, start-up, adjustment and maintenance of air conditioning systems shall have been demonstrated by the successful performance of work on at least three systems as specified herein in the last three years. The firm shall have trained personnel, instruments, tools, and equipment to perform the installation and maintenance service specified. The firm shall have been in business performing services as specified herein for at least three years.

1.4 **SAFETY**:

A. Contractor shall comply with all applicable safety standards including, but not limited to OSHA standards and Owner’s requirements.

B. **All safety exposures or violations shall be rectified immediately by the Contractor.** The Contractor shall be responsible for providing protection of persons and property, providing safe working conditions throughout the work progress, providing temporary coverings for openings through walls or floors, and providing temporary barriers, partitions and/or dust barriers where required to maintain OSHA and the Owner’s safety standards and to prevent damage to property. All areas adjacent to the construction area or affected by the construction must be protected from damage, cleaned, and restored to the original condition at no additional expense to the Owner. The Contractor shall provide protective clothing and eyewear for all personnel who are required to handle hazardous chemical products or work in hazardous locations.

C. Submit material safety data sheets and manufacturer’s current recommended method of installation for all materials used to perform the work indicated by these
documents. All submittals shall be prepared according to current Owner specifications and shall be approved prior to starting any work. All chemicals or chemical compounds proposed for use on the property including, but not limited to paint thinners, solvents, adhesives, sealants, cleaning compounds, epoxies, etc. Must be approved by the Owner.

D. Dispose of debris, trash, and hazardous materials in accordance with all applicable codes.

E. The Contractor shall be responsible for training his/her employees and subcontractors as required by the Owner, and in the recognition and avoidance of unsafe conditions, and in the regulations and hazards which apply to the area in which the work will take place.

F. Work areas shall be kept continuously, at all times, free of debris and non-hazardous material to the satisfaction of the project coordinator. All existing piping and conduits shall have temporary protection during construction. The Contractor shall coordinate storage of materials, parking of vehicles, and restrictions of work with the project coordinator. After project completion, the site shall be cleaned up and restored to its condition or better prior to the start of the project to the satisfaction of the project coordinator.

1.5 QUALITY CONTROL

A. Comply with manufacturers’ instructions, including each step in sequence.

B. Should manufacturers’ instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

C. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

D. Conform to reference standard by date of issue current on date of Contract Documents date for receiving bids, except where a specific date is established by code.

1.6 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions pages 3, 4, 5, and 7, and 2015 Uniform General Conditions pages 35 through 39.

B. Contractor shall provide product data submittals on all major equipment, components, and materials specified in these plans for Engineer's and Owner's review and acceptance prior to installation.

C. Each submittal shall include the project title, Architect, Engineer, Contractor’s names, specification section number and title, submittal number for tracking and shall be limited to a single Division 23 Specification Section. Submit shop drawings
and product data grouped to include complete submittals of related systems, products, and accessories in a single submittal.

D. Contractor Review: The Contractor shall check data carefully to insure compliance with these specifications prior to submitting. For product data describing two or more variants of the same model product, clearly mark the selected product and all included accessories and options. Stamp and sign each submittal section indicating review and approval and provide notes indicating any variances that exist.

E. Submittal data for other Division 23 Specification Sections: Provide data as required in each individual Division 23 Specification Sections. Submittal data types are as follow:

1. Compliance Data: Published literature, certificates, and lists indicating the product’s compliance with standards referenced in these specifications.
2. Published Literature: Indicate dimensions, weights, capacities, ratings, horsepower, gages, and finishes of materials, and electrical characteristics and connection requirements.
3. Performance Data: Performance data including fan curves, pump curves, and equipment output capacities complete with rating conditions as scheduled on contract drawings. As a minimum submitted data shall include all performance data scheduled or noted on contract drawings.
4. Sound Power Level Data: Equipment sound power level at 63, 125, 250, 500, 1000, 2000, 4000, and 8000 Hz octave band center frequencies plus dB A weighted sound level. Data shall include distance from equipment to test equipment.
5. Electrical Requirements: Power supply wiring including wiring diagrams for interlock and control wiring, clearly indicating factory-installed and field-installed wiring.
6. Samples and Color Selection Charts.
7. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements.
8. Manufacturer’s Instructions: Include installation instructions.
9. Certificates: Signed letters certifying compliance with specified requirements.

1.7 SUBSTITUTIONS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions pages 4, 5, and 12, and 2015 Uniform General Conditions pages 37-38.

B. Basis of Design: Model numbers indicated in other Division 23 Specification Sections or shown on the drawings are the Basis of Design. The Contractor may request substitution of equal and approved equipment from manufacturers listed in this specification or set forth in an addendum provided said equipment meets all requirements of the plans and specifications, has like electrical characteristics (e.g., same voltage, phase, fusing/circuit breaker requirements, single or multiple points of connection as indicated on the electrical drawings), and will fit in the available spaces in the building as shown.
C. If the Contractor chooses to provide equipment which meets all requirements, but has different connection sizes and/or locations, different weight or footprint, or electrical characteristics, etc., he shall bear all costs associated with the installation of that substitution. All required modifications shall be coordinated with the Engineer, the General Contractor, and affected subcontractors of other trades.

D. Substitutions: Substitutions of specified items will be considered until 10 days prior to bid opening. Each request shall include a description of the proposed substitute, the name of material or equipment for which it is to be substituted, drawings, cuts, performance and test data for an evaluation and a statement from the equipment manufacturer's representative that the items to be substituted meet or exceed the specifications of the item substituted for.

E. A request for substitution constitutes a representation that the Contractor:
1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
2. Will provide the same warranty for the Substitution as for the specified Product.
3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension which may subsequently become apparent.
5. Will reimburse Owner and Engineer for review or redesign services associated with re-approval by authorities.

F. The Engineer will notify Contractor in writing of decision to accept or reject request.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Deliver Products to the project in manufacturer's original shipping packaging, properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.

B. Acceptance at Site: Comply with the following requirements:
1. Inspect shipments and immediately report any damage to the carrier and to the Construction Manager so that job progress will not be delayed.
2. All items received by the Contractor shall be left in their original containers, or as shipped with dust caps, packing materials, and weather proof covers until installed in final locations.

C. Storage and Protection: During construction maintain all delivered materials and equipment in an orderly manner and protect from damage by complying with the following minimum requirements:
1. Products stored outside or in unheated spaces shall be covered with waterproof drop cloths or tarpaulins, and provided with blocking to raise the base of each item at least 6 inches above ground and water levels.
2. Store electrical items that would be damaged by cold weather or condensation in a heated, enclosed space until placed into service.
3. Products stored inside shall be protected from dirt, construction debris, welding and cutting spatters, paint dropping etc. either by original packaging or Contractor provided covers.
4. All installed materials and equipment shall be in a like new condition. Damaged equipment or materials shall be repaired to like new conditions or replaced at no cost to the Owner.

1.9 SEQUENCING AND SCHEDULING

A. Carefully examine the architectural HVAC, electrical drawings and specifications. Coordinate all work with other disciplines to avoid conflicts and delay of installation schedule.

B. The Contractor shall install mechanical work so as not to interfere with the work of other disciplines or trades. If work is installed that does interfere, the work shall be corrected at no additional cost to the Owner. Occupation of a work space by any trade or discipline does not give the right of priority to the space.

C. Tests: Test requirements shall be as specified in other Division 23 Specification Sections. Provide the engineer 48 hours notification in advance of any test. Engineer, at his option, may witness test. Complete tests prior to insulating or otherwise covering work. Leaks shall be repaired, defective materials replaced, and system shall be retested. No water pressure test shall be conducted in freezing weather. Conduct test prior to connecting to equipment or isolate equipment from system.

1.10 UTILITY CONNECTIONS AND PERMITS

A. The Contractor shall be responsible for securing and paying for all permits, licenses, clearances and certificates from the Owner and local authorities having jurisdiction as required prior to the commencement of the work.

B. Prior to any cutting or trenching, verify with Owners rep., utility companies, and landlord that all available information is known regarding underground obstructions. Take caution when trenching not to disturb any existing utilities. Notify Owners representative immediately upon uncovering unknown utilities for further direction.

1.11 COMPLETION OF WORK

A. Execute final cleaning prior to final inspection.

B. Final Cleaning: Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

C. Clean construction debris from roof.

D. Remove waste and surplus materials, rubbish, and construction facilities from the site.

E. Contractor to provide start-up and commissioning services for all new systems and equipment, as well as training services for the Owner’s maintenance personnel in the use of these systems and equipment. Adjust operating products and equipment to ensure smooth and correct operation.
F. Upon completion of construction, Contractor shall demonstrate proper functionality of all fire smoke dampers and ahu smoke detectors to Owner and/or Engineer.

G. At the completion, an inspection shall be made and the entire system shall be shown to be in specified working condition. The following shall be available during the inspection:
1. Owner's Representative.
2. Contractor representative.
3. Mechanic with hand tools, ladder and flash light.
5. Complete specifications and drawings with all addenda and revisions.

1.12 GUARANTEE AND WARRANTIES

A. All Division 23 – Heating, Ventilating, and Air-Conditioning (HVAC) warranty periods begin at the date specified in the Contract. The Contractor shall make provisions so that manufacturer's warranties begin on that date regardless of when equipment is delivered to the project site.

B. Warranties: Provide manufacturer's equipment warranties prior to final inspection. Length of warranty period shall be as specified in individual Division 23 Specification Sections.

C. Guarantee: All equipment and materials furnished and all work performed under this Division of specifications shall be guaranteed to be free of defective materials and workmanship for a period of one year from the date specified in A above. Upon notice from the Owner of failure of any part of the guaranteed equipment during the guarantee period, the affected part or parts shall be promptly replaced with new parts by the Contractor at no additional cost to the Owner. All labor required to perform guarantee shall be included as part of the complete guarantee warranty.

1.13 MAINTENANCE AND SERVICE

A. Maintenance: The Contractor shall maintain all systems installed under this Section of specifications for one year from date of Engineer's final certificate.

B. Inspections: Provide four maintenance inspections at 90-day intervals. Check, repair, clean, adjust, and lubricate equipment. Replace filter media when exhausted or clean permanent filters.

C. Parts: Provide repair parts during maintenance periods.

1.14 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed Shop Drawings, Product Data, and Samples.
6. Manufacturer’s instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Contract Close-Out Record Documents: Prepare construction record documents, in AutoCAD or Revit files provided by the Engineer, to include all addenda and change orders and indicating the following installed conditions:
   1. Ductwork size and location; locations of dampers, control devices, filters, air devices, terminal units, duct mounted coils, duct mounted humidifiers and duct mounted heat exchangers.
   2. Mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, locations of flexible pipe connectors, expansion joints, anchors, and guides, hangers including attachment points, and with items requiring maintenance located (i.e., traps, strainers, expansion compensators, tanks, etc.). Valve location diagrams, complete with valve tag chart. Indicate actual inverts and horizontal locations of underground piping. Record actual locations of storage tanks, fire extinguishing components and equipment, equipment identification markings, conduit and piping routing details.
   3. Equipment locations (exposed and concealed), identification, dimensioned from prominent building lines.
   5. Submit documents to Engineer with claim for final Application for Payment.

1.15 MAINTENANCE DOCUMENTS AND INSTRUCTIONS


B. Maintenance Training: After placing systems in operation, provide 2 members of Owner’s maintenance staff with 16 hours of operation and maintenance training for all systems included in this Section of specifications.

C. Maintenance Manuals: Three bound and indexed Operating and Maintenance Manuals shall be prepared by the Contractor and be submitted to the Engineer for approval prior to delivery to operating personnel. Each manual shall contain the following information, data and drawings:
   1. List of contents. Insert under front cover.
   2. Copy of approved submittals, equipment, and materials.
   3. Installation, operating, and maintenance instructions for each item of equipment.
   4. Wiring schematics for each item of equipment.
   5. Manufacturer’s list of renewal parts for each item of equipment with recommended stock items and quantities indicated.
   6. Manufacturer’s equipment warranties.
7. Copy of Test and Balance Reports including list of instruments and description of methods employed.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 ASBESTOS

A. The Contractor shall ensure that all his personnel and that all of his subcontractors are made aware during demolition, or any similar work, or in the process of connecting to or working adjacent to existing equipment or materials, that at any time any workman encounters any suspect asbestos type material, all work in that area shall be stopped immediately and the suspect spaces kept cleared until a positive decision by a properly qualified person has been determined. In the event the suspect material proves to be asbestos, all affected areas shall be kept isolated until all such asbestos material has been removed and the spaces affected duly approved for normal use. It is to be noted that only authorized and approved personnel shall be allowed to participate in any manner whatsoever either in the search of or the removal of asbestos suspect material.

B. No asbestos containing materials shall be used in any of the new construction.

3.2 DEMOLITION

A. General: Provide demolition of existing mechanical work in remodeled areas of the existing building and as described on the drawings. Dispose of removed equipment and materials in a way to maximize recycling content. In addition to work indicated on drawings, demolition includes, but is not necessarily limited to, the following:
   1. Removal of all abandoned piping, ducts, supports, equipment, control wiring, etc.
   2. Capping and plugging of piping where demolition begins.
   3. Removal of all abandoned control devices and abandoned exposed pneumatic tubing and control wiring. Abandoned pneumatic tubing and control wiring throughout accessible ceiling spaces shall also be removed.

B. Prior to construction beginning, the contractor shall take a video recording of all existing project conditions, including existing equipment/materials being removed. The contractor shall submit the video during final submittals.

C. Salvage Equipment and Materials: Existing equipment and materials designated for salvage back to the Owner or reinstallation shall be tested for proper operation prior to removal from its installed location. After removal, salvage equipment found defective shall be removed from the Owner's property at no extra cost to the Owner. Salvage equipment found in good working order shall be turned over to the Owner's agent. Defective equipment designated for reinstallation shall be repaired or replaced per bid alternate pricing for repair/replace of existing equipment. Equipment found in good working order, or repaired, and scheduled for reinstallation
shall be cleaned, serviced, and stored at Contractor's expense until it is again installed in the building.

3.3 ROUGH-IN

A. Final Locations: Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected. Coordinate mechanical systems, equipment, and materials installation with other building components.

B. Prepare for Installation: Arrange for chases, slots, and openings in other building components during progress of construction, to allow for mechanical installations. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.

C. Deviation From Drawings: Drawings are schematic and show approximate location of equipment and materials, however, the Contractor shall obtain the Engineer's approval before deviating from the drawings. Written dimensions shall take precedence over scaled dimensions.

3.4 MECHANICAL INSTALLATIONS

A. General: Installation shall be as specified in individual Division 23 Specification Sections and in accordance with approved manufacturer's installation instructions. Conflict between manufacturer's printed instructions and these specifications shall be brought to the attention of the Engineer.

B. Equipment: All equipment installed on this project shall be new and unused unless noted otherwise. The Contractor shall remove all shipping labels, dirt, paint spots, grease, and stains from all equipment. Debris shall be removed as it accumulates. Upon completion of his work, the Contractor shall clean all equipment. No loose parts or scraps of equipment shall be left on the premises.

C. Installation: Install systems, materials, and equipment to conform to approved submittal data to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Engineer.

1. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
2. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.
3. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.
4. Install systems, materials, and equipment level and plumb parallel and perpendicular to other building systems and components, following the building lines, where installed exposed in finished spaces.

GENERAL MECHANICAL REQUIREMENTS
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5. Install mechanical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations. Extend grease fittings to an accessible location.

6. Provide access panels or doors where units are concealed behind finished surfaces.

D. Cleaning: Comply with the following cleaning requirements:
1. Upon completion of installation, piping, ducts, and equipment shall be thoroughly cleared of dirt, grease, rust and oil, primed where necessary, and left ready for painting. Vacuum clean the inside and outside of plenums and equipment cabinets.

E. Painting and Finishing: Comply with the following finishing requirements:
1. Contractor shall clean, spot prime with zinc chromate and entirely repaint, with original color any factory finished equipment which has rusted or been damaged.
2. Insulation coverings shall be cleaned, sized if necessary, and left ready for service identification.
3. Ferrous metal shall be cleaned and primed, ready for painting.

F. Lubrication and Packing: Comply with the following requirements:
1. Lubricate equipment with correct grade, type, and quantity of lubrication before placing equipment into service. Damages caused by not providing proper lubrication shall be repaired at Contractor's expense.
2. Each shaft or valve stem containing a packing gland shall be checked for condition and examined for proper grade, amount, and type of packing by backing packing gland off.
3. Maintain all lubrication and packing seals during construction, and assure that all are operating properly at the time of final acceptance. Replace worn gaskets and packing.
4. When filling systems initially for hydrostatic pressure tests, adjust valve packing glands to finger tight, and allow packing to absorb water for five minutes prior to tightening packing nuts.
5. All rotating pieces of equipment shall be properly lubricated prior to start-up. Damage to shafts, bearings, seals, etc., caused by lack of proper lubrication or over lubrication shall be repaired by the Contractor at no cost to the Owner.

3.5 CUTTING AND PATCHING

A. General: Perform cutting and patching in accordance with Division 01 – General Requirements. In addition to the requirements specified in Division 01 Specification Sections, the following requirements apply:
1. In new construction areas, avoid cutting of concrete, masonry, and other finished work by use of sleeves and inserts.
2. Any cutting through structural members or floors shall first be coordinated with the structural Engineer. No cutting, boring, or excavating which will weaken the structure shall be undertaken.
3. Cut holes through concrete, brick, tile, etc., when necessary, by rotary core drilling.
4. During cutting and patching operations, protect adjacent installations.
5. Perform at no expense to the Owner, cutting, fitting, and patching of mechanical
equipment and materials required to:
   a. Uncover Work to provide for installation of ill-timed Work.
   b. Remove and replace defective Work.
   c. Remove and replace Work not conforming to requirements of the Contract
      Documents.
   d. Remove samples of installed Work as specified for testing.
   e. Install equipment and materials in existing structures.
   f. Upon written instructions from the Engineer, uncover and restore Work to
      provide for Engineer’s observation of concealed Work.
6. Protect the structure, furnishings, finishes, and adjacent materials not indicated
   or scheduled to be removed.
7. Provide and maintain temporary partitions or dust barriers adequate to prevent
   the spread of dust and dirt to adjacent areas.
8. Patch finished surfaces and building components using new materials specified
   for the original installation and experienced Installers. Installers’ qualifications
   refer to the materials and methods required for the surface and building
   components being patched. Repaired or patched surface finishes and
   components will match existing finishes. Use new materials.
9. All new wall and floor penetrations shall be made at 90-degree angles, unless
   shown otherwise, and shall be sealed fireproof with an approved sealant. All
   penetrations through fire-rated construction shall be sealed with UL 1479 listed
   through-penetration firestop systems.
10. There shall be no drilling into the floor above or below, without first contacting
    the Owner’s designated representative.
11. All roof penetrations shall be provided and installed by a qualified Contractor and
    shall be the responsibility of the General Contractor. Comply with Owner’s
    roofing Contractor’s warranty and/or roofing insurance requirements.

3.6 EXCAVATION, TRENCHING AND BACKFILL
   A. Excavation (See Divisions 00 and 01 for special requirements related to excavation
      and trenching.):

   1. The Mechanical and Electrical subcontractors shall perform all excavations of
      every description, for their particular installations and of whatever substances
      encountered, to the depths indicated on the Drawings and/or required for the
      installation of piping, conduit, utility systems, etc. All exterior lines shall be
      installed with a minimum cover of 24", unless otherwise indicated. Generally,
      more cover shall be provided if grade will permit. All excavation materials not
      required for backfill or fill shall be removed and wasted as acceptable to the
      Construction Inspector. All excavations shall be made only by open cut. The
      banks of trenches shall be kept as nearly vertical as possible and where
      required, shall be properly sheeted and braced. Trenches shall be not less
      than 12" wider nor more than 16" wider than the outside edges of the pipe to
      be laid therein, and shall be excavated true to line so that a clear space not
      less than 6" nor more than 8" in width is provided on each side of the pipe.
      For sewers, the maximum width of trench specified applies to the width at and
      below the level may be made as wide as necessary for sheeting and bracing,
      and the proper installation of the work.
2. The bottom of trenches shall be accurately graded to provide proper fall and uniform bearing and support for each section of the pipe on undisturbed soil or 2" of sand fill at every point along its entire length, except for portions of the pipe sections where it is necessary to excavate for bell holes and for the proper sealing of pipe joints. Bell holes shall be dug after the trench bottom has been graded. Where inverters are not shown, grading shall be determined by the National Plumbing Code for the service intended and the size used. Bell holes for lead pipe joints shall be 12" in depth below the trench bottom and shall extend from a point 6" back of the face of the bell. Such bell holes shall be of sufficient width to provide ample room for caulking. Bell holes for sewer tile and water pipe shall be excavated only to an extent sufficient to permit accurate work in the making of the joints and to ensure that the pipe, for a maximum of its length, will rest upon the prepared bottom of the trench. Depressions for joints other than bell-and-spigot shall be made in accordance with the recommendations of the joint manufacturer for the particular type of joint used. In general, grading for electrical ductbanks and conduits shall be from building to manhole, and from a high point between manholes to each manhole. Special pipe beds shall be provided as specified hereinafter.

3. The lower 4" of the pipe trenches measuring from an overhead line set parallel to the grade line of the sewer shall be excavated only a few feet in advance to the pipe laying, by men especially skilled in this type of work. Where damage is likely to result from withdrawing sheeting, the sheeting shall be left in place. Except at locations where excavation of rock from the bottom of trenches is required, care shall be taken not to excavate below the depths required. Where rock excavation is required, the rock shall be excavated to a minimum overdepth of 6" below the trench depths specified. The overdepth rock excavation and all excess trench excavation shall be backfilled with sand. Whenever wet or otherwise unstable soil is incapable of properly supporting the pipe is encountered in the trench bottom, such soil shall be removed to a depth and for the trench lengths required, and then backfilled to trench bottom grade, as hereinafter specified, with sand.

4. All grading in the vicinity of excavation shall be controlled to prevent surface ground water from flowing into the excavations. Any water accumulated in the excavations shall be removed by pumping or other acceptable method. During excavation, material suitable for backfilling shall be stacked in an orderly manner a sufficient distance back from edges of trenches to avoid overloading and prevent slides or cave-ins. Material unsuitable for backfilling shall be wasted and removed from the job site as directed by the Construction Inspector.

5. All shoring and sheeting required to perform and protect the excavations and to safeguard employees and/or adjacent structures shall be provided.

6. Excavate as required under the building in order that all piping, ductwork, etc., shall clear the ground a minimum of 12" for a distance of 24" on either side. Edges of such excavations shall slope at an angle of not over 45 degrees with the horizontal unless otherwise approved by the Construction
Inspector. The bottom of such excavation shall be graded to drain in a manner acceptable to the Construction Inspector.

7. Trenches for cast iron drain, storm water and sewer lines inside the building shall be properly excavated, following, in general, the procedures set out for exterior lines. Where floors are to be poured over these lines, they shall be backfilled, tamped and settled with water. Where no flooring is to cover the lines, they shall be backfilled to form a level grade.

8. All surplus materials removed in these trenching operations becomes the property of the contractor, and shall be disposed of at the expense of the contractor, at a legal disposal site, off of the campus.

B. Backfilling:

1. Trenches shall not be backfilled until all required tests are performed and until the piping, utilities systems, etc., as installed are certified by the Owner's Inspector to conform to the requirements specified hereinafter. The trenches shall be carefully backfilled with sand to a depth of 12 inches above the top of the pipe. The next layer and subsequent layers of backfill may be excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand and gravel, soft shale, or other approved materials free from large clods of earth or stones larger than 1 1/2" in diameter, flooded until the pipe has cover of not less than one foot. The remainder of the backfill material shall then be thrown into the trenches, moistened, and tamped or flooded in one foot layers. Blasted rock, broken concrete or pavement, and large boulders shall not be used as backfill material. Any trenches improperly backfilled, or where settlement occurs, shall be reopened to the depth required for proper compaction, then refilled and mounded over, and smoothed off.

2. Backfill under concrete slabs-on-fill shall be as specified above, shall be gravel, or shall be other such materials more suitable for the application. Installation and compaction shall be as required for compatibility with adjacent materials.

C. Opening and Re-closing Pavement and Lawns: Where excavation requires the opening of existing walks, streets, drives, other existing pavement, or lawns, such surfaces shall be cut as required to install new lines and to make new connections to existing lines. The sizes of the cut shall be held to a minimum, consistent with the work to be accomplished. After the installation of the new work is completed and the excavation has been backfilled and flooded, the area shall be patched, using materials to match those cut out. The patches shall thoroughly bond with the original surfaces and shall be level with them, and shall meet all the requirements established by the authorities having jurisdiction over such areas.

D. Excavation in Vicinity of Trees: All trees including low hanging limbs within the immediate area of construction shall be adequately protected to a height of at least 5 ft. to prevent damage from the construction operations and/or equipment. All excavation within the outermost limb radius of all trees shall be accomplished with extreme care. All roots located within this outermost limb radius shall be brought
to the attention of the Construction Inspector before they are cut or damaged in any way. The Construction Inspector will give immediate instructions for the disposition of same. All stumps and roots encountered in the excavation, which are not within the outermost limb radius of existing trees, shall be cut back to a distance of not less than 18" from the outside of any concrete structure or pipeline. No chips, parts of stumps, or loose rock shall be left in the excavation. Where stumps and roots have been cut out of the excavation, clean compacted dry bank sand shall be backfilled and tamped.

END OF SECTION
SECTION 23 05 03 - PIPES AND TUBES FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Pipe and pipe fittings for the following systems:
   1. Refrigerant Piping.
   2. Equipment drains and over flows.

1.2 REFERENCES

A. American Society of Mechanical Engineers:
   1. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
   2. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
   3. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes.
   4. ASME Section IX - Boiler and Pressure Vessel Code - Welding and Brazing Qualifications.

B. ASTM International:

C. American Welding Society:
   1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.
   2. AWS D1.1 - Structural Welding Code - Steel.

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Shop Drawings: Indicate layout of piping systems, including equipment, critical dimensions, and sizes.

C. Product Data: Submit data on pipe materials and fittings. Submit manufacturers catalog information.

D. Welders’ Certificate: Include welders’ certification of compliance with ASME Section IX.
1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ASME Section IX for welding materials and procedures.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years' experience.

B. Installer: Company specializing in performing work of this section with minimum 3 years documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Furnish temporary end caps and closures on piping and fittings. Maintain in place until installation.

B. Protect piping from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not install underground piping when bedding is wet or frozen.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.9 COORDINATION

A. Coordinate installation of buried piping with trenching.

PART 2 PRODUCTS

2.1 EQUIPMENT DRAINS AND OVERFLOWS

A. PVC Pipe: ASTM D1785, Schedule 40, or ASTM D2241, SDR 21 or 26, polyvinyl chloride (PVC) material.
   1. Fittings: ASTM D2466, Schedule 40, PVC.

2.2 UNDERGROUND PIPE MARKERS

A. Manufacturers:
   1. Brady
   2. Hansen
   3. LabelMaster
B. Plastic Ribbon Tape: Bright colored, continuously printed, minimum 2 inches wide by 4 mil thick, manufactured for direct burial service.

C. Detectable Underground Warning Tape: B-721 metal detectable polyester material, with subsurface graphics, bright colored, continuously printed, minimum 6 inches wide with minimum 5 mil foil, manufactured for direct burial service.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify excavations are to required grade, dry, and not over-excavated.

B. Verify trenches are ready to receive piping.

3.2 PREPARATION

A. Ream pipe and tube ends. Remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare piping connections to equipment with flanges or unions.

D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

3.3 INSTALLATION - REFRIGERANT PIPING

A. Install refrigerant piping from unit to condensing unit. Install refrigerant specialties furnished with unit, including shutoff valves at all indoor fan coils and branch selector boxes.

B. Evacuate refrigerant piping and install initial charge of refrigerant.

3.4 INSTALLATION - BURIED PIPING SYSTEMS

A. Establish elevations of buried piping with not less than 12 inches of cover. Refer to trench detail drawings.

B. Place bedding material at trench bottom to provide uniform bedding for piping, level bedding materials in one continuous layer not exceeding 4 inches compacted depth; compact to 95 percent maximum density.

C. Install pipe on prepared bedding.

D. Route pipe in straight line in protective steel sleeve pipe.

E. Install pipe to allow for expansion and contraction without stressing pipe or joints.
F. For metallic pipe, install plastic ribbon tape continuous over top of pipe. Refer to trench detail drawings.

G. Pipe Cover and Backfilling:
   1. Maintain optimum moisture content of fill material to attain required compaction density.
   2. After hydrostatic test, evenly backfill entire trench width by hand placing backfill material and hand tamping in 6 inches compacted layers to 12 inches minimum cover over top of jacket. Compact to 95 percent maximum density.
   3. Evenly and continuously backfill remaining trench depth in uniform layers with backfill material.
   4. Do not use wheeled or tracked vehicles for tamping.

3.5 INSTALLATION - ABOVE GROUND PIPING

A. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

B. Install piping to maintain headroom without interfering with use of space or taking more space than necessary.

C. Group piping whenever practical at common elevations.

D. Sleeve pipe passing through partitions, walls and floors.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

G. Provide access where valves and fittings are not accessible.

H. Install non-conducting dielectric connections wherever jointing dissimilar metals.

I. Establish invert elevations, slopes for drainage as required by authority having jurisdiction and local codes. Maintain gradients.

J. Slope piping and arrange systems to drain at low points.

K. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

L. Insulate piping.

M. Install pipe identification in accordance with Section 23 05 53.

3.6 FIELD QUALITY CONTROL

A. Test refrigerant piping in accordance with VRF manufacturer’s instructions.
3.7 Cleaning

A. After completion, fill, clean, and treat refrigerant piping in accordance with VRF manufacturer’s instructions.

END OF SECTION
SECTION 23 05 29 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Pipe hangers and supports.
   2. Hanger rods.
   3. Inserts.
   4. Sleeves.
   5. Mechanical sleeve seals.
   6. Firestopping relating to HVAC work.
   7. Firestopping accessories.
   8. Equipment bases and supports.

1.2 REFERENCES

A. American Society of Mechanical Engineers:
   1. ASME B31.1 - Power Piping.
   2. ASME B31.5 - Refrigeration Piping.
   3. ASME B31.9 - Building Services Piping.

B. ASTM International:

C. American Welding Society:
   1. AWS D1.1 - Structural Welding Code - Steel.

D. FM Global:

E. Manufacturers Standardization Society of the Valve and Fittings Industry:
   1. MSS SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
   2. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.
   3. MSS SP 89 - Pipe Hangers and Supports - Fabrication and Installation Practices.

F. Underwriters Laboratories Inc.:
   3. UL 1479 - Fire Tests of Through-Penetration Firestops.
   5. UL - Fire Resistance Directory.
G. Intertek Testing Services (Warnock Hersey Listed):
   1. WH - Certification Listings.

1.3 DEFINITIONS

A. Firestopping (Through-Penetration Protection System): Sealing or stuffing material or assembly placed in spaces between and penetrations through building materials to arrest movement of fire, smoke, heat, and hot gases through fire rated construction.

1.4 SYSTEM DESCRIPTION

A. Firestopping Materials: UL 1479 or ASTM E814 to achieve fire ratings as noted on Drawings for adjacent construction, but not less than 1-hour fire rating.

B. Firestop interruptions to fire rated assemblies, materials, and components.

1.5 PERFORMANCE REQUIREMENTS

A. Firestopping: Conform to applicable code for fire resistance ratings and surface burning characteristics.

1.6 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Product Data:
   1. Hangers and Supports: Submit manufacturers catalog data including load capacity.
   2. Firestopping: Submit data on product characteristics, performance and limitation criteria.

1.7 QUALITY ASSURANCE

A. Through Penetration Firestopping of Fire Rated Assemblies: UL 1479 or ASTM E814 with 0.10-inch water gage minimum positive pressure differential to achieve fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.
   1. Wall Penetrations: Fire F-Ratings as indicated on Drawings, but not less than 1-hour.

B. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

C. Perform Work in accordance with AWS D1.1 for welding hanger and support attachments to building structure.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
B. Protect from weather and construction traffic, dirt, water, chemical, and damage, by storing in original packaging.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F.

B. Maintain this minimum temperature before, during, and for minimum 3 days after installation of firestopping materials.

1.10 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.11 WARRANTY

A. Furnish five year manufacturer warranty for pipe hangers and supports.

PART 2 PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

A. Manufacturers:
   1. Carpenter & Paterson Inc.
   2. Creative Systems Inc.
   3. Flex-Weld, Inc.
   4. Glope Pipe Hanger Products Inc.
   5. Michigan Hanger Co.
   7. Substitutions: With engineer approval.
   8.

B. Refrigerant Piping:
   1. Conform to ASME B31.5, MSS SP58, MSS SP69, MSS SP89.
   2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
   3. Hangers for Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.
   4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
   5. Wall Support for Pipe Sizes 3 inches and Smaller: Cast iron hook.
   7. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
   8. Copper Pipe Support: Copper-plated carbon-steel ring.

2.2 ACCESSORIES

A. Hanger Rods: Mild steel threaded both ends, threaded on one end, or continuous threaded.
2.3 SLEEVES

A. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.

B. Sleeves for Ductwork: Galvanized steel.

C. Sealant: Acrylic

2.4 MECHANICAL SLEEVE SEALS

A. Manufacturers:
   1. Thunderline Link-Seal, Inc.
   2. NMP Corporation

B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.5 FORMED STEEL CHANNEL

A. Manufacturers:
   1. Allied Tube & Conduit Corp.
   2. B-Line Systems
   3. Midland Ross Corporation, Electrical Products Division
   4. Unistrut Corp.
   5. Substitutions: Not Permitted.

B. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

2.6 FIRESTOPPING

A. Manufacturers:
   1. Dow Corning Corp.
   2. Fire Trak Corp.
   3. Hilti Corp.
   4. International Protective Coating Corp.
   5. 3M fire Protection Products
   7. Substitutions: Not Permitted.

B. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
   1. Silicone Firestopping Elastomeric Firestopping: [Single] [Multiple] component silicone elastomeric compound and compatible silicone sealant.
   2. Foam Firestopping Compounds: [Single] [Multiple] component foam compound.
3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
7. Firestop Pillows: Formed mineral fiber pillows.

2.7 FIRESTOPPING ACCESSORIES

A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.

B. Dam Material: Permanent:
   1. [Mineral fiberboard.]
   2. [Mineral fiber matting.]
   3. [Sheet metal.]
   4. [Plywood or particle board.]
   5. [Alumina silicate fire board.]

C. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

D. General:
   1. Furnish UL listed products [or products tested by independent testing laboratory].
   2. Select products with rating not less than rating of wall or floor being penetrated.

E. Non-Rated Surfaces:
   1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where piping is exposed.
   2. For exterior wall openings below grade, furnish mechanical sealing device to continuously fill annular space between piping and cored opening or water-stop type wall sleeve.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify openings are ready to receive sleeves.

B. Verify openings are ready to receive firestopping.

3.2 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.
B. Remove incompatible materials affecting bond.

C. Do not drill or cut structural members.

3.3 INSTALLATION - PIPE HANGERS AND SUPPORTS

A. Install in accordance with ASME B31.5, MSS SP58, MSS SP69, MSS SP89.

B. Support horizontal piping as scheduled.

C. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.

D. Place hangers within 12 inches of each horizontal elbow.

E. Use hangers with 1-1/2 inch minimum vertical adjustment.

F. Support vertical piping at every floor.

G. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.

H. Support riser piping independently of connected horizontal piping.

I. Provide copper plated hangers and supports for copper piping.

J. Design hangers for pipe movement without disengagement of supported pipe.

K. Provide clearance in hangers and from structure and other equipment for installation of insulation.

3.4 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

A. Provide housekeeping pads of concrete, minimum 3-1/2 inches thick and extending 6 inches beyond supported equipment.

B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.

C. Construct supports of formed steel channel. Brace and fasten with flanges bolted to structure.

D. Provide rigid anchors for pipes after vibration isolation components are installed.

3.5 INSTALLATION - SLEEVES

A. Exterior watertight entries: Seal with mechanical sleeve seals.

B. Set sleeves in position in forms. Provide reinforcing around sleeves.
C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

D. Extend sleeves through floors 2 inch above finished floor level. Caulk sleeves.

E. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

F. Install chrome plated steel escutcheons at finished surfaces.

3.6 INSTALLATION - FIRESTOPPING

A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, and other items, requiring firestopping.

B. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.

C. Apply firestopping material in sufficient thickness to achieve required fire and smoke rating.

D. Fire Rated Surface:
   1. Seal opening at floor, wall, partition, ceiling, and roof as follows:
      a. Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.
      b. Size sleeve allowing minimum of 1 inch void between sleeve and building element.
      c. Pack void with backing material.
      d. Seal ends of sleeve with UL listed fire resistive silicone compound to meet fire rating of structure penetrated.

   2. Where cable tray, bus, cable bus, conduit, wireway, trough, and penetrates fire rated surface, install firestopping product in accordance with manufacturer's instructions.

E. Non-Rated Surfaces:
   1. Seal opening through non-fire rated wall, partition, and ceiling as follows:
      a. Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.
      b. Size sleeve allowing minimum of 1 inch void between sleeve and building element.
      c. Install type of firestopping material recommended by manufacturer.

   2. Install escutcheons where conduit, penetrates non-fire rated surfaces in occupied spaces. Occupied spaces include rooms with finished ceilings and where penetration occurs below finished ceiling.

   3. Exterior wall openings below grade: Assemble rubber links of mechanical sealing device to size of piping and tighten in place, in accordance with manufacturer's instructions.

   4. Interior partitions: Seal pipe penetrations at laboratories. Apply sealant to both sides of penetration to completely fill annular space between sleeve and conduit.
3.7 FIELD QUALITY CONTROL
   A. Inspect installed firestopping for compliance with specifications and submitted schedule.

3.8 CLEANING
   A. Clean adjacent surfaces of firestopping materials.

3.9 PROTECTION OF FINISHED WORK
   A. Protect adjacent surfaces from damage by material installation.

END OF SECTION
SECTION 23 05 53 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Nameplates.
   2. Tags.
   3. Stencils.
   4. Pipe markers.
   5. Ceiling tacks.
   7. Lockout devices.

1.2 REFERENCES

A. American Society of Mechanical Engineers:

B. National Fire Protection Association:

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Product Data: Submit manufacturers catalog literature for each product required.

C. Shop Drawings: Submit list of wording, symbols, letter size, and color coding for mechanical identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

D. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of tagged valves; include valve tag numbers.

1.5 QUALITY ASSURANCE

A. Conform to ASME A13.1 for color scheme for identification of piping systems and accessories.
1.6 QUALIFICATIONS
   A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years’ experience.
   B. Installer: Company specializing in performing Work of this section with minimum three years’ experience.

1.7 FIELD MEASUREMENTS
   A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.1 NAMEPLATES
   A. Manufacturers:
      1. Craftmark Identification Systems
      2. Safety Sign Co.
      3. Seton Identification Products
   B. Product Description: Laminated three-layer plastic with engraved black letters on light contrasting background color.

2.2 TAGS
   A. Plastic Tags:
      1. Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inches square.
   B. Metal Tags:
      1. Aluminum with stamped letters; tag size minimum 1-1/2 inches square with finished edges.
   C. Information Tags:
   D. Tag Chart: Typewritten letter size list of applied tags and location plastic laminated.

2.3 STENCILS
   A. Stencils: With clean cut symbols and letters of following size:
      1. Up to 2 inches Outside Diameter of Insulation or Pipe: 1/2 inch high letters.
      2. 2-1/2 to 6 inches Outside Diameter of Insulation or Pipe: 1-inch high letters.
      3. Ductwork and Equipment: 3 inch high letters.
2.4 PIPE MARKERS


B. Plastic Pipe Markers:
   1. Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener.

C. Plastic Tape Pipe Markers:
   1. Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

D. Plastic Underground Pipe Markers:
   1. Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.5 CEILING TACKS

A. Description: Steel with 3/4 inch diameter color-coded head.

B. Color code as follows:
   1. HVAC equipment: Yellow.
   2. Fire dampers/smoke dampers: Red.
   3. Plumbing valves: Green.

2.6 LABELS

A. Description: Aluminum, size 1.9 x 0.75 inches, adhesive backed with printed identification.

2.7 LOCKOUT DEVICES

A. Lockout Hasps:
   1. Anodized aluminum hasp with erasable label surface; size minimum 7-1/4 x 3 inches.

B. Valve Lockout Devices:
   1. Nylon device preventing access to valve operator, accepting lock shackle.

PART 3 EXECUTION

3.1 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces for stencil painting.
3.2 INSTALLATION

A. Install identifying devices after completion of coverings and painting.

B. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive.

C. Install labels with sufficient adhesive for permanent adhesion and seal with clear lacquer. For unfinished canvas covering, apply paint primer before applying labels.

D. Install tags using corrosion resistant chain. Number tags consecutively by location.

E. Install underground pipe markers 6 to 8 inches below finished grade, directly above buried pipe.

F. Identify fan coil units, condensing units, and branch selector boxes with nameplates. Identify other small devices with tags.

G. Identify control panels and major control components outside panels with plastic nameplates.

H. Identify valves in main and branch piping with tags.

I. Tag automatic controls, instruments, and relays. Key to control schematic.

J. Identify piping, concealed or exposed, with plastic pipe markers or stenciled painting. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

K. Identify ductwork with plastic nameplates or stenciled painting. Identify with fan coil unit identification number and area served. Locate identification at fan coil unit, at each side of penetration of structure or enclosure, and at each obstruction.

L. Provide ceiling tacks to locate mechanical equipment, valves or dampers above T-bar type panel ceilings. Locate in corner of panel closest to equipment.

END OF SECTION
SECTION 23 05 93 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Testing, adjusting, and balancing of air systems.
   2. Measurement of final operating condition of HVAC systems.

1.2 REFERENCES

A. Associated Air Balance Council:

B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:

C. Natural Environmental Balancing Bureau:
   1. NEBB - Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems.

D. Testing Adjusting and Balancing Bureau:
   1. TABB - International Standards for Environmental Systems Balance.

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Prior to commencing Work, submit proof of latest calibration date of each instrument.

C. Test Reports: Indicate data on NEBB Report forms or TABB Report Forms, and include all information indicated in Schedules.

D. Field Reports: Indicate deficiencies preventing proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.

E. Prior to commencing Work, submit report forms or outlines indicating adjusting, balancing, and equipment data required. Include detailed procedures, agenda, sample report forms and Copy of NEBB Certificate of Conformance Certification or TABB International Quality Assurance program guarantee.

F. Submit draft copies of report for review prior to final acceptance of Project.

G. Furnish reports in electronic PDF format, complete with table of contents page and indexing tabs, with cover identification at front and side. Include set of reduced
drawings with air outlets and equipment identified to correspond with data sheets and indicating thermostat locations.

1.4 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of balancing valves and rough setting.

B. Operation and Maintenance Data: Furnish final copy of testing, adjusting, and balancing report inclusion in operating and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with NEBB Procedural Standards for Testing, Balancing and Adjusting of Environmental Systems or TABB International Quality Assurance program.

1.6 QUALIFICATIONS

A. Agency: Company specializing in testing, adjusting, and balancing of systems specified in this section with minimum three years’ experience Certified by NEBB or TABB.

1.7 SEQUENCING

A. Sequence balancing between completion of systems tested and Date of Substantial Completion.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify systems are complete and operable before commencing work. Verify the following:
1. Systems are started and operating in safe and normal condition.
2. HVAC control systems are installed complete and operable.
3. Proper thermal overload protection is in place for electrical equipment.
4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
5. Duct systems are clean of debris.
6. Fans are rotating correctly.
7. Fire and volume dampers are in place and open.
8. Air coil fins are cleaned and combed.
9. Access doors are closed and duct end caps are in place.
10. Air outlets are installed and connected.
11. Duct system leakage is minimized.

3.2 PREPARATION

A. Furnish instruments required for testing, adjusting, and balancing operations.

B. Make instruments available to Architect/Engineer to facilitate spot checks during testing.

3.3 INSTALLATION TOLERANCES

A. Air Handling Systems: Adjust to within plus or minus 10 percent of design.

B. Outside Air: Adjust to within plus 10 percent of design. Minimum outside air design requirement shall be achieved and no minus percentage tolerance shall be allowed.

C. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

3.4 ADJUSTING

A. Verify recorded data represents actual measured or observed conditions.

B. Permanently mark settings of dampers and other adjustment devices allowing settings to be restored.

C. After adjustment, take measurements to verify balance has not been disrupted. If disrupted, verify correcting adjustments have been made.

D. Report defects and deficiencies noted during performance of services, preventing system balance.

E. Leave systems in proper working order, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

3.5 AIR SYSTEM PROCEDURE

A. Adjust air handling and distribution systems to obtain required or design supply, return, and exhaust air quantities.

B. Make air flow rate measurements in main ducts by Pitot tube traverse of entire cross-sectional area of duct.

C. Measure air quantities at air inlets and outlets.

D. Use volume control devices to regulate air quantities only to extent adjustments do not create objectionable air motion or sound levels. Effect volume control by using volume dampers located in ducts.
E. Vary total system air quantities by adjustment of fan speeds. Vary branch air quantities by damper regulation.

F. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.

G. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across fan. Make allowances for 50 percent loading of filters.

H. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.

I. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.

J. At modulating damper locations, take measurements and balance at extreme conditions.

END OF SECTION
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. HVAC piping insulation, jackets and accessories.
   2. HVAC equipment insulation, jackets and accessories.
   3. HVAC ductwork insulation, jackets, and accessories.

1.2 REFERENCES

A. ASTM International:
   2. ASTM C450 - Standard Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping, and Vessel Lagging.

B. Sheet Metal and Air Conditioning Contractors' :
   1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.

C. Manufacturer's Installation Instructions: Submit manufacturers published literature indicating proper installation procedures.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
1.4 QUALITY ASSURANCE

A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84.

B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.

C. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

D. Duct insulation, Coverings, and Linings: Maximum 25/50 flame spread/smoke developed index, when tested in accordance with ASTM E84, using specimen procedures and mounting procedures of ASTM E 2231.

E. Maintain one copy of each document on site.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

B. Applicator: Company specializing in performing Work of this section with minimum three years documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

B. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.9 WARRANTY

A. Furnish five year manufacturer warranty for all products.

PART 2 PRODUCTS

2.1 PIPE INSULATION

A. TYPE CF: ASTM C534, Type I, flexible, closed cell elastomeric insulation, tubular.
1. Thermal Conductivity: 0.27 at 75 degrees F.
2. Operating Temperature Range: Range: Minus 70 to 220 degrees F.

B. TYPE CF (for high temperature refrigerant lines): ASTM C534, Type I, flexible, closed cell elastomeric insulation, tubular.
1. Thermal Conductivity: 0.27 at 75 degrees F.
2. Maximum Service Temperature: 300 degrees F.
3. Operating Temperature Range: Range: Minus 58 to 300 degrees F.

2.2 PIPE INSULATION JACKETS

A. Vapor Retarder Jacket:
1. ASTM C921, white Kraft paper with glass fiber yarn, bonded to aluminized film.
2. Water Vapor Permeance: ASTM E96/E96M; 0.02 perms.

B. PVC Plastic Pipe Jacket:
1. Product Description: ASTM D1785, One piece molded type fitting covers and sheet material, off-white color.
2. Thickness: 15 mil.

C. Aluminum Pipe Jacket:
1. ASTM B209.
2. Thickness: 0.016 inch thick sheet.
3. Finish: Stucco embossed finish with factory-applied vapor barrier.
5. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
6. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.

2.3 PIPE INSULATION ACCESSORIES

A. Vapor Retarder Lap Adhesive: Compatible with insulation.

B. Covering Adhesive Mastic: Compatible with insulation.

C. Piping 1-1/2 inches diameter and smaller: Galvanized steel insulation protection shield. MSS SP-69, Type 40. Length: Based on pipe size and insulation thickness.

D. Piping 2 inches diameter and larger: Wood insulation saddle, hard maple. Inserts length: not less than 6 inches long, matching thickness and contour of adjoining insulation.


F. Adhesives: Compatible with insulation.
2.4 DUCTWORK INSULATION

A. TYPE DWF: ASTM C1290, Type III, flexible glass fiber, commercial grade with factory applied reinforced aluminum foil jacket meeting ASTM C1136, Type II.
   1. Thermal Conductivity: 0.30 at 75 degrees F.
   2. Maximum Operating Temperature: 250 degrees F.
   3. Density: 0.75 pound per cubic foot.

B. TYPE DWCCF: ASTM C534, Type II, flexible, closed cell elastomeric insulation, sheet.
   1. Thermal Conductivity: 0.27 at 75 degrees F.
   2. Service Temperature Range: Range: Minus 20 to 220 degrees F.

2.5 DUCTWORK INSULATION JACKETS

A. Vapor Retarder Jacket:
   1. Kraft paper with glass fiber yarn and bonded to aluminized film.
   2. Water Vapor Permeance: ASTM E96/E96M; 0.02 perms.
   3. Secure with pressure sensitive tape.

2.6 DUCTWORK INSULATION ACCESSORIES

A. Vapor Retarder Tape:
   1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

B. Vapor Retarder Lap Adhesive: Compatible with insulation.

C. Adhesive: Waterproof type.

D. Liner Fasteners: Galvanized steel, self-adhesive pad with integral head.

E. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.

F. Lagging Adhesive: Fire retardant type with maximum 25 flame spread/smoke developed index when tested in accordance with ASTM E84.

G. Impale Anchors: Galvanized steel, 12 gage self-adhesive pad.

H. Adhesives: Compatible with insulation.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify piping and ductwork has been tested before applying insulation materials.

B. Verify surfaces are clean and dry, with foreign material removed.
3.2 INSTALLATION - PIPING SYSTEMS

A. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.

B. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide intumescent firestopping when continuing insulation through assembly. Finish at supports, protrusions, and interruptions.

C. Closed Cell Elastomeric Insulation:
   1. Push insulation on to piping.
   2. Miter joints at elbows.
   3. Seal seams and butt joints with manufacturer's recommended adhesive.
   4. When application requires multiple layers, apply with joints staggered.
   5. Insulate fittings and valves with insulation of like material and thickness as adjacent pipe.
   6. Cover with aluminum jacket.

D. Piping Exterior to Building: Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor retarder cement. Cover with aluminum jacket with seams located at 3 or 9 o'clock position on side of horizontal piping with overlap facing down to shed water or on bottom side of horizontal piping.

E. Buried Piping: Insulate only with a product that the insulation manufacturer recommends for use in trench, tunnel or direct buried. Install factory fabricated assembly with inner all-purpose service jacket with self-sealing lap, and asphalt impregnated open mesh glass fabric, with 1 mil thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with polyester film.

F. Prepare pipe insulation for finish painting.

3.3 INSTALLATION - DUCTWORK SYSTEMS

A. Duct dimensions indicated on Drawings are finished inside dimensions.

B. Insulated ductwork conveying air below ambient temperature:
   1. Provide insulation with vapor retarder jackets.
   2. Finish with tape and vapor retarder jacket.
   3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
   4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.

C. External Glass Fiber Duct Insulation:
   1. Secure insulation with vapor retarder with wires and seal jacket joints with vapor retarder adhesive or tape to match jacket.
   2. Secure insulation without vapor retarder with staples, tape, or wires.
3. Install without sag on underside of ductwork. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift ductwork off trapeze hangers and insert spacers.

4. Seal vapor retarder penetrations by mechanical fasteners with vapor retarder adhesive.

5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

D. External Elastomeric Duct Insulation:
   1. Adhere to clean oil-free surfaces with full coverage of adhesive.
   2. Seal seams and butt joints with manufacturer’s recommended adhesive.
   3. When application requires multiple layers, apply with joints staggered.
   4. Insulate standing metal duct seams with insulation of like material and thickness as adjacent duct surface. Apply adhesive at joints with flat duct surfaces.
   5. Lift ductwork off trapeze hangers and insert spacers.

E. Prepare duct insulation for finish painting.

END OF SECTION
SECTION 23 31 00 - HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Duct Materials.
   2. Flexible ducts.
   3. Ductwork fabrication.
   4. Duct cleaning.

1.2 REFERENCES

A. ASTM International:
   2. ASTM A90/A90M - Standard Test Method for Weight Mass of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
   3. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

B. National Fire Protection Association:
   2. NFPA 90B - Standard for the Installation of Warm Air Heating and Air Conditioning Systems.

C. Sheet Metal and Air Conditioning Contractors:
   2. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.
   3. SMACNA - Round Industrial Duct Construction Standards

D. Underwriters Laboratories Inc.:
   1. UL 181 - Factory-Made Air Ducts and Connectors.

1.3 PERFORMANCE REQUIREMENTS

A. Variation of duct configuration or sizes other than those of equivalent or lower loss coefficient is not permitted except by written permission. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts.

1.4 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 - General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Shop Drawings: Submit duct fabrication drawings, drawn to scale not smaller than 1/8 inch equals 1 foot, on drawing sheets same size as Contract Documents, indicating:
1. Duct layout.
2. Penetrations through fire rated and other walls.

C. Product Data: Submit data for duct materials and duct liner.

D. Test Reports: Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate, following SMACNA HVAC Air Duct Leakage Test Manual.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with SMACNA - HVAC Duct Construction Standards - Metal and Flexible.

B. Construct ductwork to NFPA 90A and NFPA 90B standards.

C. Manufacturers: Companies specializing in manufacturing products specified in this section with minimum three years’ experience.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not install duct sealant when temperatures are less than those recommended by sealant manufacturers.

B. Maintain temperatures during and after installation of duct sealant.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.1 DUCT MATERIALS

A. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality, having G60, zinc coating in conformance with ASTM A90/A90M.

B. Fasteners: Rivets, bolts, or sheet metal screws.

C. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.2 SINGLE WALL SPIRAL ROUND DUCTS

A. Product Description: UL 181, Class 1, round spiral lockseam duct constructed of galvanized steel, with pressure ratings as shown on plans.
B. Construct duct and fittings with minimum gage thickness per SMACNA HVAC Duct Construction Standards for Metal and Flexible duct.

2.3 DUCTWORK FABRICATION (BY CONTRACTOR)

A. Fabricate and support rectangular ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and as indicated on Drawings. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

B. Fabricate and support round ducts with longitudinal seams in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible (Round Duct Construction Standards), and as indicated on Drawings. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

C. Construct T's, bends, and elbows with minimum radius 1-1/2 times centerline duct width. Where not possible and where rectangular elbows are used, provide airfoil turning vanes. Where acoustical lining is indicated, furnish turning vanes of perforated metal with glass fiber insulation.

D. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

E. Fabricate continuously welded round and oval duct fittings two gages heavier than duct gages indicated in SMACNA Standard. Minimum 4 inch cemented slip joint, brazed or electric welded. Prime coat welded joints.

F. For rectangular duct, use 45 degree tap per SMACNA requirements.

G. For round duct, provide standard 45-degree lateral wye takeoffs. When space does not allow 45-degree lateral wye takeoff, use 90-degree conical tee connections.

H. Seal joints between duct sections and duct seams with welds, gaskets, mastic adhesives, mastic plus embedded fabric systems, or tape.
   1. Sealants, Mastics and Tapes: Conform to UL 181A. Provide products bearing appropriate UL 181A markings.
   2. Do not provide sealing products not bearing UL approval markings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify sizes of equipment connections before fabricating transitions.

3.2 INSTALLATION

A. Install ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible. All ductwork to be seal class A in accordance with SMACNA HVAC Air Duct Leakage Test Manual.
B. During construction, install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

C. Use crimp joints with or without bead or beaded sleeve couplings for joining round duct sizes 8 inch and smaller.

D. Use double nuts and lock washers on threaded rod supports.

E. Connect flexible ducts to metal ducts with draw bands.

F. Set plenum doors 6 to 12 inches above floor. Arrange door swing so fan static pressure holds door in closed position.

3.3 INTERFACE WITH OTHER PRODUCTS

A. Install openings in ductwork where required to accommodate thermometers and controllers. Install pitot tube openings for testing of systems. Install pitot tube complete with metal can with spring device or screw to prevent air leakage. Where openings are provided in insulated ductwork, install insulation material inside metal ring.

B. Connect diffusers to low pressure ducts with five feet maximum length of flexible duct held in place with strap or clamp.

C. Connect air outlets and inlets to supply ducts directly or with five foot maximum length of flexible duct. Do not use flexible duct to change direction.

3.4 CLEANING

A. Clean duct system and force air at high velocity through duct to remove accumulated dust. To obtain sufficient air flow, clean one half of system completely before proceeding to other half. Protect equipment with potential to be harmed by excessive dirt with temporary filters, or bypass during cleaning.

3.5 TESTING

A. For ductwork designed for 3 inches w.c. above ambient, pressure test minimum 25 percent of ductwork after duct cleaning, but before duct insulation is applied or ductwork is concealed.

1. Test in accordance with SMACNA HVAC Air Duct Leakage Test Manual.

END OF SECTION
SECTION 23 34 00 - HVAC FANS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Roof ventilators.

1.2 REFERENCES

A. American Bearing Manufacturers Association:
   1. ABMA 9 - Load Ratings and Fatigue Life for Ball Bearings.
   2. ABMA 11 - Load Ratings and Fatigue Life for Roller Bearings.

B. Air Movement and Control Association International, Inc.:
   2. AMCA 204 - Balance Quality and Vibration Levels for Fans.
   5. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data.

C. National Electrical Manufacturers Association:
   1. NEMA MG 1 - Motors and Generators.
   2. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Shop Drawings: Indicate size and configuration of fan assembly, mountings, weights, ductwork and accessory connections.

C. Product Data: Submit data on each type of fan and include accessories, fan curves with specified operating point plotted, power, RPM, sound power levels for both fan inlet and outlet at rated capacity, electrical characteristics and connection requirements.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

1.5 QUALITY ASSURANCE

A. Performance Ratings: Conform to AMCA 210 and bear AMCA Certified Rating Seal.
B. Sound Ratings: AMCA 301, tested to AMCA 300, and bear AMCA Certified Sound Rating Seal.

C. Balance Quality: Conform to AMCA 204.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect motors, shafts, and bearings from weather and construction dust.

1.7 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.8 EXTRA MATERIALS

A. Furnish two sets of belts for each fan.

PART 2 PRODUCTS

2.1 MANUFACTURERS

1. Greenheck Corp.
2. Loren Cook Company.
3. Twin City Fan and Blower.
4. PennBarry.
5. Substitution: With engineer approval

2.2 CENTRIFUGAL FANS

A. Performance:
1. Temperature Limit: Maximum 300 degrees F.
2. Static and Dynamic Balance: Eliminate vibration or noise transmission to occupied areas.

B. Wheel and Inlet:
1. Airfoil Wheel: Steel construction with smooth curved inlet flange, back plate die formed hollow airfoil shaped blades continuously welded at tip flange, and back plate; cast iron or cast steel hub riveted to back plate and keyed to shaft with set screws.

C. Housing:
1. Steel, spot welded for AMCA 99 Class I and II fans, and continuously welded for Class III, braced, designed to minimize turbulence with spun inlet bell and shaped cut-off.
2. Factory finish before assembly to manufacturer's standard.

D. Bearings and Sleeves:
1. Bearings: Pillow block type, self-aligning, grease-lubricated roller bearings, or ABMA 11, L-10 life at 120,000 hours.
2. Shafts: Hot rolled steel, ground and polished, with key way, protectively coated with lubricating oil, and shaft guard.
3. Belt Guard: Fabricate to SMACNA Standard; 0.106 inch thick, 3/4 inch diamond mesh wire screen welded to steel angle frame or equivalent, prime coated. Secure to fan or fan supports without short circuiting vibration isolation, with provision for adjustment of belt tension, lubrication, and use of tachometer with guard in place.

E. Accessories:
1. Discharge Dampers: Opposed blade steel damper assembly with blades constructed of two plates formed around and welded to shaft, channel frame, sealed ball bearings, with blades linked out of air stream to single control lever.
2. Inlet/Outlet Screens: Galvanized steel welded grid.
3. Access Doors: Shaped to conform to scroll, with quick opening latches and gaskets.
4. Scroll Drain: 1/2 inch steel pipe coupling welded to low point of fan scroll.
5. Vibration isolators: restrained isolators to allow 1 inch deflection

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify roof curbs are installed and dimensions are as instructed by manufacturer.

3.2 INSTALLATION

A. Secure fans with cadmium plated steel lag screws to structure.
B. Install backdraft dampers on inlet to exhaust fans.
C. Install safety screen where inlet or outlet is exposed.
D. Pipe scroll drains to nearest floor drain.
E. Install backdraft dampers on discharge of exhaust fans.
F. Provide sheaves required for final air balance.

3.3 CLEANING

A. Vacuum clean coils and inside of fan cabinet.

3.4 DEMONSTRATION

A. Demonstrate fan operation and maintenance procedures.

3.5 PROTECTION OF FINISHED WORK

A. Do not operate fans for until ductwork is clean, filters in place, bearings lubricated, and fan has been test run under observation.
END OF SECTION
SECTION 23 81 27 – VARIABLE REFRIGERANT FLOW SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. VRF indoor fan coil units.
   2. VRF outdoor condensing units.
   3. Branch selector boxes.

1.2 REFERENCES

A. Air-Conditioning and Refrigeration Institute:
   1. ARI 270 - Sound Rating of Outdoor Unitary Equipment.
   3. ARI 365 - Commercial and Industrial Unitary Air-Conditioning Condensing Units.

B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:
   1. ASHRAE 52.2 – Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.

C. ASTM International:

D. National Electrical Manufacturers Association:
   1. NEMA MG 1 - Motors and Generators.

E. National Fire Protection Association:

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Product Data: Submit data indicating:
   1. Cooling and heating capacities.
   2. Efficiencies.
   3. Dimensions.
   4. Weights.
   5. Rough-in connections and connection requirements.
   6. Duct connections.
   7. Electrical requirements with electrical characteristics and connection requirements.
8. Controls.

C. Manufacturer's Installation Instructions: Submit assembly, support details, connection requirements, and include start-up instructions.

D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

E. Manufacturer's Field Reports: Submit start-up report for each unit.

1.4 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of controls installed remotely from units.

B. Operation and Maintenance Data: Submit manufacturer's descriptive literature, operating instructions, installation instructions, and maintenance and repair data.

1.5 QUALITY ASSURANCE

A. Performance Requirements: Refer to mechanical schedules.

B. Cooling Capacity: Rate in accordance with ARI 340/360 or ARI 365. Testing standard varies with equipment type.

C. Sound Rating: Measure in accordance with ARI 270.

D. Insulation and adhesives: Meet requirements of NFPA 90A.

E. Perform Work in accordance with applicable local, state, and federal standards.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Accept units and components on site in factory protective containers, with factory shipping skids and lifting lugs. Inspect for damage.

B. Comply with manufacturer's installation instruction for rigging, unloading and transporting units.

C. Protect units from weather and construction traffic by storing in dry, roofed location.
1.8 COORDINATION

A. Coordinate installation of condensing units with concrete pad.

B. Coordinate installation of air handling units with building structure.

1.9 MAINTENANCE MATERIALS

A. Furnish two sets of filters for all indoor units; one set for use during construction, and one set to be installed at Substantial Completion.

PART 2 PRODUCTS

2.1 VARIABLE REFRIGERANT FLOW UNITS

A. Manufacturers:
   1. Daikin
   2. Trane
   3. Mitsubishi
   4. Substitution: With engineer approval

B. Product Description: Multiple zone VRF system consisting of multiple indoor fan coil units and condensing unit including cabinet, evaporator fan, refrigerant cooling coil, variable speed compressors, electric heating coil (where shown on schedules), air filters, controls, fan coil unit accessories, condensing unit accessories, and refrigeration specialties.

2.2 INDOOR FAN COIL UNIT

A. Configuration: As indicated on Drawings.

B. Cabinet:
   1. Panels: Constructed of galvanized steel with baked enamel finish.
   2. Insulation: Manufacturer's standard, factory-applied to each surface to insulate entire cabinet.

C. Evaporator Fan: Forward curved centrifugal type, direct drive with high efficiency motor complying with NEMA MG1, Type 1. Motor permanently lubricated with built-in thermal overload protection.

D. Evaporator Coil: Constructed of copper tubes expanded onto aluminum fins. Factory leak tested under water. Removable, PVC construction, double-sloped drain pan with piping connections on both sides. Provide float switch to disable fan and auxiliary drain pan.


F. Electric Heating Coil: Helical nickel-chrome resistance wire coil heating elements with refractory ceramic support bushings easily accessible with automatic reset thermal...

G. Air Filters: 2 inch thick pleated glass fiber disposable media in metal frames. Minimum MERV of 6 prescribed by ASHRAE 62.1 when rated in accordance with ASHRAE 52.2.

H. Fan Coil Unit Accessories:
   1. Return air plenum: Refer to mechanical plan drawings.
   2. Supports and hangers for suspended installation.
   3. Auxiliary drain pan with float switch.
   4. Wired, 7-day programmable, wall-mounted thermostat for each fan coil unit.

2.3 CONDENSING UNIT

A. Unit Casings: Exposed casing surfaces constructed of galvanized steel with manufacturer's standard baked enamel finish. Designed for outdoor installation and complete with weather protection for components and controls, and complete with removable panels for required access to compressors, controls, and condenser fans.

B. Compressor: Variable speed scroll type compressors, resiliently mounted, with positive lubrication, and internal motor overload protection.

C. Condenser Coil: Constructed of copper tubing mechanically bonded to aluminum fins, factory leak and pressure tested.

D. Controls: Furnish operating and safety controls including high and low pressure cutouts. Control transformer. Internal controls shall control the compressor variable speed drives and condenser fan ECM speeds.


F. Condensing Unit Accessories: Furnish the following accessories:
   1. Controls to provide low ambient cooling to 0 degrees F.
   2. Disconnect switch.
   3. Condenser Coil Guard: Expanded or louvered metal. Wire mesh not acceptable.

G. Refrigeration specialties: Furnish the following:
   1. Full charge of compressor oil.
   2. Full charge of refrigerant.
   3. Replaceable core type filter drier.
   4. Shut-off valves on suction and liquid piping.
   5. Liquid line solenoid valve.
   6. Charging valve.
   7. Pressure relief device.

H. Refrigerant: Furnish complete charge of refrigerant.
2.4 CONTROLS

A. Thermostat: 7-day programmable electronic space thermostat with automatic changeover and heating setback and cooling setup capability. Furnish system selector switch off-heat-auto-cool and fan control switch, auto-on.

2.5 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Electrical Characteristics: As indicated in Drawings.

B. Disconnect Switch: Factory mounted, non-fused type, interlocked with access door, accessible from outside unit, with power lockout capability. Sizes and NEMA ratings indicated on Drawings. Each indoor fan coil unit and outdoor condensing unit shall be provided with a disconnect switch.

2.6 BRANCH SELECTOR BOXES

A. Furnish quantity as shown on the Drawings, or as required for system operation.

B. Furnish internally-insulated branch selector boxes. If not internally insulated, provide a condensate drain connection and route to nearest sanitary waste line. Submit proposed condensate line routing to Engineer for approval.

C. Provide each branch selector box with the appropriate number of ports/connections as required for system operation and functionality.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify concrete pad for condensing unit is ready for unit installation.

3.2 INSTALLATION – FAN COIL UNIT

A. Install floor-mounted units on concrete housekeeping pads at least 3-1/2 inches high and 6 inches wider than unit.

B. Connect fan coil units to supply and return ductwork with flexible connections. Transition as necessary to existing ductwork. Refer to Drawings.

C. Install condensate piping with trap and route from drain pan to location indicated on Drawings.

D. Install components furnished loose for field mounting.

E. Install connection to electrical power wiring.

3.3 INSTALLATION - CONDENSING UNIT

A. Install condensing units on vibration isolators.
B. Install units on concrete foundations.

C. Install refrigerant piping from unit to condensing unit. Install refrigerant specialties furnished with unit.

D. Evacuate refrigerant piping and install initial charge of refrigerant.

E. Install electrical devices furnished loose for field mounting.

F. Install control wiring between air handling unit, condensing unit, and field installed accessories.

G. Install connection to electrical power wiring.

3.4 INSTALLATION - BRANCH SELECTOR BOXES

A. Install per manufacturer’s installation instructions.

B. Install a shutoff valve on each refrigerant line (supply and return) to each fan coil for isolating each fan coil and the branch selector box.

3.5 MANUFACTURER’S FIELD SERVICES

A. Furnish initial start-up and shutdown during first year of operation, including routine servicing and checkout.

3.6 CLEANING

A. Vacuum clean coils and inside of unit cabinet.

B. Install temporary filters during construction period. Replace with permanent filters at Substantial Completion.

3.7 DEMONSTRATION

A. Demonstrate air handling unit operation and maintenance.

B. Demonstrate starting, maintenance, and operation of condensing unit.

C. Furnish services of manufacturer’s technical representative for one 8-hour day to instruct Owner’s personnel in operation and maintenance of units. Schedule training with Owner, provide at least 7 days’ notice to Architect/Engineer of training date.

3.8 PROTECTION OF FINISHED WORK

A. Do not operate air handling units until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

END OF SECTION
SECTION 26 00 00 - ELECTRICAL GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes general electrical work requirements, such as:
   1. Summary of Scope of Work
   2. Submittal, qualifications, quality assurance, & warranty requirements
   3. Storage and handling requirements
   4. Coordination requirements
   5. Safety requirements
   6. Shoring and supporting requirements
   7. Temporary construction power and lighting

B. The scope of work shall include complete provisions for electrical power distribution to all lighting, devices, appliances, and equipment shown on the construction documents.
   1. Provisions include, but are not limited to, all supplies, materials, equipment, tools, and labor.
   2. Provisions also include all miscellaneous materials required to complete the work shown including, but not limited to, supports, hangers, raceways, boxes, sleeves, seals, equipment pads, wiring connectors, terminals, labels, signs, and markers
   3. The construction documents include all plans, elevations, details, diagrams, schedules, and notes on the drawings and the written specifications including any items mentioned in either the specifications or on the drawings but not in the other.
   4. Where used on the plans and in the specifications and where not specifically noted otherwise, the term “provide” and the term “install” shall mean furnish, install, connect, and test.
   5. Unless explicitly noted “by others” or “existing”, all items shown graphically or specified by notes and details on the plans shall be furnished, installed, connected, and tested as needed.

C. In addition to the general scope described above, the work shall include:
   2. Equipment rental.
   3. Temporary construction power and lighting. GFCI receptacles shall be used for all construction power.
   4. Provisions for maintaining the functionality of existing to remain building communications, fire alarm, security/access control, public address, and bell systems that will be affected by the work.

D. The intent of the drawings and specifications is to set forth the general requirements and equipment necessary for the functioning of the electrical system. The drawings and specifications do not provide a complete list of materials and work required. All miscellaneous electrical components required by good practice and workmanship for the complete installation of the electrical system shall be provided by the contractor.
E. The electrical contractor shall be responsible for all controls raceways and boxes to serve devices and equipment shown or described on the construction documents even where such devices and equipment will be provided by a specialist contractor and/or a contractor working directly for the owner such as communications, fire alarm, HVAC controls, security/access control.
1. Unless noted otherwise, all control wiring shall be by specialist contractor.
2. Electrical contractor shall be responsible for 120 through 480V power required for controls systems such as fire alarm panels and extension panels, server racks, HVAC equipment 120V control and maintenance circuits, etc.

F. Related Sections:
1. This and all other division 26 specifications, the construction drawings, general contract provisions, and division 1 specifications shall be considered collectively as the total general requirements for the electrical equipment and electrical system installation and all special systems shown or described on the electrical or “E series” sheets.

1.2 REFERENCES

A. Materials, equipment, and the work performed shall comply with current requirements, rules and regulations of and, where applicable, be certified by the following standards, codes and organizations:
1. American National Standards Institute (ANSI)
3. Americans with Disabilities Act (ADA)
4. ASHRAE/IES 90.1
5. Institute of Electrical and Electronics Engineers (IEEE)
9. National Electrical Manufacturer's Code (NEMA)
11. National Fire Protection Associations (NFPA)
13. Underwriter's Association (UL)
14. Where discrepancies are found between the requirements of these standards codes, ordinances, regulations and the drawings and specifications, the contractor should notify the engineer prior to installation. Installed work that fails to comply with the requirements of the above shall be replaced at contractor's expense.

1.3 DEFINITIONS

A. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, shall be as defined in IEEE Std 100.

B. The technical sections referred to herein are those specification sections that describe products, installation procedures, and equipment operations and that refer to this section for detailed description of submittal types.
C. The technical paragraphs referred to herein are those paragraphs in PART 2 - PRODUCTS and PART 3 - EXECUTION of the technical sections that describe products, systems, installation procedures, equipment, and test methods.

1.4 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Submittal requirements shown here shall be used in conjunction with the requirements of the other specification sections. Where in conflict, the more stringent requirements shall apply.

C. Submit the following:
   1. Permitting, inspection, and final acceptance certifications from the authority having jurisdiction.

D. For each product required to be submitted, provide the following
   1. Product Data: Submit catalog data showing manufacturer’s name and contact information, all standard features, dimensions, weights, listings and product labels, material types, finishes and clearly indicating which optional features will be provided.
      a. Include amperage and voltage ratings, over-current protective device ratings, AIC ratings, etc.
      b. Where multiple sizes are listed, indicate sizes to be used.
      c. Where multiple products are shown on the same page, indicate which products to be used.
   2. Shop Drawings (where applicable): Manufacturer or contractor prepared drawings showing all relevant dimensions, weights, electrical and mechanical connection requirements, conduit entry points, assembly requirements, lifting requirements, lifting points, and required clearances.
      a. Include dimensioned plan views and elevations.
      b. Include all relevant electrical diagrams including schematic and interconnection diagrams for power, signal, and control wiring.

E. Submittals shall be organized by specification section, provided with a table of contents, and a cover page with all pertinent project information including contractor’s name and contact information, project name and number, and specification sections submitted.

F. Rejected submittals shall be resubmitted promptly, so as to avoid delay, until submittal approval; in a manner in keeping with the Texas Parks and Wildlife Department 2015 Uniform General Conditions.

G. Any equipment covered by Division 26 specifications that is installed by the contractor without submittal approval and is not in compliance with the appropriate specifications shall be replaced at the contractor’s expense.

A. As-Built Record Drawings: See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions. The Contractor shall maintain a master set of As-Built Record Drawings.
that show changes and any other deviations from the drawings. The markups must be made as the changes are done. At the conclusion of the job, these As-Built Record Drawings shall be transferred to AutoCAD electronic files, in a format acceptable to the Owner, and shall be complete and delivered to the TPWD Construction Manager prior to final acceptance.

1.5 CLOSEOUT SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. At the end of construction, provide a closeout submittal containing the following information in addition to items specified in other sections.
   1. As built drawings showing the actual locations of installed equipment, site raceways and boxes, and feeders rated 100A or more and concealed behind walls or in slabs.
   3. Shop Drawings
   4. Test results
   5. Actual circuit arrangements at panels and equipment. Provide complete, typed as built of all panel schedules.

C. Operation and Maintenance Data: At the end of construction, provide the owner with an 8.5x11 bound manual including the following information:
   1. Provide product data as defined under submittals.
   2. Provide manufacturer’s installation and maintenance instructions for normal operation, routine maintenance and testing, and emergency maintenance procedures.
   3. Spare parts listing; source of replacement parts and supplies; and recommended maintenance procedures and intervals.

D. Shop Drawings: At end of construction, provide owner with a final draft, new copy of all shop drawings that were field modified after the original submittal was approved.

1.6 QUALIFICATIONS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Manufacturer: Company specializing in manufacturing products shown on the construction documents with minimum three years documented experience.
   1. Manufacturer shall maintain or certify an independently operated service center capable of providing training, support, parts, and maintenance services.

C. Supplier: Authorized distributor

D. Installer: A state licensed electrician with documented experience installing all equipment specified here in shall directly supervise all work. Where noted in the specifications, required by code, or required by the manufacturer, installer shall be a manufacturer trained and/or certified installer of the specific product to be installed.
E. Testing Agency: Where required by the construction documents, equipment manufacturer, or code; testing shall be performed by an agency
1. With the documented experience and properly calibrated, fully functioning equipment.
2. That is a member company of the International Electrical Testing Association or is a nationally recognized testing laboratory (NRTL).
3. That is acceptable to the authority having jurisdiction.
4. Testing may be required to be performed by an independent agency. Refer to individual specification sections for detailed testing requirements.

1.7 QUALITY ASSURANCE

A. Inclusion of specific products in these specifications and on the plans, does not mean that said products may be used for all applications in all environments. Products may only be used where approved either in the specification installation requirements sections or on the plans. Where the construction documents do no explicitly state what products are acceptable for an application, the most robust products specified are assumed to be the minimum requirement.

B. Regulatory Requirements
1. The contractor shall comply with the requirements of all laws, rules, regulations, code and ordinances that have been adopted by the federal, state, and local authorities having jurisdiction (AHJ). All equipment, materials, means and methods shall be acceptable to the AHJ’s.
2. Electrical installations shall conform to IEEE C2, NFPA 70, local codes and specified requirements herein. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.
3. In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears.

C. Standard Products
1. Unless otherwise approved, all equipment shall be new, properly designed, from a reputable manufacturer meeting the specification qualifications, in compliance with the specification requirements, and in full working order.
2. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in the technical section.
3. Listing and Labeling: Where required, all electrical components, devices, and accessories shall be listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction and marked for the intended use. Testing agency shall be UL unless noted otherwise or pre-approved by owner and AHJ.
4. Products shall have been in satisfactory commercial or industrial use prior to bid opening. The minimum time of use shall be 2 years. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. Longer periods may be specified for specific products. The product shall have been on sale on the commercial market through advertisements, manufacturers’ catalogs, or brochures during the 2-year period.
D. Alternative Qualifications
   1. Products having less than a 2-year field service record will be acceptable if a
certified record of satisfactory field operation for not less than 6000 hours,
exclusive of the manufacturers’ factory or laboratory tests, is furnished.

E. Material and Equipment Manufacturing Date
   1. Products manufactured more than 2 years prior to date of delivery to site shall
not be used, unless specified otherwise.

F. All equipment used for testing shall be in full working order and calibrated per the
manufacturer’s recommendations.

1.8 WARRANTY

A. The equipment items shall be supported by local service agencies who can respond
in a manner consistent with Texas Parks and Wildlife Department Division 1 –
General Requirements, Section 01000 Special Conditions, and 2015 Uniform General
Conditions to render satisfactory service to the equipment on a regular and
emergency basis during the warranty period of the contract.

1.9 COORDINATION

A. All power outages shall be coordinated in writing with the Owner a minimum of two
(2) weeks prior to the outage.

B. If the owner will occupy any portion of the facility during any period of construction,
cooperate fully with the owner or his representative during construction operations to
minimize conflicts and to facilitate owner usage so as not to interfere with the
owner’s operations.

C. The drawings are diagrammatic. They do not show switches, power and data
outlets, special systems components (FA, Access Control, AV, etc), electrical
equipment, equipment connections, required raceways, etc. in their exact
dimensioned locations. The contractor must carefully review the architectural,
structural, mechanical, plumbing, fire protection, and special systems plans to
identify conflicts and areas that require coordination.

D. Coordinate electrical and special systems equipment rough in with millwork, signs,
mechanical and plumbing systems, sprinkler systems, architectural and structural
elements, and the owner’s representative. Minor changes in electrical equipment
locations and layout that are required by site conditions or order by the design team
prior to performance of work shall be made by the contractor without additional
charges to the owner.

E. Maintain required NEC working space and dedicated equipment spaces around all
electrical equipment, control panels, etc that are subject to maintenance, testing, or
user interface. Coordinate with other trades prior to installation. If clearance cannot
be provided, the contractor shall notify the engineer prior to rough-in.

F. Coordinate color selections for luminaires and all device plates with Owner and
Engineer.
G. Contractor shall be responsible for field coordinating with other trades.

H. Coordinate arrangement, mounting, and support of electrical equipment:
   1. To allow maximum possible headroom unless specific mounting heights that
      reduce headroom are indicated.
   2. To provide for ease of disconnecting the equipment with minimum interference
      to other installations.
   3. To allow right of way for piping and conduit installed at required slope.
   4. So, connecting raceways, cables, wireways, cable trays, and busways will be
      clear of obstructions and of the working and access space of other equipment.
   5. To allow for the appropriate installation of furniture and equipment relative to
      receptacles and switches.

I. Coordinate installation of required supporting devices and set sleeves in cast-in-place
   concrete, masonry walls, and other structural components as they are constructed.

J. Coordinate location of access panels and doors for electrical items that are behind
   finished surfaces or otherwise concealed.

K. Coordinate sleeve selection and application with architect and structural engineer.

L. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and
   manufacturer's instructions for equipment furnished under other sections.

M. Determine connection locations and requirements.

N. Sequence rough-in of electrical connections to coordinate with installation of
   equipment.

O. Sequence electrical connections to coordinate with start-up of equipment.

1.10 DELIVERY STORAGE AND HANDLING

A. Store in clean, dry space located above grade and protect from dirt, water,
   construction debris, traffic, freeze, and where applicable, deterioration from sun
   light.

B. Maintain factory wrapping or provide additional canvas or plastic cover for all large
   electrical equipment. Follow all manufacturer recommendations for humidity and
   max/min temperatures for storing electrical equipment.

1.11 SAFETY

A. The Contractor shall follow all industry standard safety procedures in addition to the
   requirements of the owner's Project Safety Manual (PSM).
   1. The Contractors shall be responsible for training all personnel under their employ
      in areas concerning safe work habits and construction safety. The Contractor
      shall continually inform personnel of hazards particular to this project and
      update the information as the project progresses.
   2. The Contractor shall secure all electrical rooms, to limit access, prior to
      energizing any high voltage switchgear and shall control access during the
project after energization. The Contractor shall post and maintain warning and caution signage in areas where work is on going near energized equipment. The Contractor shall cover all energized live parts when work is not being done in the equipment. This includes lunch and breaks.

3. The Contractor shall strictly enforce OSHA lock out/tag out procedures. Initial infractions shall result in a warning; a second infraction shall result in the removal of the workman and his foreman from the site. Continued infractions shall result in removal of the Contractor from the site.

1.12 SHORING AND EQUIPMENT SUPPORTS

A. Provide all permanent and temporary bracing, anchoring, supports, and shoring required to firmly stabilize and secure all raceways, boxes, enclosure, equipment, and devices.

B. Provide free standing racks to support equipment. Racks shall be securely bolted to the floor, wall, and or ceilings. Where secured to only one surface, provide angle bracing so that racks have a minimum of 4 attachment points.

C. Provide concrete housekeeping pads for floor mounted electrical equipment. Coordinate with flooring contractor for installation.
   1. 3000PSI, with rebar reinforcement.
   2. Provide dowels for connection to new or existing adjacent slabs
   3. Pad shall be 4” thick and protrude a minimum of 1” beyond the edge of equipment.
   4. Chamfer top edges of slab

1.13 TEMPORARY CONSTRUCTION POWER AND LIGHTING

A. Provide temporary power service per utility company specifications
   1. Contractor shall be responsible for securing permits and coordinating temporary service with utility provider.
   2. Provide temporary power service pole per utility company specifications.
   3. Provide service feeder from temporary service point to construction trailers and power distribution assemblies to serve power tools and construction equipment.

B. Provide panel or assembly containing GFCI receptacles for power tools to be used on site.

C. Provide temporary power cables neatly trained and protected from damage.

D. Provide temporary lighting throughout area of construction. Install at ceiling level out of way of construction work.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Equipment to be installed outdoors, in corrosive or hazardous environments shall be rated for the intended use.
B. Compliance with the requirements of the contract documents shall not relieve the contractor of the responsibility of providing equipment that is new, properly designed, from a reputable manufacturer, and in full working order.

C. If conflicts occur between the specifications and drawings, the higher quality, price or quantity shall be provided and installed.

D. If there is any question as to quality, size or quantity necessary, the contractor shall provide a written request for clarification from the Engineer. Contractor shall be responsible for any additional expenses incurred as a result of the contractor’s failure to obtain clarification.

E. Detailed product specifications are included in other specification section and on the plans.

2.2 FINISHES

A. Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA 250 corrosion-resistance test.

B. Raceways, boxes, supports, etc. shall be galvanized: gold, silver, or hot dipped, unless noted otherwise.
   1. Do not use pre-galvanized products that are formed, cut, or punched after galvanization.
   2. Do not use hot dip galvanized threaded products.

2.3 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time,

PART 3 EXECUTION

3.1 FIELD APPLIED PAINTING

A. Paint electrical equipment as required to match finish of adjacent surfaces or to meet the indicated or specified safety criteria.

3.2 FIELD PROGRAMMING

A. Electrical contractor shall be responsible for the coordination and payment of programming for all programmable devices and equipment including, but not limited to, lighting controls, circuit breakers, interfaces with building automation system, power monitoring equipment, etc.

B. Where required, the manufacturer of the product shall be engaged to perform the programming.
3.3 EXAMINATION

A. If a conflict is found between the specification and plans, notify the Architect or Engineer of the conflict.

B. Verify equipment is ready for electrical connection, for wiring, and to be energized.

C. Verify existing conditions are as shown on the plans and that adequate space is available for the equipment for installation.

3.4 EXISTING WORK

A. Maintain in service existing systems that are required for life safety or ongoing operations during construction.

B. Remove exposed abandoned equipment wiring connections, conduit, and boxes, including abandoned connections, conduit, and boxes above accessible ceiling finishes.

C. Disconnect abandoned utilization equipment and remove wiring connections. Remove abandoned components when connected raceway is abandoned and removed. Install blank cover for abandoned boxes and enclosures not removed.

D. Extend existing equipment connections using materials and methods compatible with existing electrical installations, or as specified.

3.5 INSTALLATION

A. The installation requirements shown here are general scope requirements. More detailed information is provided for each of these topics in other specifications and on the plans.

B. No foreign systems such as piping, duct work, etc shall be installed above electrical equipment.

C. Grounding and Bonding
   1. All circuits shall be provided with NEC compliant green ground conductor sized per NEC 250, UNO.
   2. All equipment shall be properly bonded.
   3. Provide grounding electrodes as specified on plans and as required by code.

D. Raceways, Boxes and Enclosures
   1. Provide complete raceway systems from source to all loads with dedicated supports for each raceway element.
   2. Provide all required back boxes and supports for wiring devices, telecommunications, fire alarm, access control, controls equipment, alarms, sensors, etc.
   3. Provide pull box at appropriate locations for all power and special systems raceways whether shown on plans or not.
E. Electrical connections and terminations.
   1. Make all connections and terminations within the power distribution system and between the distribution system and the equipment served.
   2. Make conduit connections to vibrating equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
   3. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
   4. Provide calibrated torque wrenches and screwdrivers and tighten terminals, lugs and bus joints using it.

F. Equipment wiring requirements
   1. Install disconnect switches, controllers, control stations, and control devices as required for equipment.
   2. Install terminal block jumpers to complete equipment wiring requirements.
   3. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.
   4. Install control wiring to interlocks, sensors, and remote operator interfaces provided with equipment.

G. Identification
   1. Provide appropriate labels for all equipment, wiring devices, conductors, cables, box, and enclosures
   2. Provide warning signs for electrical equipment and buried circuits.

H. Code and manufacturer requirement compliance
   1. Install work in compliance with the latest edition of the NEC, City and Owner design criteria manuals, and the authority having jurisdiction.
   2. Apply, install, connect, erect, use, clean, adjust, and condition materials and equipment as recommended by the manufacturers in their published literature.
   3. All terminals, lugs and bus joints shall be tightened per the manufacturer's torque recommendations.

I. Arrangement and planning
   1. Arrange electrical work in neat, well-organized manner.
   2. Do not block future connection points of electrical service.
   3. Install all electrical work parallel or perpendicular to building lines unless noted otherwise, properly supported with purpose-designed apparatus, in a neat manner.
   4. Maintain required NEC working space and dedicated equipment spaces around all electrical equipment subject to maintenance, testing, or user interface. Coordinate with other trades prior to installation.
   5. Do not block equipment control panels with lighting, raceways, structural elements or other equipment. Orient equipment so that control panels do not face structural elements or other equipment that will restrict access.
   6. Coordinate with engineer before installation if any of the above conditions cannot be met due to undiscovered site conditions or if locations shown on plans are field determined to be in conflict with equipment and structures called for on other plans.

J. Cutting and Patching
1. Make opening through masonry and concrete by core drilling in acceptable locations. Restore openings to original condition to match remaining surrounding materials.
2. Provide sleeves for penetrations through floors and walls
3. Seal all openings using appropriate materials
4. Where existing conditions are not documented, perform ground penetrating radar scan of structural element to be cut.

END OF DOCUMENT
PART 1 GENERAL

1.1 SUMMARY

A. Section includes general electrical materials and methods. Section covers the following specific items.
   1. Terminal Blocks
   2. Push Buttons and Selector Switches

B. Related Sections:
   1. This and all other division 26 specifications, the construction drawings, general contract provisions, and division 1 specifications shall be considered collectively as the total general requirements for the electrical equipment and electrical system installation and all special systems shown or described on the electrical or “E series” sheets.

1.2 REFERENCES

A. Materials, equipment, and the work performed shall comply with current requirements, rules and regulations of and, where applicable, be certified by the following standards, codes and organizations:
   1. American National Standards Institute (ANSI)
   3. Americans with Disabilities Act (ADA)
   4. ASHRAE/IES 90.1
   5. Institute of Electrical and Electronics Engineers (IEEE)
   9. National Electrical Manufacturer's Code (NEMA)
   11. National Fire Protection Associations (NFPA)
   13. Underwriter's Association (UL)
   14. Where discrepancies are found between the requirements of these standards codes, ordinances, regulations and the drawings and specifications, the contractor should notify the engineer prior to installation. Installed work that fails to comply with the requirements of the above shall be replaced at contractor's expense.

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.
B. Submittal requirements shown here shall be used in conjunction with the requirements of the other specification sections. Where in conflict, the more stringent requirements shall apply.

C. Product Data: Submit catalog data showing manufacturer’s name and contact information, all standard features, dimensions, weights, listings and product labels, material types, finishes and clearly indicating which optional features will be provided.
   1. Include amperage and voltage ratings, over-current protective device ratings, AIC ratings, etc
   2. Where multiple sizes are listed, indicate sizes to be used.
   3. Where multiple products are shown on the same page, indicate which products to be used.

D. Rejected submittals shall be resubmitted within two weeks of notification of rejection.

E. Any equipment covered by division 26 specifications that is installed by the contractor without submittal approval and is not in compliance with the appropriate specifications shall be replaced at the contractor’s expense.

1.4 CLOSEOUT SUBMITTALS

A. At the end of construction, provide a closeout submittal containing the following information in addition to items specified in other sections.
   1. Operation and Maintenance data
   2. Test results

B. Operation and Maintenance Data: At the end of construction, provide the owner with an 8.5x11 bound manual including the following information:
   1. Provide product data as defined under submittals.
   2. Provide manufacturer’s installation and maintenance instructions for normal operation, routine maintenance and testing, and emergency maintenance procedures.
   3. Spare parts listing; source of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products shown on the construction documents with minimum three years documented experience.

B. Supplier: Authorized distributor

C. Installer: A state licensed electrician with documented experience installing all equipment specified here in shall directly supervise all work. Where noted in the specifications, required by code, or required by the manufacturer, installer shall be a manufacturer trained and/or certified installer of the specific product to be installed.
1.6 QUALITY ASSURANCE

A. Inclusion of specific products in these specifications and on the plans, does not mean that said products may be used for all applications in all environments. Products may only be used where approved either in the specification installation requirements sections or on the plans. Where the construction documents do no explicitly state what products are acceptable for an application, the most robust products specified are assumed to be the minimum requirement.

B. Regulatory Requirements
   1. The contractor shall comply with the requirements of all laws, rules, regulations, code and ordinances that have been adopted by the federal, state, and local authorities having jurisdiction (AHJ). All equipment, materials, means and methods shall be acceptable to the AHJ’s.
   2. Electrical installations shall conform to IEEE C2, NFPA 70, local codes and specified requirements herein. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.
   3. In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears.

C. Standard Products
   1. Unless otherwise approved, all equipment shall be new, properly designed, from a reputable manufacturer meeting the specification qualifications, in compliance with the specification requirements, and in full working order.
   2. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in the technical section.
   3. Listing and Labeling: Where required, all electrical components, devices, and accessories shall be listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction and marked for the intended use. Testing agency shall be UL unless noted otherwise or pre-approved by owner and AHJ.

D. Material and Equipment Manufacturing Date
   1. Products manufactured more than 2 years prior to date of delivery to site shall not be used, unless specified otherwise.

E. All equipment used for testing shall be in full working order and calibrated per the manufacturer’s recommendations.

1.7 WARRANTY

A. The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.
1.8 DELIVERY STORAGE AND HANDLING

A. Store in clean, dry space located above grade and protect from dirt, water, construction debris, traffic, freeze, and where applicable, deterioration from sunlight.

B. Maintain factory wrapping or provide additional canvas or plastic cover for all large electrical equipment. Follow all manufacturer recommendations for humidity and max/min temperatures for storing electrical equipment.

PART 2 PRODUCTS

2.1 TERMINAL BLOCKS

A. Manufacturers:
   1. Carlon Electrical Products
   2. Hubbell Wiring Devices
   3. Reliance Electric
   4. Substitutions: With engineer approval.


C. Power Terminals: Unit construction type with closed back and tubular pressure screw connectors, rated 600 volts.

D. Signal and Control Terminals: Modular construction type, suitable for channel mounting, with tubular pressure screw connectors, rated 300 volts.

E. Furnish ground bus terminal block, with each connector bonded to enclosure.

2.2 RELAYS

A. Manufacturers:
   1. Allen Bradley
   2. Automatic Switch Co.
   3. Eaton
   4. General Electric
   5. Siemens
   6. Square D
   7. Substitutions: With engineer approval.

B. Product Description: Heavy duty, single-coil momentary contact, mechanically held remote control relays, unless noted otherwise
   1. Contacts: Rated 20 amperes at 120-277 volts. Lower ratings may be used for control circuits with approval.
   2. Line Voltage Connections: Clamp type screw terminals.

C. Time Delay: Provide where required and/or noted
   1. Solid state timer attachment
2. Adjustable from 0.2 to 60 seconds (min). Note that longer time ranges may be specified on plans.
3. Field convertible from ON delay to OFF delay.

D. Enclosure: NEMA ICS 6, to meet conditions. Fabricate enclosure from steel finished with manufacturer’s standard gray enamel.
1. Interior Dry Locations: Type 1.
2. Exterior Locations: Type 3R.

2.3 PUSH BUTTONS AND SELECTOR SWITCHES

A. Manufacturers:
1. Allen Bradley
2. Eaton
3. General Electric
4. Siemens
5. Square D

B. Product Description: Heavy duty, oil tight, unless noted otherwise
1. Contacts: Rated 20 amperes at 120-277 volts. Lower ratings may be used for control circuits with approval.
2. Line Voltage Connections: Clamp type screw terminals.
3. Indicator lights: LED type, push to test.
4. Provide black ON or START pushbuttons and switches.
5. Provide red OFF or STOP pushbuttons and switches.
6. Provide engraved plastic label.
7. Provide lock out provisions, shrouds, and manual reset functions as noted on plans.

C. Enclosure: Fabricate enclosure from steel finished with manufacturer’s standard gray enamel.
1. Interior Dry Locations: Type 13.
2. Exterior Locations: Type 3R. Provide 4X for corrosive locations.
3. Hazardous Locations: UL listed for the space classification, division, group.

2.4 GENERAL REQUIREMENTS

A. Equipment to be installed outdoors, in corrosive or hazardous environments shall be rated for the intended use.

B. Compliance with the requirements of the contract documents shall not relieve the contractor of the responsibility of providing equipment that is new, properly designed, from a reputable manufacturer, and in full working order.

C. If conflicts occur between the specifications and drawings, the higher quality, price or quantity shall be provided and installed.
D. If there is any question as to quality, size or quantity necessary, the contractor shall provide a written request for clarification from the Engineer. Contractor shall be responsible for any additional expenses incurred as a result of the contractor’s failure to obtain clarification.

E. Detailed product specifications are included in other specification section and on the plans.

PART 3 EXECUTION

3.1 FIELD APPLIED PAINTING

A. Paint electrical equipment as required to match finish of adjacent surfaces or to meet the indicated or specified safety criteria.

3.2 FIELD PROGRAMMING

A. Electrical contractor shall be responsible for the coordination and payment of programming for all programmable devices and equipment including, but not limited to, all power meters and meter monitoring work stations and meter to BAS interfaces, lighting controls, circuit breakers, interfaces with building automation system, power monitoring equipment, etc.

B. Where required, the manufacturer of the product shall be engaged for programming.

3.3 EXAMINATION

A. If a conflict is found between the specification and plans, notify the Architect or Engineer of the conflict.

B. Verify equipment is ready for electrical connection, for wiring, and to be energized.

C. Verify existing conditions are as shown on the plans and that adequate space is available for the equipment for installation.

3.4 INSTALLATION

A. The installation requirements shown here are general scope requirements. More detailed information is provided for each of these topics in other specifications and on the plans.
   1. All requirements of the NEC and grounding specifications shall apply to the products specified here.

B. In addition to the applicable installation requirements of the other specification sections and the plans, install all equipment covered under this specification per the following requirements.
   1. Install devices plumb and level.
   2. Secure to structure and support following all requirements of the NEC, other codes, and the AHJ.
   3. Install per manufacturer’s recommendations and instructions.
4. Follow all owner requirements, specifications, and design standards.
5. Test for proper voltage and phase rotation.

C. Identification
1. Provide appropriate labels for all equipment, wiring devices, conductors, cables, box, and enclosures
2. Provide warning signs for electrical equipment and buried circuits.

END OF DOCUMENT
PART 1 GENERAL

1.1 SUMMARY

A. Section includes building
   1. wire and cable
   2. wiring connectors and connections.

1.2 REFERENCES

A. International Electrical Testing Association:
   1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution
      Equipment and Systems.

B. National Fire Protection Association:
   1. NFPA 70 - National Electrical Code.
   2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and
      Cables for Use in Air-Handling Spaces.

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section
   01000 Special Conditions, and 2015 Uniform General Conditions.

B. Product Data: Submit catalog data showing all standard features, dimensions,
   weights, listings and product labels, material types, finishes and clearly indicating
   which optional features will be provided.
   1. Include amperage and voltage ratings.
   2. Where multiple sizes are listed, indicate sizes to be used.
   3. Where multiple products are shown on the same page, indicate which products
      to be used.

1.4 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of components and circuits.

B. Field Quality-Control Test Reports: Report certified by field testing agent indicating
   results of performance testing required in Part 3 and/or on plans.
   1. Torque log

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this
   section with minimum three years documented experience.

B. Installer: A licensed electrician with documented experience installing all equipment
   specified here in shall directly supervise all work. Where noted in the specifications
or required by the manufacturer, installer shall be a manufacturer trained and/or
certified installer of the specific product to be installed.

1.6 QUALITY ASSURANCE

A. Provide wiring materials located in plenums with peak optical density not greater
   than 0.5, average optical density not greater than 0.15, and flame spread not
   greater than 5 feet (1.5 m) when tested in accordance with NFPA 262.

B. Perform Work in accordance with all applicable city, state, and federal requirements.

C. Maintain one copy of each document on site.

D. Source Limitations: All components required for a complete functioning system as
   described here in shall be obtained through one source from a single manufacturer.

E. Listing and Labeling: Where required, all electrical components, devices, and
   accessories shall be listed and labeled as defined in NFPA 70, Article 100, by a
   testing agency acceptable to authorities having jurisdiction and marked for the
   intended use. Testing agency shall be UL unless noted otherwise or pre-approved by
   owner and AHJ.

1.7 FIELD MEASUREMENTS

A. Verify field measurements are as indicated on Drawings.

1.8 COORDINATION

A. Where wire and cable destination is indicated and routing is not shown, determine
   routing and lengths required.

B. Wire and cable routing indicated is approximate unless dimensioned.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Product Requirements: Provide products as follows:
   1. Solid, insulated conductor in raceway for feeders and branch circuits 10 AWG
      and smaller.
   2. Stranded, insulated conductors in raceway for feeders and branch circuits 8 AWG
      and larger
   3. Stranded, insulated conductors for control circuits. Route in raceway, except
      were otherwise allowed to be run exposed in plenum, in tray, etc.
   4. Conductor not smaller than 12 AWG for power and lighting circuits.
   5. Conductor not smaller than 14 AWG for control circuits.
   6. Increase wire size in branch circuits to limit voltage drop to a maximum of 3
      percent.
B. Wiring Methods: Provide the following wiring methods:

1. Concealed and Exposed Dry, Wet, or Damp Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.

2.2 BUILDING WIRE

A. Manufacturers:
   1. AETNA
   2. American Insulated Wire Corp.
   3. Colonial Wire Model
   4. Encore Wire Model
   5. General Cable Co. Model
   6. Republic Wire Model
   7. Rome Cable Model
   8. Service Wire Co. Model
   9. Southwire Model
   10. Superior Essex Model
   11. Substitutions: With engineer approval.

B. Product Description: Single conductor insulated wire.
   2. Insulation Voltage Rating: 600 volts.
   3. Insulation Temperature Rating: 90 degrees C.

C. Grounding conductors, where insulated, shall be colored solid green or identified with green color as required by the NEC. Conductors intended as a neutral shall be colored solid white, or identified as required by the NEC. All motor or equipment power wiring shall be colored according to Section 26 05 53, Electrical Identification.

2.3 WIRING CONNECTORS

A. Provide factory-fabricated, metal connectors of the size, rating, material, type and class as required by manufacturer of the equipment and the NEC. The following types, classes, kinds and styles should be used only where appropriate and as noted
   1. Solderless Pressure Connectors
   2. Crimp
   3. Threaded
   4. Insulated Spring Wire Connectors with plastic caps for 10 AWG and smaller
   5. Split bolt parallel connectors
   6. Pre-insulated multi-tap connectors
   7. Epoxy resin type splicing kits.

B. Wiring connectors shall be insulated to 600V. Conducting components shall match conducting material of wiring (copper, unless noted otherwise).

2.4 TERMINATIONS

A. Terminal Lugs for Wires 6 AWG and Smaller: Solderless, compression type copper.
B. Lugs for Wires 4 AWG and Larger: Color keyed, compression type copper, with insulating sealing collars. Confirm where compression lugs will be required and where mechanical lugs will be acceptable on this project. Please note that the switchgear manufacturers limit where compression lugs are available for their electrical equipment.

C. Control wiring: Use insulated terminals for control wiring. Use flange spade compression terminal for termination of stranded conductors at wiring devices, including grounding connections.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify interior of building has been protected from weather.

B. Verify mechanical work likely to damage wire and cable has been completed.

C. Verify raceway installation is complete and supported.

3.2 PREPARATION

A. Completely and thoroughly swab raceway before installing wire.

B. Clean conductor surfaces before installing lugs and connectors.

3.3 EXISTING WORK

A. Remove exposed abandoned wire and cable, including abandoned wire and cable above accessible ceiling finishes. Patch surfaces where removed cables pass through building finishes.

B. Disconnect abandoned circuits and remove circuit wire and cable. Remove abandoned boxes when wire and cable servicing boxes is abandoned and removed. Install blank cover for abandoned boxes not removed.

C. Provide access to existing wiring connections remaining active and requiring access. Modify installation or install access panel.

D. Extend existing circuits using materials and methods compatible with existing electrical installations, or as specified.

E. Clean and repair existing wire and cable remaining or wire and cable to be reinstalled.

3.4 INSTALLATION

A. Neatly train and lace wiring inside boxes, equipment, and panelboards.
B. Install electrical cable, wire and connectors as indicated, in accordance with the manufacturer's written instructions, the applicable requirements of NEC and the National Electrical Contractors Association's "Standard of Installation", and as required to ensure that products serve the intended functions.

C. Wiring Installation in Raceways
1. Wire and cable shall be pulled into clean dry conduit. Do not exceed manufacturer’s recommended values for maximum pulling tension.
2. Do not install the conductors until the raceway system is complete and properly cleaned.
3. Pull conductors together where more than one is being installed in a raceway.
4. Use UL listed pulling compound or lubricant, when necessary; compound must not deteriorate conductor and insulation.
5. Do not use a pulling means, including fish tape, cable or rope, which can damage the raceway.
6. Install wire in raceway after interior of building has been physically protected from the weather and all mechanical work likely to injure conductors has been completed.
7. Place an equal number of conductors for each phase of a circuit in same raceway.
8. Provide separate conduit or raceway for line and load conductors of motor starters, safety disconnect switches, and similar devices. Those devices shall not share the same raceway.
9. All conduits shall contain a green grounding conductor. Conduit, wireways, or boxes shall not be used as the equipment grounding conductor.

D. Cable:
1. Protect exposed cable from damage.
2. Support cables above accessible ceiling, using spring metal clips or appropriate cable ties to support cables from structure. Do not rest cable on ceiling panels.
3. Use suitable cable fittings and connectors.

E. Wiring Connections and Terminations
1. Install splices, taps and terminations, which have equivalent-or-better mechanical strength and insulation as the conductor. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

F. Keep conductor splices and taps accessible and to a minimum. Splice branch circuits only in accessible junction or outlet boxes. Where terminations of cables that are installed under this Section are to be made by others, provide pigtail of adequate length for neat, trained and bundles connections, minimum 5 feet at each location, unless noted otherwise on drawings.
1. Splices below grade shall only be in handholes or manholes and shall be made watertight with epoxy resin type splicing kits similar to Scotchcast. 20A branch circuit splices installed below grade may use scotch-lock or other means of making water resistant.
2. Use splice, tap and termination connectors, which are compatible with the conductor material.
3. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
4. Tape un-insulated conductors and connectors with electrical tape to 150 percent of the insulation value of conductor and label as spare.

5. Power and Lighting Circuits:
   a. Use solderless pressure connectors with insulating covers for copper wire splices and taps, 8 AWG and larger.
   b. For 10 AWG and smaller, use insulated spring wire connectors with plastic caps on lighting and receptacle circuits.
   c. Use split bolt connectors for copper wire splices and taps, 6 AWG and larger.

6. Controls Circuits

G. Control circuit conductors shall terminate at terminal blocks only. Control cable shall never be spliced except the final connection to field devices.
   1. If stranded conductors used for #10 or smaller for controls, FA, security, etc, install crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under screws.
   2. Connections for all wire sizes in motor terminal boxes where the motor leads are furnished with crimped-on lugs shall be made by installing ring type compression terminals on the motor branch circuit ends and then bolting the proper pairs of lugs together. First one layer of No. 33 scotch tape reversed (sticky side out), then a layer of rubber tape, then two layers of No. 33 half-lapped.

H. Terminal Lugs
   1. Install terminal lugs on ends of 600 volt wires unless lugs are furnished on connected device, such as circuit breakers.
   2. Size lugs in accordance with manufacturer’s recommendations terminating wire sizes. Install 2-hole type lugs to connect wires 4 AWG and larger to copper bus bars.
   3. For terminal lugs fastened together such as on motors, transformers, and other apparatus, or when space between studs is small enough that lugs can turn and touch each other, insulate for dielectric strength of 2-1/2 times normal potential of circuit.

I. Voltage Drop
   1. No conductor smaller than No. 12 wire shall be used for lighting purposes. In the case of “home runs” over 50’ length (100’ for 277 volt) no conductor smaller than a No. 10 wire shall be used.
   2. Voltage drop on feeders and branch circuits shall not exceed NEC requirement.
   3. Voltage drop on control circuits shall not exceed the requirements of the equipment that the wiring serves.

J. Control Wiring

K. Run in separate conduits from building wiring.

L. Departures from the sizes specified in Part 2 shall be made only in those cases in which the National Electrical Code requires the use of larger conductors.

M. The Contractor may, if he deems it necessary or advisable, use larger sized conductors than those shown.

N. Wiring Within an Enclosure:
O. Contractor shall bundle AC and DC wiring separately within an enclosure.

P. The Contractor shall utilize panel wire-ways when they are provided.

Q. Where wireways are not provided, the Contractor shall neatly tag and bundle wires and secure to sub-panel at a minimum of every three inches.

R. Separate neutral conductors shall be provided for each single-phase circuit.

S. Where terminations of cables that are installed under this Section are to be made by others, provide pigtail of adequate length for neat, trained and bundles connections, minimum 5 feet at each location, unless noted otherwise on drawings.

T. Do not band any conductor either permanently or temporarily during installation to radii less than four times the outer diameter of 600-volt insulated conductors.

3.5 WIRE COLOR

A. General:
1. For wire sizes 10 AWG and smaller, install wire colors in accordance with the following for each phase A, B, C, and Neutral:
   a. Red (A), Black (B) for single phase circuits at 120/240 volts.
   b. Red (A), Black (B), Blue (C) for circuits at 120/208 volts single or three phase.
   c. Brown (A), Yellow (B), Purple (C) for circuits at 277/480 volts single or three phase.

B. For wire sizes 8 AWG and larger, identify wire with colored tape at terminals, splices and boxes. Use colors listed above.

C. Neutral Conductors: White. Use gray for 277/480V neutrals were required by AHJ. When two or more neutrals are located in one conduit, individually identify each with proper circuit number.

D. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.

E. Feeder Circuit Conductors: Uniquely color code each phase.

F. Ground Conductors:
1. For 6 AWG and smaller: Green.
2. For 4 AWG and larger: Identify with green tape at both ends and visible points including junction boxes.

3.6 FIELD QUALITY CONTROL

A. Before final acceptance, the Contractor shall make voltage, insulation, and load tests, necessary to demonstrate to the Owner's representative the satisfactory installation and proper performance of all circuits.
B. All terminations rated 60A or larger shall be made using a torque wrench and the results recorded in a log to be provided to owner with closeout documents.

   1. Test results below 50 megohms shall be cause for rejection of the wiring installation.
   2. Replace and retest all non-compliant conductors.
   3. Provide written log of testing results to owner with closeout documents.

END OF SECTION
SECTION 26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Rod electrodes.
   2. Active electrodes.
   3. Wire.
   4. Grounding well components.
   5. Mechanical connectors.

1.2 REFERENCES

A. Institute of Electrical and Electronics Engineers:
   2. IEEE 1100 - Recommended Practice for Powering and Grounding Electronic Equipment.

B. International Electrical Testing Association:

C. National Fire Protection Association:
   1. NFPA 70 - National Electrical Code.

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Product Data: Submit catalog data showing all standard features, dimensions, weights, listings and product labels, material types, finishes and clearly indicating which optional features will be provided.
   1. Include amperage ratings, voltage, over-current protective device ratings, AIC ratings.
   2. Where multiple sizes are listed, indicate sizes to be used.
   3. Where multiple products are shown on the same page, indicate which products to be used.

C. Manufacturer's Installation Instructions: Submit for active electrodes.

D. Manufacturer's Certificate: Certify, Products meet or exceed specified requirements.
1.4 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of components and grounding electrodes.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: A licensed electrician with documented experience installing all equipment specified here in shall directly supervise all work. Where noted in the specifications or required by the manufacturer, installer shall be a manufacturer trained and/or certified installer of the specific product to be installed.

1.6 QUALITY ASSURANCE

A. Provide grounding materials conforming to requirements of NEC, IEEE 142, and UL labeled.

B. Listing and Labeling: Where required, all electrical components, devices, and accessories shall be listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction and marked for the intended use. Testing agency shall be UL unless noted otherwise or pre-approved by owner and AHJ.

C. Source Limitations: All components required for a complete functioning system as described here in shall be obtained through one source from a single manufacturer.

D. Maintain one copy of each document on site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labeled with manufacturer's identification.

B. Store in clean, dry space located above grade and protect from dirt, water, construction debris, traffic, chemical and mechanical damage, freeze, and where applicable, deterioration from sunlight. Store in original packaging where possible.

C. Do not deliver items to project before time of installation. Limit shipment of bulk and multiple-use materials to quantities needed for immediate installation.

1.8 COORDINATION

A. Complete grounding and bonding of building reinforcing steel prior to concrete placement.
PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Products that are compliant with these specifications and produced by the following manufacturers are acceptable
   1. Copperweld, Inc
   2. Erico, Inc.
   3. ILSCO Corporation
   4. O-Z Gedney Co.
   5. Thomas & Betts, Electrical.

B. Substitutions: With engineer approval.

2.2 GROUNDING AND BONDING WIRE

A. Material:
   1. Match building wiring material specifications
   2. Except where noted bare, match building wiring insulation.
   4. Solid copper may be used for #8 AWG and smaller.

2.3 MECHANICAL CONNECTORS

A. Description: Bronze connectors, suitable for grounding and bonding applications, in configurations required for particular installation.

B. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.

C. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.

PART 3 EXECUTION

3.1 PREPARATION

A. Remove paint, rust, mill oils and surface contaminants at connection points.

3.2 EXISTING WORK

A. Modify existing grounding system to maintain continuity to accommodate renovations.

B. Extend existing grounding system using materials and methods compatible with existing electrical installations, or as specified.
3.3 INSTALLATION

A. Permanently ground and bond the entire power system in accordance with NEC, including service equipment, feeders and branch circuits electrical panels, switch and starter enclosures, motor frames, grounding type receptacles, and other exposed non-current carrying metal parts of electrical equipment.

B. General Requirements
1. Install in accordance with IEEE 142, NEC requirements, and manufacturer’s recommendations.
2. Install grounding and bonding conductors concealed from view.
3. Routing of grounding electrode, special systems ground conductors, and other grounds not routed in feeders or branch circuit raceways shall be installed in a dedicated metal conduit in all locations subject to physical abuse or environmental deterioration such as exterior mounted, exposed below ceiling, etc.
4. Ground system using separate insulated grounding conductor installed with every feeder and branch circuit conductors in conduits. Terminate each end on suitable lug, bus, or bushing.
5. Size grounding conductors in accordance with NEC. Install from grounding bus of serving panel to ground bus of served panel, grounding screw of receptacles, lighting fixture housing, light switch outlet boxes, equipment ground terminal, or metal enclosures of equipment.
6. Raceway systems shall be made continuous from source to load.
   a. Provide bonding jumpers were raceway system is inherently discontinuous such as where conduits terminate at cable trays.
   b. Raceway shall be made continuous using mechanical connections that have been securely tightened using the appropriate tool. Hand tight is not acceptable.
7. Permanently attach equipment and grounding conductors prior to energizing equipment.
8. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors
9. Provide grounding bushings for conduit terminations at panels, electrical equipment, enclosures, etc.

C. Bonding Straps and Jumpers:
1. Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.
2. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
3. Bonding to Equipment Mounted on Vibrations Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
4. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.
5. Bond the following components to the grounding electrode
   a. System neutral at service entrance and transformer secondaries
   b. Service equipment enclosures, exposed non-current carrying metal parts of electrical equipment
c. Metal raceway systems, cable trays, auxiliary gutters, meter fittings, boxes, cable armor, cable sheath

d. Ground bus in electrical rooms and IT rooms

D. Conductor Terminations and Connections:
   1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
   2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
   3. Connections to Ground Rods at Test Wells: Bolted connectors

E. Install branch circuits feeding isolated ground receptacles with separate insulated grounding conductor, connected only at isolated ground receptacle, ground terminals, and at ground bus of serving panel.

3.4 FIELD QUALITY CONTROL

A. Grounding System Resistance: 5 ohms maximum.

B. Perform ground resistance testing
   1. Test in accordance with IEEE 142.
   2. Provide additional grounding electrodes as required to achieve resistance listed above.
   3. Testing shall be performed when the soil is dry and there has been no rain in the past 48 hours.

C. Perform continuity testing in accordance with IEEE 142.

D. When improper grounding is found on receptacles, check receptacles in entire project and correct. Perform retest.

END OF SECTION
SECTION 26 05 29 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. section Includes:
   1. Conduit supports.
   2. Formed steel channel.
   4. Equipment bases and supports.

1.2 REFERENCES

A. FM Global:
      Factory Mutual Research For Property Conservation.

B. National Fire Protection Association:
   1. NFPA 70 - National Electrical Code.

C. Underwriters Laboratories Inc.:

D. Intertek Testing Services (Warnock Hersey Listed):
   1. WH - Certification Listings.

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section
   01000 Special Conditions, and 2015 Uniform General Conditions.

B. Product Data:
   1. Hangers and Supports: Submit manufacturers catalog data including load
      capacity.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this
   section with minimum three years documented experience.

B. Supplier: Authorized distributor

C. Installer: A licensed electrician with documented experience installing all equipment
   specified here in shall directly supervise all work. Where noted in the specifications
   or required by the manufacturer, installer shall be a manufacturer trained and/or
   certified installer of the specific product to be installed.
1.5 QUALITY ASSURANCE

A. Source Limitations: All components required for a complete functioning system as described here in shall be obtained through one source from a single manufacturer.

B. Listing and Labeling: Where required, all electrical components, devices, and accessories shall be listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction and marked for the intended use. Testing agency shall be UL unless noted otherwise or pre-approved by owner and AHJ.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labeled with manufacturer’s identification.

B. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

PART 2 PRODUCTS

2.1 CONDUIT SUPPORTS

A. Manufacturers:
   1. Allied Tube & Conduit Corp.
   2. Electroline Manufacturing Company
   3. O-Z Gedney Co.
   4. Thomas & Betts
   5. Substitutions: With engineer approval.

B. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.

C. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.

D. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt and nut to tighten.

E. Conduit straps - general purpose:
   1. One hole zinc plated steel for surface mounted conduits 1” or less.
   2. Two hole zinc plated steel for surface mounted conduits greater than 1”

2.2 CABLE TIES

A. High strength nylon temperature rated to 185 degrees F.

B. Self-Locking
2.3 FORMED STEEL CHANNEL

A. Manufacturers:
   1. Allied Tube & Conduit Corp.
   2. B-Line Systems
   3. Midland Ross Corporation, Electrical Products Division
   4. Thomas & Betts
   5. Unistrut Corp.

B. Product Description:
   2. Holes 1-1/2 to 2 inches on center.
   3. Provide angle brackets and other accessories from the same manufacture and
      from the same materials with the same finish

C. Provide heavier gage channel where the weight of the equipment exceeds the ratings
   of the products specified above.

D. Steel Pipe Straps
   1. Provide straps from the same manufacturer and of the same material and finish
      as channel
   2. Bolt head combination slot and hex head with square nut
   3. Conduit size engraved in strap for easy identifications
   4. Design load of 500lbs min.

2.4 SPRING STEEL CLIPS

A. Product Description: Mounting hole and screw closure.

2.5 BOX SUPPORTS

A. Outlet boxes
   1. Provide between stud box mounting brackets secured to the two adjacent studs.
   2. Provide two self-tapping screws on each side to secure bracket to stud
   3. Where two studs are not available, provide far side box support strap

B. Pull and Junction boxes
   1. Provide threaded hangers and channel supports for pull and junction boxes
      suspended from ceiling

PART 3 EXECUTION

3.1 PREPARATION

A. Remove incompatible materials affecting bond.

B. Obtain permission from Architect/Engineer before using powder-actuated anchors.
C. Obtain permission from Architect/Engineer before drilling or cutting structural members.

3.2 INSTALLATION - HANGERS AND SUPPORTS

A. General Requirements
1. Support raceways using galvanized steel or malleable iron straps, channel, and/or beam/pipe clamps as appropriate.
2. Install conduit and raceway support and spacing in accordance with NEC.
   a. Provide supports at all boxes, elect equipment, and loads
   b. Provide supports at code required intervals along raceways.
3. Support independent of other systems. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
4. Install multiple conduit runs on common hangers. Provide spare capacity on support elements where more than three conduits are grouped together.

B. Anchors and Fasteners:
1. Concrete Structural Elements: Provide precast inserts, expansion anchors and preset inserts.
2. Steel Structural Elements: Provide beam clamps, spring steel clips, and welded fasteners.
3. Concrete Surfaces: Provide self-drilling anchors and expansion anchors.
5. Solid Masonry Walls: Provide expansion anchors and preset inserts.
7. Wood Elements: Provide wood screws.

C. Inserts:
1. Install inserts for placement in concrete forms.
2. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut.

D. Supports:
1. Fabricate supports from structural steel or formed steel channel. Install hexagon head bolts to present neat appearance with adequate strength and rigidity. Install spring lock washers under nuts.
2. Install surface mounted boxes, cabinets, and panelboards with minimum of four anchors.
3. Install surface mounted device boxes with a minimum of two anchors, secure boxes in stud walls to the studs on both sides of the box.
4. In wet and damp locations install steel channel supports to stand cabinets and panelboards 1 inch off wall.
5. Support vertical conduit at every floor.

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
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3.3 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

A. Provide housekeeping pads of 3000 PSI concrete, minimum 3-1/2 inches thick and extending 6 inches beyond supported equipment.

B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.

C. Construct supports of steel members or formed steel channel. Brace and fasten with flanges bolted to structure.

3.4 PROTECTION OF FINISHED WORK

A. Protect adjacent surfaces from damage by material installation.

END OF SECTION
SECTION 26 05 33 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:
   1. Conduit and tubing
   2. Surface raceways
   3. Wireways
   4. Outlet boxes
   5. Pull and junction boxes
   6. Enclosures and Cabinets

B. Related Sections:
   1. The requirements of this specification shall be followed when installing raceway for all mechanical, controls, electrical, and special systems work covered by other specifications.

1.2 REFERENCES

A. American National Standards Institute:
   1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
   2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.
   3. ANSI C80.5 - Aluminum Rigid Conduit - (ARC).

B. National Electrical Manufacturers Association:
   1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
   2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
   3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
   4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
   5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
   6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
   7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

C. Underwriters Laboratories Inc.:
   1. Products shall be listed where required by the NEC
   2. Fire-stopping products shall be listed.
   3. Rigid Aluminum Conduit: UL-6A
   4. Aluminum EMTL UL 797

1.3 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.
B. Product Data: Submit catalog data showing all standard features, dimensions, weights, listings and product labels, and clearly indicating which optional features will be provided for the following items:
1. Metal conduit
2. Flexible metal conduit.
3. Liquidtight flexible metal conduit.
5. Raceway fittings and supports.
6. Conduit bodies.
7. Surface raceway.
8. Wireway.
9. Pull and junction boxes.
10. Enclosures and cabinets

C. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.4 CLOSEOUT SUBMITTALS

A. Project Record Documents:
1. Record actual routing of conduits larger than 2 inches.
2. Record actual locations and mounting heights of outlet, pull, and junction boxes larger than 4x4.

1.5 COORDINATION

A. Coordinate installation of outlet boxes for equipment connected under Section 26 05 03.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: A state licensed electrician with documented experience installing all equipment specified here in shall directly supervise all work. Where noted in the specifications, required by core, or required by the manufacturer, installer shall be a manufacturer trained and/or certified installer of the specific product to be installed.

1.7 QUALITY ASSURANCE

A. Listing and Labeling: Where required, all electrical components, devices, and accessories shall be listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction and marked for the intended use. Testing agency shall be UL unless noted otherwise or pre-approved by owner and AHJ.
B. Fire Rated Assemblies: Tested and listed per all requirements of ASTM and UL to achieve the fire-resistant rating of the wall (1 hour minimum). Refer to architectural plans for all locations of fire rated floor, roof, and wall assemblies.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store in clean, dry space located above grade and protect from dirt, water, construction debris, traffic, freeze, and where applicable, deterioration from sunlight.

B. Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F.

C. Maintain this minimum temperature before, during, and for minimum 3 days after installation of firestopping materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Subject to the requirements of the specifications, products by the following manufacturers may be used for raceways and boxes. UL listed substitutions that are compliant with these specifications are acceptable provided compliance with all specification requirements are clearly indicated on the submittal.

1. Apleton
2. Carlon Electrical Products
3. Hubbell Wiring Devices
4. Thomas & Betts Corp.
5. Walker Systems Inc.
6. The Wiremold Co.
7. Wheatland Tube Company
8. Allied Tube & Conduit
9. B I A
10. Cantex
11. Southwire
12. Eastern
13. Pass & Seymour
14. Hoffman

2.2 SYSTEM DESCRIPTION

A. Provide raceway and boxes as specified below for power, fire alarm, controls, and other special systems.

1. Provide raceway and boxes for all building wiring, equipment; wiring devices; communications equipment and outlets; fire alarm equipment, appliances, and devices; access control/security points; controls points; and other special systems shown on plans.

2. Provide raceway and boxes at other locations as required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements.
Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.

B. In Concrete:
   1. Provide wrapped rigid steel conduit for 1" or larger elbows and where entering or exiting concrete.
   2. Provide thick-wall nonmetallic conduit for straight runs in concrete.
   3. Provide high-grade plastic boxes or polymer concrete boxes. Nonmetallic may be used with engineer approval.
   4. Use concrete tight, masonry rated boxes and fittings were installed in concrete, stone, brick, or CMU.

C. Exterior Above Grade and Wet/Damp Interior Locations:
   1. Provide rigid steel conduit and fittings.
   2. Provide cast metal outlet, junction, and pull boxes, gasketed, rated NEMA 3R min.

D. Concealed Dry Interior Locations:
   1. Provide rigid steel conduit, intermediate metal conduit, or electrical metallic tubing.
   2. Provide sheet-metal boxes.

E. Exposed Dry Interior Locations:
   1. Provide rigid steel conduit below 10 feet, and rigid steel, intermediate metal, or electrical metallic tubing above 10 feet.
   2. Provide sheet-metal boxes.

2.3 METAL CONDUIT

A. Rigid Steel Conduit:
   1. ANSI C80.1.
   3. Continuously welded seams.
   4. Uniform wall thickness and cross section.
   5. Manufacturer applied lubricating and corrosion retarding coating applied to interior of conduit.
   6. The minimum conduit size is 3/4", except fixture whips may be ½".

B. Rigid Aluminum Conduit:
   1. ANSI C80.5.
   2. Continuously welded seems
   3. Uniform wall thickness and cross section

C. Intermediate Metal Conduit (IMC): Rigid steel.

D. Fittings and Conduit Bodies:
   1. NEMA FB 1
   2. Material to match conduit.
   3. Couplings and connectors: threaded
   4. Expansion Fittings: OZ Type DX, concrete tight, provide for ¾" movement in all directions and/or 30 degrees deflection in any direction
2.4 PVC COATED METAL CONDUIT

A. Product Description: NEMA RN 1; rigid steel conduit with external PVC coating, 20 mil thick.

B. Fittings and Conduit Bodies: NEMA FB 1; steel fittings with external PVC coating to match conduit.

2.5 FLEXIBLE METAL CONDUIT

A. Product Description: Interlocked steel construction.

B. Fittings: NEMA FB 1.

C. FMC shall be used in the following locations
   1. For lighting whips
   2. For connections to vibrating equipment
   3. In applications where rigid conduit cannot be installed without extensive demolition, but only with engineer's approval.

2.6 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Product Description: Interlocked steel construction with PVC jacket.

B. Fittings: NEMA FB 1.

C. Use LFMC for all exterior vibrating equipment loads and in pump rooms that contain large quantities of mechanical and plumbing piping in the vicinity of the flex conduit.

2.7 ELECTRICAL METALLIC TUBING (EMT)

A. Product Description:
   1. ANSI C80.3
   2. Material: galvanized tubing, manufactured from mild steel
   3. Continuously welded seems
   4. Uniform wall thickness and cross section
   5. Manufacturer applied lubricating and corrosion retarding coating applied to interior of conduit
   6. The minimum conduit size is 3/4", except fixture whips may be 1/2".

B. Fittings and Conduit Bodies:
   1. NEMA FB 1
   2. Material: zinc plated steel
   3. Concrete tight
   5. Expansion Fittings: OZ Type TX

C. Aluminum EMT: Aluminum (nonferrous) metallic tubing shall be UL listed as required by NEC Article 358. Aluminum EMT shall be product of American Conduit by Sapa. Fittings for aluminum EMT shall be UL listed specifically for Aluminum EMT, or approved equal fitting.
2.8 NONMETALLIC CONDUIT

A. Product Description: NEMA TC 2; Schedule 40 and 80 PVC.
   1. Schedule 40 PVC may be used where buried or embedded.
   2. Use schedule 80 PVC conduit for any exposed exterior or interior applications requiring corrosive resistant PVC conduit such as pool pump rooms.
   3. The minimum conduit size is ¾”.
   4. 1” shall be used for underground conduit runs longer than 50ft.

B. Fittings and Conduit Bodies: NEMA TC 3.

2.9 OUTLET BOXES

A. Sheet Metal Outlet Boxes:
   1. NEMA OS 1
   3. 4”x4”, 2” deep, unless noted otherwise
   4. Concentric knockouts
   5. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2-inch male fixture studs where required.
   6. Concrete Ceiling Boxes: Concrete type.

B. Nonmetallic Outlet Boxes: NEMA OS 2.

C. Cast Boxes: NEMA FB 1, Type FD, aluminum or cast ferolloy. Furnish gasketed cover by box manufacturer. Furnish threaded hubs.

D. Wall Plates for Finished Areas: As specified in Section 26 27 26.

E. Wall Plates for Unfinished Areas: Furnish gasketed cover.

F. Outlet box accessories as required for each installation, including mounting brackets, wallboard hangers, mud rings extension rings, fixture studs, cable clamps and metal straps for supporting outlet boxes, compatible with outlet boxes being used and meeting requirements of individual situations.

G. Provide multi-gang outlets of single box design. Sectional boxes are not acceptable. Provide outlet boxes of sufficient volume to accommodate the number of conductors entering the box in accordance with the requirements of NEC, and not less than 1-1/2-inch-deep unless shallower boxes are required by structural conditions and are approved by the A/E.

H. Provide deep type cast metal weatherproof exterior outlet wiring boxes of the type, shape and size, including depth of box, with threaded conduit ends, cast metal face plate with spring-hinged waterproof cap suitably configured for each application, including face plate gasket and fasteners. Provide PVC type outlet boxes only in corrosive areas rated as NEMA 4X.
2.10 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: NEMA OS 1, galvanized steel. Screw on cover, welded seams, stainless nuts, bolts, screws and washers.
   1. Boxes larger than 12 inches in any dimension shall be panelboard code gauze galvanized steel with hinged cover.
   2. Boxes shall be sized in accordance with NEC.

B. Hinged Enclosures: Provide hinged covers for enclosures larger than 4". Coordinate with engineer if screw type covers must be used for any reason.

C. Surface Mounted Cast Metal Box: NEMA 250, Type 4X; flat-flanged, surface mounted junction box:
   1. Material: Galvanized cast iron. Cast aluminum may be used with engineer approval
   2. Cover: Furnish with ground flange, neoprene gasket, and stainless-steel cover screws.

2.11 ENCLOSURES AND CABINETS

A. Construction: NEMA 250, Type 1 steel enclosure.
   1. Use NEMA 3R in wet locations

B. Covers: Continuous hinge, held closed by flush latch operable by key

C. Furnish interior metal panel for mounting terminal blocks and electrical components; finish with white enamel.

D. Provide wire management systems, terminal strips, and partitions as required for complete functioning of the system.

E. Enclosure Finish: Manufacturer's standard enamel

2.12 SLEEVES

A. Materials:
   1. Interior Locations: Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends
   2. Exterior Wall Penetrations: Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated
   3. Fire Rated and Fire Resistive Floors and Walls: Prefabricated fire rated sleeves including seals, UL listed
B. Sleeves for Rectangular Openings: Galvanized sheet steel.
   1. Minimum Metal Thickness:
      a. For sleeve cross-section rectangle perimeter, less than 50 inches (1270 mm) and no side more than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).
      b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches (1270 mm) and 1 or more sides equal to, or more than, 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).

C. Waterproof Sleeve Seals
   1. Description: Modular mechanical type, designed for field assembly, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.
   2. 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
      a. Advance Products & Systems, Inc.
      b. Calpico, Inc.
      c. Metraflex Co.
      d. NMP Corporation
      e. Pipeline Seal and Insulator, Inc.
      f. Thunderline Link-Seal, Inc.
   3. Sealing Elements: Interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable
   4. Pressure Plates: Carbon Steel. Include two for each sealing element.
   5. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.13 FIRESTOPPING

A. Manufacturers:
   1. Dow Corning Corp.
   2. Fire Trak Corp.
   3. Hilti Corp.
   4. International Protective Coating Corp.
   5. 3M fire Protection Products
   7. Substitutions: With engineer approval.

B. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
   1. Silicone Firestopping Elastomeric Firestopping: Single component silicone elastomeric compound and compatible silicone sealant.
   2. Foam Firestopping Compounds: Single component foam compound.
   3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
4. Fiber Stuffing and Sealant Firestopping: Composite of mineral or ceramic fiber stuffing insulation with silicone elastomer for smoke stopping.
5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
7. Firestop Pillows: Formed mineral fiber pillows.

C. Firestopping Materials: ASTM E119 or EB14 tested and UL Listed to achieve fire ratings of adjacent construction.

D. Conform to applicable code for fire resistance ratings and surface burning characteristics.

E. Color: Red in concealed location, black where exposed and allowed by AHJ.

2.14 FIRESTOPPING ACCESSORIES

A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.

B. Dam Material: Permanent:
   1. Mineral fiberboard.
   3. Sheet metal.
   4. Plywood or particle board.
   5. Alumina silicate fire board.

C. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

D. Non-Rated Surfaces:
   1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where conduit is exposed.
   2. For exterior wall openings below grade, furnish modular mechanical type seal consisting of interlocking synthetic rubber links shaped to continuously fill annular space between conduit and cored opening or water-stop type wall sleeve.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify outlet locations and routing and termination locations of raceway prior to rough-in.
3.2 EXISTING WORK

A. Remove exposed abandoned raceway, including abandoned raceway above accessible ceiling finishes. Cut raceway flush with walls and floors, and patch surfaces.

B. Remove concealed abandoned raceway to its source.

C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets when raceway is abandoned and removed. Install blank cover for abandoned outlets not removed.

D. Maintain access to existing boxes and other installations remaining active and requiring access. Modify installation or provide access panel.

E. Extend existing raceway and box installations using materials and methods compatible with existing electrical installations.

F. Clean and repair existing raceway and boxes to remain or to be reinstalled.

3.3 INSTALLATION

A. Provide complete raceway systems from source to all loads with dedicated supports for each raceway element.

B. Provide all required back boxes and supports for wiring devices, telecommunications, fire alarm, access control, controls equipment, alarms, sensors, etc.

C. Provide pull box at appropriate locations for all power and special systems raceways whether shown on plans or not.

D. Arrange raceway and boxes to present a neat appearance; allow for future expansion; provide access where needed; and maintain headroom and clearances for equipment, egress, etc.

E. Fasten raceway and box supports to structure and finishes in accordance with all requirements of the NEC and the construction documents.

F. Ground and bond raceway and boxes in accordance with all requirements of the NEC and the construction documents.

G. Identify raceway and boxes in accordance with all requirements of the NEC and the construction documents.

H. Paint exposed raceway and boxes to match the surface to which they are attached.

3.4 INSTALLATION - RACEWAY

A. Raceway Supports
   1. Support raceway using galvanized steel, malleable iron straps, or channel and pipe clamps.
2. Provide support at each junction box, panel and load.
3. Provide supports at intervals per code and manufacturer recommendations.
4. Group related raceway and support using steel channel conduit rack. Provide space on each for 25 percent additional raceways.
5. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports
6. Do not attach raceway to ceiling support wires or other piping systems such as sprinkler or HVAC piping or duct work.
7. Support cables in vertical raceways per NEC 300.19.
8. Construct wireway supports from steel channel.
9. Arrange raceway supports to prevent misalignment during wiring installation.
10. Additional supporting requirements are specified in other specification sections.

B. Raceway Routing
1. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.
2. The conduit routing shown on the construction documents is diagrammatic.
   a. Coordinate interior routing with other trades; structure; existing and new utilities, ductwork, piping; and other existing conditions as required for a complete, conflict free installation.
   b. Coordinate site routing with other trades; structure; new and existing buried utilities, new and existing paved areas, conduit sleeves, and landscaping before digging to avoid conflicts, damage, and to allow for future installations.
3. Route raceway parallel and perpendicular to walls, floors, and ceilings.
4. Route exposed conduit parallel to structural elements. Follow all surface contours; do not route in free air from point to point. Where physically possible, install on top side of structural elements to conceal from view. Paint to match structure to which it is attached.
5. Route conduit in and under slab from point-to-point. Coordinate conduit installations in slab, except straight slab penetrations with structural engineer for conduits larger than 2".
6. Maintain clearance between raceway and piping for maintenance purposes.
7. Maintain 12-inch clearance between power raceways and communications cabling, raceways, and cable trays.
8. Maintain 12-inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.
9. Install no more than equivalent of three 90-degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Use factory elbows or hydraulic one-shot bender to fabricate elbows for bends in metal conduit larger than 2-inch size.

C. Install raceways so that it drains to junction and pull boxes to avoid moisture traps at low points; install junction box with drain fitting at low points in conduit system.

D. Install fittings to accommodate expansion and deflection where raceway crosses seismic, control and expansion joints.

E. Install suitable pull string or cord in each empty raceway except sleeves and nipples.
F. Close ends and unused openings in surface raceways, wireways, boxes, and enclosures.

G. Maximum Size Conduit in Slab Above Grade: 3/4 inch. Do not cross conduits in slab without approval.

H. Cut conduit square using saw or pipe cutter; de-burr cut ends.

I. Bring conduit to shoulder of fittings; fasten securely.

J. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.

K. Install conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.

L. Install suitable caps to protect installed conduit against entrance of dirt and moisture.

M. Surface Raceway: Install flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Install insulating bushings and inserts at connections to outlets and corner fittings.

N. All connections to motors, instruments, machines, and equipment subject to movement or vibration shall be made using liquid-tight flexible metal conduit (3ft max).

3.5 INSTALLATION – BOXES, ENCLOSURES, CABINETS

A. General Requirements
   1. Seal all unused openings.
   2. Provide flush mounted boxes in finished areas.
   4. Install boxes without damaging or removing insulation, cutting structural elements, or damaging finishes.
   5. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

B. Wiring Device Boxes
   1. Install gang box where more than one device is mounted together. Do not use sectional box.
   2. Install gang box with plaster ring for single device outlets.
   3. Adjust mounting locations to be flush with finished surface.
   5. Do not install flush mounting box back-to-back in walls
      a. Install with minimum 6 inches separation.
      b. Install in separate stud bays to reduce noise transfer where ever possible.
      c. Install with minimum 24 inches separation in acoustic rated walls.
6. Install wall mounted boxes at elevations to accommodate mounting heights as indicated on Drawings. Refer to architectural elevations for mounting heights of outlet boxes noted “above counter.”

7. Orient boxes to accommodate wiring device orientation. Field verify with architect for wiring devices mounted above counters or exposed to view in lobbies, on display walls, etc.

8. Adjust box location up to 10 feet prior to rough-in to accommodate intended purpose.

C. Ceiling Mounted Boxes
   1. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
   2. Install adjustable steel channel fasteners for hung ceiling outlet box.
   3. Do not fasten boxes to ceiling support wires or other piping systems.

D. Masonry Walls and Poured In Concrete
   1. Install recessed boxes in the corner of masonry blocks so that only the corner of one masonry element is required to be cut.
   2. File smooth the edges of cut masonry blocks. Replace cracked or damaged blocks.
   3. Seal concrete tight all openings in boxes prior to pouring concrete.
   4. Verify box is level and flush with finished grade. File down edges that protrude above finished grade.

3.6 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods in accordance with the fire stopping material manufacturer’s instructions.

B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation. Follow architectural details for any required roof penetrations. Obtain permission from architect for dedicated electrical rough penetrations before performing work.

C. Locate outlet boxes to allow luminaires positioned as indicated on reflected ceiling plan.

D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.7 ADJUSTING

A. Adjust flush-mouting outlets to make front flush with finished wall material.

B. Install knockout closures in unused openings in boxes.

3.8 CLEANING

A. Clean interior of boxes to remove dust, debris, and other material.
B. Clean exposed surfaces and restore finish.

3.9 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, floors, ceilings concrete or masonry walls, partition walls in finished exposed spaces, or fire-rated floor and wall assemblies.

B. Sleeve Installations:
   1. Position raceway or cable in center of sleeve.
   2. Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.
   3. Extend sleeves installed in floors 3 inches above finished floor level.
   4. For fire rated penetrations, size sleeve allowing minimum of 1 inch annular clear space between raceway and sleeve.
   5. For exterior wall penetrations, size sleeve allowing minimum of 1 inch annular clear space between raceway and sleeve for installing mechanical sleeve seals.
   6. For other penetrations, size sleeve allowing ¼ to ½” annular clear space between raceway and sleeve.
   7. Where cable tray, bus, cable bus, conduit, wireway, or trough, penetrates fire rated surface, install firestopping product in accordance with manufacturer’s instructions.

C. Install escutcheons, floor plates, or ceiling plates where conduit, penetrates surfaces in occupied spaces or exterior walls. Occupied spaces include rooms with finished ceilings and where penetration occurs below finished ceiling.
   1. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
   2. Install stainless steel escutcheons at finished surfaces.

D. Sealing
   1. Exterior wall and other water tight openings: Seal with adjustable, interlocking rubber links of mechanical seal (waterproof sleeve seal) sized to cover annular space between raceway and sleeve. Install in accordance with manufacturer’s instructions.
   2. Conduit penetrations not required to be watertight: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint
   3. Seal space outside of sleeves with grout for penetrations of concrete and masonry
   4. Seal ends of sleeve with UL listed fire resistive silicone compound to meet fire rating of structure penetrated (for fire rated walls).

E. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

F. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

G. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal
raceway and cable penetration sleeves with firestop materials that meet the fire rating of the wall.

3.10 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Install per manufacturer's instruction and in accordance with architectural and owner specifications.

B. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.

C. Apply firestopping material in sufficient thickness to achieve required fire and smoke rating and uniform density and texture.

D. Compress fibered material to maximum 40 percent of its uncompressed size.

E. Place foamed material in layers to ensure homogenous density, filling cavities and spaces. Place sealant to completely seal junctions with adjacent dissimilar materials.

F. Place intumescent coating in sufficient coats to achieve rating required.

G. Remove dam material after firestopping material has cured.

END OF SECTION
SECTION 26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Nameplates.
   2. Labels.
   3. Wire markers.
   5. Stencils.
   7. Lockout Devices.
   8. Operating Instructions
   9. Nameplates
   10. Warning Signs

1.2 SUBMITTALS

A. See Texas Parks and Wildlife Department Division 1 – General Requirements, Section 01000 Special Conditions, and 2015 Uniform General Conditions.

B. Product Data:
   1. Submit manufacturer’s catalog literature for each product required.
   2. Submit electrical identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function.

C. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

1.3 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of tagged devices; include tag numbers.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with federal, state, and local codes

B. Provide all labeling as required by NFPA 70 and 70E.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
1.6 DELIVERY, STORAGE, AND HANDLING
   A. Accept identification products on site in original containers. Inspect for damage.
   B. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
   C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.7 ENVIRONMENTAL REQUIREMENTS
   A. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

PART 2 PRODUCTS

2.1 NAMEPLATES
   A. Product Description: Laminated three-layer plastic with engraved black letters on white contrasting background color.
   B. Letter Size:
      1. 1/4-inch-high (min) letters for identifying individual equipment and loads.
      2. 1/4-inch-high (min) letters for identifying grouped equipment and loads.
   C. Minimum nameplate thickness: 1/8 inch.

2.2 LABELS
   A. Generic Labels: Embossed adhesive tape, with 3/16 inch white letters on black background.
   B. Finished area Receptacles Cover Labels: Adhesive labels, clear with black text.

2.3 WIRE MARKERS
   A. Description: Cloth tape, split sleeve, or tubing type wire markers.
   B. Legend:
      1. Power and Lighting Circuits: Panel name and branch circuit or feeder number.
      2. Control Circuits: Control wire number as indicated on shop drawings.

2.4 CONDUIT AND RACEWAY MARKERS
   A. Description: Nameplate fastened with adhesive, Labels fastened with adhesive or Stencils.
   B. Color:
      1. 480 Volt System: Black lettering on white background.
2. 208 Volt System: Black lettering on white background.

C. Legend:
1. 480 Volt System: 480 VOLTS.
2. 208 Volt System: 208 VOLTS.

2.5 STENCILS

A. Stencils: With clean cut symbols and letters of following size:
   1. Up to 2 inches Outside Diameter of Raceway: 1/2-inch-high letters.
   2. 2-1/2 to 6 inches Outside Diameter of Raceway: 1 inch high letters.

2.6 LOCKOUT DEVICES

A. Lockout Hasps:
   1. Anodized aluminum or Reinforced nylon hasp with erasable label surface; size minimum 7-1/4 x 3 inches.

2.7 POSTED OPERATING INSTRUCTIONS

A. Provide for each system and principal item of equipment as specified in the technical sections for use by operation and maintenance personnel. The operating instructions shall include the following:
   1. Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
   2. Start up, proper adjustment, operating, lubrication, and shutdown procedures.
   3. Safety precautions.
   4. The procedure in the event of equipment failure.
   5. Other items of instruction as recommended by the manufacturer of each system or item of equipment.
   6. At a minimum, operating instructions shall be provided for fire alarm panels, ATSS, generators, switchgear.

B. Print or engrave operating instructions and frame under glass or in approved laminated plastic. Post instructions where directed. For operating instructions exposed to the weather, provide weather-resistant materials or weatherproof enclosures. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

2.8 MANUFACTURER'S NAMEPLATE

A. Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

2.9 FIELD FABRICATED NAMEPLATES

A. ASTM D 709. Provide laminated plastic nameplates for each equipment enclosure, relay, switch, and device; as specified in the technical sections or as indicated on the drawings. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125-inch-thick.
white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be one by 2.5 inches. Lettering shall be a minimum of 0.25-inch-high normal block style.

PART 3 EXECUTION

3.1 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

3.2 EXISTING WORK

A. Install identification on existing equipment to remain in accordance with this section that is modified for this project.

B. Replace lost nameplates labels markers.

C. Re-stencil existing equipment as required.

3.3 INSTALLATION

A. Install identifying devices after completion of painting.

B. Fire alarm, emergency/critical power, life safety labels, including receptacles, shall be color coded and engraved.

C. Provide each panel with a manufacturer prepared arc flash hazard warning label.

D. Provide a typed panel directory for each panel provided or modified for this project. Directory shall identify the circuit number, loads served, and location of loads by room number. Mount on inside of each panel and file with the owner when the work is complete.

E. Nameplate Installation:
   1. Install nameplate parallel to equipment lines.
   2. Install nameplate for each electrical distribution and control equipment enclosure with corrosive-resistant mechanical fasteners, or adhesive.
   3. Install nameplates for each control panel and major control components located outside panel with corrosive-resistant mechanical fasteners, or adhesive.
   4. Secure nameplate to equipment front using screws or rivets.
   5. Secure nameplate to inside surface of door on recessed panelboard in finished locations.
   6. Install nameplates for the following:
      a. Panelboards.
      b. Disconnects and starters.
      c. VFDs
      d. Equipment enclosures
      e. Controls cabinets and enclosures
F. Label Installation:
   1. Install label parallel to equipment lines.
   2. Install label for identification of individual control device stations.
   3. Install labels for permanent adhesion and seal with clear lacquer.
   4. Install panel name and circuit number identification labels for the following:
      a. Junction boxes (permanent marker may be used for junction boxes in mechanical spaces or above lay in ceilings.)
      b. Receptacle cover plates

G. Wire Marker Installation:
   1. Install wire marker for each conductor at panelboards, gutters, pull boxes, at electrical equipment such as contactors and disconnects, and each load connection.
   2. Mark data cabling at each end. Install additional marking at accessible locations along the cable run.
   3. Install labels at data outlets identifying patch panel and port designation.

H. Raceway Marker Installation:
   1. Install raceway marker for each raceway longer than 6 feet and rated 100A or more.
   2. Raceway Marker Spacing: provide marker in a visible location in each room where raceway passes through walls or floors.
   3. Coordinate with architect before labeling raceways in finished spaces

I. Junction and Pull Box Installation
   1. Label all junction boxes with the panel, circuit number, and voltage. For boxes exposed in finished spaces, label the inside of the cover.
   2. Box for communications, fire alarm, and access control shall be provided with color coded covers. Coordinate color to be used with owner.

END OF SECTION