

SPECIFICATIONS

Project Manual

RELLIS Runway 35R Rehabilitation

The Texas A&M University System RELLIS Campus
Bryan, Texas

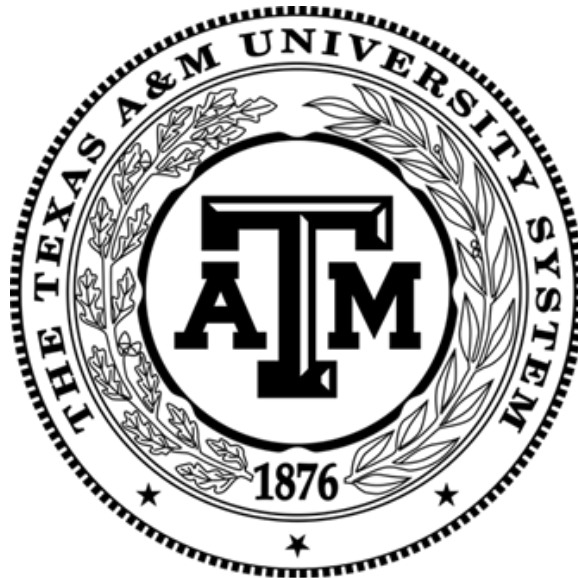
TAMUS PROJECT NO. 01-3331

For Construction

August 20, 2021

**The Texas A&M University System
Office of Facilities Planning & Construction**

Owner



Kimley Horn and Associates, Inc.

2800 Texas Ave #201
Bryan, Texas 77802
(979) 775-9595

**RELLIS RUNWAY 35R REHABILITATION
THE TEXAS A&M UNIVERSITY SYSTEM RELLIS CAMPUS
BRYAN, TEXAS
PROJECT NO. 01-3331**

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AREA MANAGER, ENGINEERING
OFFICE OF FACILITIES PLANNING & CONSTRUCTION**

THE TEXAS A&M UNIVERSITY SYSTEM

TECHNICAL SPECIFICATIONS

SEALS PAGES

I hereby certify that the following Specifications were prepared by me, or under my supervision. I further certify that to the best of my knowledge, information and belief the following Specifications are as required by and in compliance with applicable building codes and standards of the Owner and authorities having jurisdiction in effect at the time of issuance.

Civil Engineer

1. J. Chris Harris, P.E. License # 94859, TBPE Registered Firm No. F-928
2. Responsible for the following (**Division 01, 02, 03, 31, 32, and 33**) Sections of the Specifications:
 - a. Division 01
 - i. Section 01 11 00 Summary of Work Revised
 - ii. Section 01 23 00 Alternates
 - iii. Section 01 74 00 Cleaning and Waste Management
 - iv. Section 01 78 00 Closeout Submittals
 - b. Division 02
 - i. Section 02 41 13.13 Removal of Existing Concrete
 - c. Division 03
 - i. Section 03 30 00 Concrete
 - d. Division 31
 - i. Section 31 11 00 Clearing and Grubbing
 - ii. Section 31 23 00 Excavation and Embankment
 - iii. Section 31 23 23.53 Cement Stabilized Sand Backfill
 - iv. Section 31 23 33 Excavating Trenching and Backfilling
 - v. Section 31 25 13 Erosion and Sedimentation Control
 - e. Division 32
 - i. Section 32 05 17 Asphalts Oils and Emulsions
 - ii. Section 32 11 14 Flexible Base Crushed Limestone
 - iii. Section 32 11 16 Subgrade Preparation and Compaction
 - iv. Section 32 11 29.02 Rolling
 - v. Section 32 11 34 Cement Stabilization of Material in Place
 - vi. Section 32 12 13.16 Tack Coat – Asphaltic
 - vii. Section 32 12 13.23 Prime Coat – Asphaltic
 - viii. Section 32 12 16 Hot Mix Asphaltic Concrete Pavement
 - ix. Section 32 13 00 Site Concrete
 - x. Section 32 13 13 Concrete Pavement
 - xi. Section 32 16 13 Concrete Curb and Gutter
 - xii. Section 32 16 13.01 Concrete Sidewalk
 - f. Division 33
 - i. Section 33 10 00 Facility Water Distribution Piping
 - ii. Section 33 11 15 HDPE Pipe and Fittings
 - iii. Section 33 41 00 Storm Utility Drainage Piping



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THE TEXAS A&M UNIVERSITY SYSTEM INSTRUCTIONS FOR COMPETITIVE SEALED PROPOSALS

1.0 GENERAL:

- 1.1 In accordance with Sec. 51.783, Texas Education Code, the Board of Regents of The Texas A&M University System is requesting Competitive Sealed Proposals (CSP) from general construction contractors.
- 1.2 All data submitted with a Proposal, except as noted herein, is deemed to be a part of the terms and conditions of the Contract.
- 1.3 It is the policy of the State of Texas and the A&M System to encourage the use of Historically Underutilized Businesses (HUBs) in our prime contracts, subcontractors and our purchasing transactions. The goal of the HUB program is to promote equal access and equal opportunity in A&M System contracting and purchasing. Subcontracting opportunities are anticipated for this Request for Competitive Sealed Proposals (RFCSP) and therefore a HUB Subcontracting Plan (HSP) is required.

2.0 RECEIPT OF PROPOSALS:

- 2.1 Proposals will be received at the time, place and under conditions set forth in the published RFCSP.
- 2.2 Proposal documents are obtainable from the Architect/Engineer (A/E) under conditions set forth in the RFCSP.

3.0 INFORMATION INQUIRIES:

- 3.1 Information inquiries regarding the CSP process should be directed to the Chief Facilities Officer for the Office of Facilities Planning & Construction at telephone: (979) 458-7000.
- 3.2 See "Supplemental Instructions for Competitive Sealed Proposals" for information inquiries regarding the technical aspects of the Drawings and Specifications.
- 3.3 Information inquiries regarding the HUB Program and HSP process should be directed to the HUB Program Director as listed in Part 3, HUB Subcontracting Plan for Construction Services.

4.0 DISCREPANCIES AND INTERPRETATIONS:

- 4.1 Proposer must notify the Project Manager and the A/E, in writing, at least eight (8) business days prior to the scheduled Proposal opening date, if discrepancies, ambiguities or omissions are found in the Proposal documents, or if further information or interpretation is desired.
- 4.2 Answers to inquiries will be provided in writing to all proposers in addenda form. All provisions and requirements of such addenda will supersede or modify affected portions of

the Proposal documents. All addenda will be incorporated into and bound with the Contract Documents. No other explanation or interpretation will be considered binding.

5.0 SUBMITTAL PROCEDURE:

- 5.1 Submit one (1) original Part 1, Competitive Sealed Proposal by the time stated per part sealed in a unimailer envelope furnished by the A/E or available at The Texas A&M University System Office of Facilities Planning & Construction.
- 5.2 Enclose the Bid/Proposal Bond or other acceptable Proposal guaranty in the small envelope affixed to the outside of the unimailer envelope for Part 1.
- 5.3 Complete the proposer identification information on the unimailer envelope.
- 5.4 Submit Part 2, Technical Proposal, Proposer's Qualifications by the time stated and in the quantity called for in the Supplemental Instructions for Competitive Sealed Proposals.
- 5.5 Submit Part 3, Technical Proposal, HUB Subcontracting Plan for Construction Services by the time stated and in the quantity called for in Section 2.5 of the Supplemental Instructions for Competitive Sealed Proposals. The HSP shall be submitted as a separate document with sections appropriately tabbed.
- 5.6 If the Proposal is submitted by mail, place the unimailer envelope in a mailing envelope addressed per the Supplemental Instructions for Competitive Sealed Proposals. Delivery of all Proposal parts prior to the advertised time set for the Proposal receipt and subsequent submittal deadlines is the responsibility of the proposer.

6.0 PREPARATION OF COMPETITIVE SEALED PROPOSAL:

- 6.1 The Proposal must be based on conditions at the project site, the project Drawings and Specifications and any addenda issued.
- 6.2 The Proposal, Part 1, Technical Proposal, must be authoritatively executed *in blue ink* and submitted on the Proposal form furnished by the A/E.
- 6.3 If the Part 2, Proposer's Qualifications form does not provide sufficient space to adequately respond to a question, the proposer should attach additional 8 1/2" X 11" white paper sheets as required, referencing the page and question numbers to which the response pertains.
- 6.4 A Proposal showing omissions, alterations, conditions, or carrying riders or other qualifiers which modify the Proposal form may be rejected as irregular.
- 6.5 The various sections of the Part 2 and Part 3 Proposal data should be separated by tabbed dividers. The tabs must identify the sections by name rather than simply a number or alphabet.

- 6.6 If the proposer chooses to issue a "No Response" (N/R) to a question on the Proposal, an explanation of this action is required. Failure to do so may be viewed by the Owner as an incomplete response and may subject the entire Proposal to rejection.
- 6.7 Only one Part 1, Technical Proposal shall be submitted by each proposer. If two or more Part 1, Technical Proposals are submitted, either in one envelope or in separate envelopes, such multiple Proposals may be subject to rejection. The blank Proposal form bound in the Specification is for the proposer's information only.
- 6.8 A fully completed and executed Part 3, HUB Subcontracting Plan acceptable to the Owner must be submitted as directed in the Supplemental Instructions for Competitive Sealed Proposals. Failure to submit a Part 3, HUB Subcontracting Plan will constitute an irregular proposal which will be rejected. The HSP shall not be modified after the time set for receipt except as set forth in the Part 3, HUB Subcontracting Plan for Construction Services.
- 6.9 The proposer may modify a Part 1 Proposal by means of marking an add or deduct to a line in the Part 1 Proposal on the outside of the unimailer in ink with individuals initials prior to the advertised time set for the receipt of Proposals in the published RFCSP. The add or deduct must not reveal the Proposal price but should identify the addition or subtraction or other modification(s) so that the final prices will not be known until the sealed Proposal is opened. Any such modification shall be confirmed on company letterhead and executed by a company officer and received by the presiding official within two (2) working days after the date of the Proposal opening, otherwise the Proposal modification will be ignored and the total Proposal may be rejected.
- 6.10 Proposals received after the advertised time for the Proposal receipt will be ineligible and will be returned unopened.
- 6.11 Before publicly opening the proposals, the HUB Coordinator official shall make a cursory review of the proposer's HSP to determine if a good faith effort has been made and for preliminary acceptability. If no HSP is submitted or if the submitted Plan is not complete and cannot be made complete under this procedure or is not indicative of a good faith effort as defined in the Part 3, HUB Subcontracting Plan Submittal instructions and the Owner's Policy on Utilization of HUBs, the HUB Program Director will publicly announce this to those in attendance at the opening, reject the proposal and return all submitted proposal parts to the proposer unopened.
- 6.12 After all Proposals are publicly opened, but before they are read aloud, they will be examined by the presiding official to determine if they are complete, in proper form and properly signed. If an error or omission is discovered and classified by the presiding official as a technicality which the Owner has reserved the right to waive, the proposer's representative may be permitted to make the appropriate correction. Any such correction will be announced and explained to those present at the Proposal opening. A Proposal which is not and cannot be made eligible for consideration under this procedure will not be read, nor will the Proposal prices be revealed.
- 6.13 A proposer will receive no compensation or reimbursement of expenses incurred in the preparation of a CSP submission.
- 6.14 The Owner reserves the right to reject any or all Proposals.

7.0 PUBLIC INFORMATION AND NOTICE OF CONFIDENTIALITY

- 7.1 The Owner considers all Proposal information, documentation and supporting materials submitted in response to this RFCSP to be non-confidential and/or non-proprietary in nature, and therefore, shall be subject to the public disclosure under the Texas Public Information Act (*Texas Government Code*, Sec. 552.001, et seq.) after the execution of the contract.
- 7.2 The Proposer must identify and designate those portions of their technical Proposal which contains trade secrets or other proprietary data. If the Proposal includes such data, the proposer shall:
1. Mark the cover sheet of the Technical Proposal with the following phrase: "This Proposal includes data that shall not be disclosed outside The Texas A&M University System and the A/E design team and shall not be duplicated, used or disclosed in whole or in part for any purpose other than to evaluate this Proposal."
 2. Mark each sheet and the specific data on that sheet that the proposer wishes to restrict with the following phrase: "Use or disclosure of this specifically marked data is subject to the restrictions regarding confidentiality cited on the cover sheet of this Proposal."

8.0 PROPOSAL GUARANTY:

- 8.1 A certified or cashier's check from a State or National Bank or a Bid/Proposal Bond on The Texas A&M University System Bid/Proposal Bond (A&M System Form C-2), from a Surety authorized to transact business in the State of Texas, with a rating of A- or better with A.M. Best Company and listed in the Department of Treasury list of companies holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies in the amount of not less than five percent (5%) of the greatest total amount of the proposed contract amount, payable without recourse to the order of the Board of Regents of The Texas A&M University System, must accompany the Proposal as a guaranty that, if awarded the Contract, the proposer will promptly enter into and execute the Contract and Performance and Payment Bonds on the forms provided.
- 8.2 The Bid or Proposal Bond must be accompanied by a properly dated and executed Power of Attorney with a live Surety seal on each document. Failure to do so will constitute an irregular Proposal which may be rejected. Use of a Surety company's bond form is not acceptable and will cause the Proposal to be rejected.
- 8.3 Should the successful proposer fail to execute the Contract and Bonds within fifteen (15) days after the date of transmittal of the Contract Documents for execution, the Proposal Guaranty becomes the property of the Owner, not as a penalty, but as liquidated damages.
- 8.4 Proposal guaranties of all proposers will be retained until after the Contract and Bonds have been executed.

9.0 PRE-QUALIFICATION OF PROPOSER

- 9.1 The Owner, at its option, may elect to pre-qualify proposers. If pre-qualification is to be accomplished, proposers will be required to submit all or specific parts of the information required by the RFCSP with the exception of pricing information. Pre-qualification may not be a conclusive determination that a proposer offers the best value to the Owner.
- 9.2 A pre-qualified Proposal may be rejected on the basis of subsequently discovered information, but failure to pre-qualify does not prevent a subsequent determination that a proposer offers the best value to the Owner regarding a specific proposal.

10.0 PROPOSER REQUIREMENTS:

- 10.1 As required by Chapter 231, Texas Family Code, a Proposal for a contract to be paid from state funds must include the name and social security number of the sole proprietor, each partner, shareholder or owner with an ownership interest of at least 25 percent of the business entity submitting the Proposal.
- 10.2 The Texas Family Code requires each Proposal to include the following statement: “Under Section, 231.006, Family Code, the vendor or applicant certifies that the individual or business entity named in this contract Proposal or application, is not ineligible to receive the specified grant, loan or payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate.” Proposer agrees with this certification statement upon submittal of a properly executed Proposal.
- 10.3 All proposals that have a contract value of \$100,000 or more shall contain a Historically Underutilized Business (HUB) Subcontracting Plan. Each Proposer must have made a good faith effort in developing the HSP. The instructions for preparing the HSP are located in the Part 3, HUB Subcontracting Plan.
- 10.4 Out of state corporate proposers must submit a Certificate of Good Standing or a Certificate of Authority with their Proposal. This certificate may be applied for through the office of the Texas Secretary of State.

11.0 OWNERSHIP OF THE COMPETITIVE SEALED PROPOSAL

- 11.1 Submitted Proposals, documentation and supporting materials shall become the property of the Owner.

12.0 SITE INVESTIGATION:

- 12.1 It is the responsibility of each proposer to examine the project site, existing improvements and adjacent property and be familiar with existing conditions before submission of a Proposal.
- 12.2 After investigating the project site and comparing the Drawings and Specifications with the existing conditions, the proposer should immediately notify the A/E, in accordance with paragraph 4.0 of these Instructions for Competitive Sealed Proposals, of any conditions for which requirements are not clear; or about which there is any question regarding the extent of the Work involved.

- 12.3 Should the successful proposer fail to make the required investigation and should a question arise after award of contract as to the extent of the Work involved in any particular case, after receiving recommendations from the A/E, the Owner will make the interpretation of the Contract Documents.

13.0 EVALUATION AND CONTRACT AWARD PROCESS:

- 13.1 Proposals will be opened publicly to identify the names of the proposer and their respective proposed contract amount and contract time. Other contents of the Proposals will be afforded security sufficient to preclude disclosure of the contents prior to award or rejection action.

- 13.2 Proposals will be evaluated by the Owner and the A/E. The criteria for evaluation and selection of the successful proposer for this award will be based upon the factors listed below:

- (1) Proposed construction contract amount – 72%
- (2) Proposed construction contract time – 8%
- (3) Proposer's experience and qualifications – 10%
- (4) Proposer's ability to assist The Texas A&M University System in meeting/exceeding goals for Historically Underutilized Business participation – 4%
- (5) Litigation/claims/compliance – 2%
- (6) Proposer's Quality Control program – 2%
- (7) Proposer's safety record and program – 2%

- 13.3 After opening the Proposals, the Owner will evaluate and rank each Proposal with respect to the published selection criteria described under Section 13.2. After opening and ranking, an award may be made on the basis of the initially submitted Proposal, without discussion, clarification or modification, or the Owner may discuss with the selected proposer, offers for cost adjustment and other elements of the Proposal. Other than the data read at the Proposal opening, the Owner will not disclose any information derived from the Proposals submitted by competing firms in conducting such discussions.

If the Owner determines that it is unable to reach a satisfactory agreement with the first ranked proposer, the Owner will terminate discussions with that proposer. The Owner will then proceed with negotiations with each successive proposer as they appear in the order of ranking until an agreement is reached, or until the Owner has rejected all Proposals. After termination of discussions with any proposer, Owner will not resume discussions with that proposer.

- 13.4 Immediately following the Owner's approval of the order of ranking of proposers and the Owner's contract award or Proposal rejection action, the proposers will be notified.
- 13.5 The Owner reserves the right to accept or reject any or all alternates or to accept any combination of alternates considered advantageous to the Owner.

- 13.6 The award or rejection action regarding this Proposal is at the sole discretion of the Owner and the Owner makes no warranty regarding this Proposal that a contract will be awarded to any proposer.
- 13.7 The Owner agrees that if the Contract is awarded, it will be awarded to the proposer offering the best value to the Owner. The Owner is not bound to accept the lowest priced Proposal if that Proposal is judged not to be the best value for the Owner, as determined by the Owner.

**THE TEXAS A&M UNIVERSITY SYSTEM
SUPPLEMENTAL INSTRUCTIONS FOR COMPETITIVE SEALED PROPOSALS**

These "Supplemental Instructions for Competitive Sealed Proposals," amend and supplement the "Instructions for Competitive Sealed Proposals" and shall govern in the event of any conflict with the "Instructions for Competitive Sealed Proposals."

1.0 PROPOSAL DOCUMENTS:

- 1.1. Drawings and Specifications have been prepared by the architectural/engineering (A/E) firm of **Kimley Horn and Associates, Inc.** Documents include Drawings and Specifications dated **August 20, 2021.**
- 1.2. Information inquiries regarding the Competitive Sealed Proposals (CSP) method of procurement should be directed to Mr. Brett McCully, Chief Facilities Officer, Office of Facilities Planning & Construction, The Texas A&M University System at (979) 458-7000.
- 1.3. Inquiries regarding the technical aspects of the Drawings, Specifications and other CSP documents should be directed to **Kimley Horn and Associates, Inc, Chris Harris, PE, (979) 775-9595.**

2.0 PROPOSAL DEADLINE AND REQUIRED SUBMITTALS:

- 2.1. Proposals will be received by Mr. Brett McCully, Chief Facilities Officer, The Texas A&M University System, Office of Facilities Planning & Construction, 301 Tarrow Street 2nd Floor, College Station, Texas 77840-7896, in parts, at times and dates as follows:
- 2.2. **PART 1 – COMPETITIVE SEALED PROPOSAL**, will be received by Mr. McCully at the aforementioned location **until 2:00 p.m., Tuesday, September 21, 2021**, then publicly opened and read aloud after review of Part 3.
 - 2.2.1. Part 1 Proposals must include the following:
 - 2.2.1.1. One (1) executed original Competitive Sealed Proposal, PART 1 Technical Proposal, sealed in the unmailer envelope.
 - 2.2.1.2. Certified or Cashier's Check or One (1) executed original Bid/Proposal Bond (A&M SYSTEM Form C-2), sealed in the small envelope affixed to the outside of the unmailer envelope.
 - 2.2.2. FAILURE TO SUBMIT A COMPLETE PROPOSAL **THAT INCLUDES ALL ALTERNATES** WILL BE VIEWED BY THE OWNER AS A NON-RESPONSIVE PROPOSAL WHICH WILL BE SUBJECT TO REJECTION.
- 2.3. One (1) copy on an electronic formatted media device of **PART 2, TECHNICAL PROPOSAL, PROPOSER'S QUALIFICATIONS**, will be received **until 2:00 p.m., Tuesday, September 21, 2021**, by Mr. McCully at the aforementioned location.

- 2.4. One (1) copy on an electronic formatted media device of **PART 3, TECHNICAL PROPOSAL, HISTORICALLY UNDERUTILIZED BUSINESS SUBCONTRACTING PLAN**, will be received **until 2:00 p.m., Tuesday, September 21, 2021**, by Mr. McCully at the aforementioned location. The HUB Subcontracting Plan shall be clearly labeled “HUB Subcontracting Plan, **RELLIS Runway 35R Rehabilitation, Project No. 01-3331**. Sections shall be appropriately tabbed for easy reference.
- 2.4.1. FAILURE TO SUBMIT A COMPLETE AND ACCEPTABLE HUB SUBCONTRACTING PLAN WILL BE VIEWED BY THE OWNER AS A NON-RESPONSIVE PROPOSAL WHICH WILL BE REJECTED.
- 2.4.1.1. **NOTE TO GENERAL CONTRACTOR:**
THE HUB SUBCONTRACTING PLAN (HSP), SUBMITTED AS PART 3 OF THE CSP PROCESS, WILL BECOME A PART OF ANY CONSTRUCTION CONTRACT RESULTING FROM THIS SOLICITATION.
- 2.5. Proposals submitted by mail or courier shall be addressed to Mr. Brett McCully, Chief Facilities Officer, The Texas A&M University System, Office of Facilities Planning & Construction, 301 Tarrow Street 2nd Floor, College Station, TX 77840-7896. Delivery of all proposal parts prior to the submittal deadlines set forth above is the responsibility of the proposer.
- 2.6. Proposals will be publicly opened and the names of the respondents and the monetary proposals publicly read aloud **at 3:00 p.m., Tuesday, September 21, 2021**, virtually through the following WebEx link.
Meeting Link: [WebEx Meeting Link](#); Meeting number: 145 743 2725; Password; Tuesday1
Join by phone: +1-855-282-6330 US TOLL FREE, +1-415-655-0003 US TOLL
Access code: 145 743 2725
- 3.0 PRE-PROPOSAL MEETING:
- 3.1. A Pre-Proposal meeting will be held at **1:30 p.m., Tuesday, September 7, 2021, in the RELLIS Administration Building, Room 101, 1484 Avenue A, Bryan, Texas 77807**. All general contractors and subcontractors planning to submit a proposal are encouraged to attend.
- 4.0 ESTIMATED BUDGET:
- 4.1. The Owner has established a range of **\$4,200,000.00 to \$4,500,000.00** as the estimated construction budget for all Work including alternates as described in the Drawings, Specifications and other Contract Documents prepared by the A/E.
- 5.0 ESTIMATED CONSTRUCTION TIME:
- 5.1. The Owner has determined that **425** calendar days from the Notice to Proceed should be sufficient time for performing all work including alternates in accordance with the drawings, specifications and other contract documents prepared by the A/E.

6.0 EVALUATION AND CONTRACT AWARD PROCESS:

- 6.1. The A&M System reserves the right not to award the Base Bid or any or all of the Alternates.

**THE TEXAS A&M UNIVERSITY SYSTEM
BID/PROPOSAL BOND**

KNOW ALL MEN BY THESE PRESENTS:

That we, _____
(Name and Address of Bidder/Proposer)

hereinafter called the Principal, and _____

a corporation or firm duly authorized to transact surety business in the State of Texas or as listed in the current notice of the Department of Treasury list of companies holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies, hereinafter called the Surety, are held and firmly bound unto the Board of Regents of The Texas A&M University System, College Station, Texas 77840-7896, hereinafter called the Oblige, in the sum of not less than five percent (5%) of the greatest total amount of the bid or proposal, as a guarantee, the payment of which sum will and truly be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid or proposal for: Project Number _____

(Full name and location of project)

NOW, THEREFORE, if the Oblige shall award the Contract to the Principal and the Principal shall enter into the Contract in writing with the Oblige in accordance with the terms of such bid or proposal, and furnish such bonds and other instruments as may be specified in the Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, then this bond shall be null and void. If in the event of failure of the Principal to execute such Contract and furnish such bonds and other instruments required by the Contract Documents within fifteen (15) days after the date of transmittal of the Contract Documents to the Principal for execution, this bond shall remain in full force and effect and become the property of the Oblige, without recourse of the Principal and/or the Surety, not as a penalty, but as liquidated damages.

Signed this _____ DAY of _____, 20____

By: _____
(Principal)

(Signature and Title)

* By: _____
(Surety)

(Attorney-in-Fact)

*Attach Power of Attorney for Surety's Attorney-in-Fact with "live seal".

Surety Seal

DISCLOSURE OF GUARANTY FUND NONPARTICIPATION

In the event the Surety is unable to fulfill its contractual obligation under this bond, the Oblige is not protected by an insurance guaranty fund or other solvency protection arrangement.

PART 1
TECHNICAL PROPOSAL
COMPETITIVE SEALED PROPOSAL

(Firm Name)

(Address)

(City/State/Zip Code)

(Phone)

(Fax)

For

RELLIS Runway 35R Rehabilitation
The Texas A&M University System RELLIS Campus
Bryan, Texas
Project No. 01-3331

Project No. 01-3331

Proposal Of: _____

(Legal Firm Name)

COMPETITIVE SEALED PROPOSAL
to
THE BOARD OF REGENTS
of
THE TEXAS A&M UNIVERSITY SYSTEM
FOR THE FOLLOWING WORK

RELLIS Runway 35R Rehabilitation
The Texas A&M University System RELLIS Campus
Bryan, Texas

The undersigned, as a designated representative of the proposer, declares such firm is the only entity, as principal, with any interest in this Proposal and the Proposal is made without collusion with any other entity. The proposer affirms that the form of Contract, Instructions for Competitive Sealed Proposals, Supplemental Instructions for Competitive Sealed Proposal, Addenda, selection criteria, estimated budget, Specifications and the Drawings pertaining to this Proposal have been examined and the firm has also examined the locations, conditions and classes of materials for the proposed Work and agrees to provide all necessary machinery, tools, apparatus and construction means to accomplish the Work described in the Contract Documents in the manner prescribed.

The proposer agrees the quantities of Work to be performed and materials to be furnished may be increased or decreased as may be considered necessary, in the sole opinion of the Owner's Representative, to complete the Work as planned and contemplated. Adjustment for changes in Work will be in accordance with the Owner's current Uniform General and Supplementary Conditions.

Proposal amounts must be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.

The proposer acknowledges receipt and incorporation of the following addenda into this Proposal:

No. _____

Dated _____

No. _____

Dated _____

Is proposer a corporation? Check One: Yes No .

If proposer is subject to the Texas Franchise Tax, a "Certificate of Good Standing" issued by the Texas Comptroller of Public Accounts must be submitted with the Proposal.

A "nonresident proposer" is equivalent to a "nonresident bidder," and a "Texas Resident Proposer" is equivalent to a "Texas Resident Bidder," as defined hereafter and may be awarded a Contract in accordance with Chapter 2252, Texas Government Code, as partially quoted below:

"...(3) "Nonresident bidder" refers to a person who is not a resident.

(4) "Resident bidder" refers to a person whose principal place of business is in this state, including a

contractor whose ultimate parent company or majority owner has its principal place of business in this state."

In the space below, enter the address of the proposer's place of business and, if applicable, the name and address of the proposer's ultimate parent company or majority owner.

Proposer's name and address of principal place of business:

Ultimate parent company or majority owner's name and the address of its principal place of business:

BASE PROPOSAL AMOUNT

Total amount for the furnishing of all labor, materials, services, equipment and appliances required in conjunction with and properly incidental to all Work (demolition, site work, general construction, mechanical, plumbing, electrical and data/telecommunications work not including Work listed as alternates) for construction of the 01-3331 RELLIS Runway 35R Rehabilitation, Texas, in conformance with Drawings and Specifications prepared by Kimley-Horn and Associates, Texas.

(Amount In Words)

_____ DOLLARS (\$ _____)
(Amount In Figures)

CONSTRUCTION TIME:

The undersigned agrees to complete all Work in the following number of calendar days from the Notice to Proceed:

_____ (Words) _____ (Proposer to complete) _____ (Numerals)

Builder's Risk Insurance:

Submit a credit amount to The Texas A&M University System for not providing the General Contractor's Builder's Risk Insurance. The Texas A&M University System has the option to insure the project under the System Builder's Risk Program which includes a \$100,000 deductible per occurrence, of which \$15,000 will be the responsibility of the contractor.

(Amount In Words)

_____ DOLLARS (\$ _____)
(Amount In Figures)

ADD ALTERNATE PROPOSAL ITEMS:

Refer to Specification Section 01230 for detailed description of work included in each Alternate Proposal Item.

In the spaces provided below, state amounts, both in words and figures, to be added to Base Proposal Amount, in the event that any of the described Alternate Proposal Items are accepted. Include all variations in profit, overhead, bonds,

insurance and similar related items. Time of completion shall not be changed due to the acceptance of any of the Alternate bids below except for adjustments indicated for each alternate in the space provided.

A "non-response" or omission of proposal price on any Alternate may cause the total proposal to be rejected.

The Owner reserves the right to accept or reject any Alternate in the order of its own choosing.

ALTERNATE PROPOSAL ITEM NUMBER ONE – LANE A – NEOLOGY SHOULDER

The amount to be added to the Base Proposal Amount to rehabilitate the western most lane of 35R including all labor, materials, services and equipment as described in the plans and specifications is:

ADD:
(Amount In Words) _____
_____ DOLLARS (\$ _____)
(Amount In Figures)

Adjustment to total project time for this Alternate Proposal Item, in days: _____
(Numerals)

ALTERNATE PROPOSAL ITEM NUMBER TWO – LANE X – EASTERN SHOULDER

The amount to be added to the Base Proposal Amount to rehabilitate the eastern most lane of 35R including all labor, materials, services and equipment as described in the plans and specifications is:

ADD:
(Amount In Words) _____
_____ DOLLARS (\$ _____)
(Amount In Figures)

Adjustment to total project time for this Alternate Proposal Item, in days: _____
(Numerals)

ALTERNATE PROPOSAL ITEM NUMBER THREE – NORTH END REHABILITATION

The amount to be added to the Base Proposal Amount to rehabilitate the northern end of 35R including all labor, materials, services, equipment and appliances as described in the plans and specifications is:

ADD:
(Amount In Words) _____
_____ DOLLARS (\$ _____)
(Amount In Figures)

Adjustment to total project time for this Alternate Proposal Item, in days: _____
(Numerals)

ALTERNATE PROPOSAL ITEM NUMBER FOUR – SOUTH END REHABILITATION

The amount to be added to the Base Proposal Amount to rehabilitate the southern end of 35R including all labor, materials, services, equipment and appliances as described in the plans and specifications is:

ADD:
(Amount In Words) _____
_____ DOLLARS (\$ _____)
(Amount In Figures)

Adjustment to total project time for this Alternate Proposal Item, in days: _____
(Numerals)

ALTERNATE PROPOSAL ITEM NUMBER FIVE – TAXI 3 ADDITIONAL PAVEMENT

The amount to be added to the Base Proposal Amount to furnish and install the additional pavement shown for

Taxiway 3 including all labor, materials, services, equipment and appliances as described in the plans and specifications is:

ADD:
(Amount in Words) _____
_____ DOLLARS (\$ _____)
(Amount In Figures)

Adjustment to total project time for this Alternate Proposal Item, in days: _____
(Numerals)

ALTERNATE PROPOSAL ITEM NUMBER SIX – TAXIWAY 5 ADDITIONAL PAVEMENT

The amount to be added to the Base Proposal Amount to furnish and install the additional pavement shown for Taxiway 5 including all labor, materials, services, equipment and appliances as described and scheduled in the plans and specifications is:

ADD:
(Amount in Words) _____
_____ DOLLARS (\$ _____)
(Amount In Figures)

Adjustment to total project time for this Alternate Proposal Item, in days: _____
(Numerals)

UNIT PRICES:

ITEM NUMBER ONE—REPLACE CONCRETE SLAB

The price per slab to demolish, remove concrete, prepare subgrade, and replace additional concrete slabs not shown on drawings

a. Replace Concrete Slabs \$ _____
(Amount in Words)
_____ DOLLARS (\$ _____)
(Amount in Figures)

ITEM NUMBER TWO—CRACK SEAL

The price per linear foot of routing and sealing concrete cracks not shown on drawings

a. Route and seal cracks \$ _____
(Amount in Words)
_____ DOLLARS (\$ _____)
(Amount in Figures)

ITEM NUMBER THREE—SPALL REPAIR

The price per pound of concrete spall repair not shown in drawings.

a. Number of concrete replaced \$ _____
(Amount in Words)
_____ DOLLARS (\$ _____)
(Amount in Figures)

ITEM NUMBER FOUR— PATCH REPAIR

The price per pound of concrete spall repair not shown in drawings.

- a. Number of concrete replaced \$ _____
(Amount in Words) _____ DOLLARS (\$ _____)
(Amount in Figures)

ITEM NUMBER FIVE—FAULT REPAIR

The price per square foot of pavement grinding not shown in drawings.

- a. SF of grinding \$ _____
(Amount in Words) _____ DOLLARS (\$ _____)
(Amount in Figures)

Accompanying this Proposal is a cashier's check or a Bid or Proposal Bond (TAMUS Form C-2) in the amount of not less than five percent (5%) of the greatest total amount of this Proposal payable without recourse to the order of the Board of Regents of The Texas A&M University System. Use of a surety company bid bond form is NOT acceptable and will constitute an irregular proposal which will be rejected.

The proposer agrees that this Proposal will not be withdrawn for a period of ninety (90) days from the date of the Proposal opening.

The proposer further agrees to pay Liquidated Damages per calendar day for failure to complete the work within the contracted time in accordance with Section 9.11 of the Uniform General and Supplementary Conditions and as established in the Contract.

By signing below, the proposer hereby certifies as follows, and acknowledges that such certifications will be included in any resulting contract:

- (i) By signature hereon, Respondent offers and agrees to furnish all services to construct the project at the prices quoted and comply with all terms, conditions, and requirements set forth in the RFP documents and contained herein.
- (ii) By signature hereon, Respondent affirms that it has not given, 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 Proposal. Failure to sign hereon, or signing a false statement, may void the proposal or any resulting contracts at the Owner's option, and the Respondent may be removed from all proposal lists at this Agency.
- (iii) By signature hereon, a corporate Respondent certifies that it is not currently delinquent in the payment of any Franchise Taxes due under Chapter 171, Texas Tax Code, or that the corporation is exempt from the payment of such taxes, or that the corporation is an out-of-state corporation that is not subject to the Texas Franchise Tax, whichever is applicable. A false certification shall be deemed a material breach of contract and, at the Owner's option, may result in cancellation of any resulting contract.
- (iv) By signature hereon, the Respondent hereby certifies that neither the Respondent nor the firm, corporation, partnership or institution represented by the Respondent, 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 proposal made to any competitor or any other person engaged in such line of business.
- (v) By signature hereon, Respondent certifies that all statements and information prepared and submitted in response to this RFP are current, complete and accurate.
- (vi) By signature hereon, Respondent certifies that the individual signing this document and the documents made part of the RFP is authorized to sign such documents on behalf of the company and to bind the company under any contract which may result from the submission of this proposal.

- (vii) By signature hereon, Respondent certifies as follows:
“Under Section 231.006, Texas Family Code, the vendor or applicant certifies that the individual or business entity named in this contract, is not ineligible to receive payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate.”
“Under Section 2155.004, Texas Government Code, the vendor or applicant certifies that the individual or business entity named in this bid or contract is not ineligible to receive the specified contract and acknowledges that this contract may be terminated and payment withheld if this certification is inaccurate.”
“Under Section 2254.004, Texas Government Code, the vendor or applicant certifies that each individual or business entity proposed by Respondent as a member of its team that will engage in the practice of engineering or architecture was selected based on demonstrated competence and qualifications only.”
- (viii) By signature hereon, Respondent and each person signing on behalf of Respondent certifies, and in the case of a sole proprietorship, partnership or corporation, each party thereto certifies as to its own organization, that to the best of their knowledge and belief, no member of The A&M System or The A&M System Board of Regents, nor any employee, or person, whose salary is payable in whole or in part by The A&M System, has direct or indirect financial interest in the award of this RFP, or in the services to which this RFP relates, or in any of the profits, real or potential, thereof.
- (ix) By signature hereon, Respondent affirms that no compensation has been received for participation in the preparation of the specifications for this RFP. (Ref. Texas Government Code, Section 2155.004.)
- (x) Respondent represents and warrants that all services to be provided in response to this RFP will meet or exceed the safety standards established and promulgated under the Federal Occupational Safety and Health law (Public Law 91-596) and its regulations in effect as of the date of this solicitation.
- (xi) By signature hereon, Respondent signifies its compliance with all federal laws and regulations pertaining to Equal Employment Opportunities and Affirmative Action.
- (xii) Respondent certifies it does not and will not, during the performance of any resulting contract from this RFP, boycott Israel.
- (xiii) Respondent certifies that it is not engaged in business with Iran, Sudan, or a foreign terrorist organization. Respondent acknowledges that any Agreement resulting from this RFP may be terminated if this certification is inaccurate.
- (xiv) Respondent certifies that it or the individual named below is not involved in human trafficking. Respondent acknowledges that any Agreement resulting from this RFP may be terminated & payment withheld if this certification is inaccurate.
- (xv) Respondent certifies that the requirements of Subchapter J, Chapter 552, and *Texas Government Code*, (added by SB 943 during the 86th Legislative Session) may apply to this RFQ and resultant agreement and the Respondent agrees that the resultant agreement can be terminated if the Respondent knowingly or intentionally fails to comply with a requirement of that subchapter.
- (xvi) Respondent is responsible to ensure that employees participating in work for any A&M System member have not been designated by the A&M System as Not Eligible for Rehire as defined in System policy [32.02, Section 4](#). Non-conformance to this requirement may be grounds for termination of any resultant agreement.

Failure to complete all portions of this Proposal form may cause the entire Proposal to be rejected.

[SIGNATURE PROVIDED ON FOLLOWING PAGE]

Proposer:

Name(s) of individual(s), proprietor(s), partner(s), share holders(s), or owner(s) with an ownership interest of at least 25% of the business entity executing this Proposal.

(Legal Firm Name)

Name: _____

Name: _____

By: _____
(Signature)

Name: _____

(Print or Type Name)

Name: _____

Title: _____

Address: _____

Phone No.: _____

FAX No.: _____

E-mail Address: _____

PART 2
TECHNICAL PROPOSAL
PROPOSER'S QUALIFICATIONS
COMPETITIVE SEALED PROPOSAL

(Firm Name)

(Address)

(City/State/Zip Code)

(Phone)

(Fax)

E-Mail Address

RELLIS Runway 35R Rehabilitation
The Texas A&M University System RELLIS Campus
Bryan, Texas
Project No. 01-3331

General Contractor's Name: _____

Address: _____

City, State, Zip: _____

Telephone No.: _____ Fax No.: _____

E-mail Address: _____

State Comptroller Vendor Identification Number: _____

I. GENERAL

1. Qualification information submitted shall be applicable only to the Contractor's office that will perform this Work.
2. Attach your Project Organization Chart and detailed resumes of individuals assigned to this project including full-time project manager, full-time superintendent, full-time project scheduler/expediter, and two full-time quality control supervisors.
3. The resumes of your key personnel shall include professional affiliations.

II. HISTORY

1. Corporation Partnership Sole Proprietorship Joint Venture Limited Liability Company

State of Organization: _____

2. In continuous business since: _____

Remarks (if required): _____

3. List other fully staffed offices or fully staffed branch offices of your organization:

<u>Name/Location</u>	<u>Branch Manager</u>	<u>Telephone Number</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

4. Corporate Officers, Partners or Owners of Organization:

<u>Name</u>	<u>Title</u>	<u>Construction Experience</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

5. Check box(es) corresponding to the nature of your business:

- Large Business (100 or more employees)
- Small Business (fewer than 100 employees)
- HUB Business
- Other (Define)

6. Has your organization ever defaulted or failed to complete any work awarded?

- Yes No

If yes, stipulate where and why: _____

7. Has your organization ever paid liquidated damages or a penalty for failure to complete a contract on time? Yes No

If yes, stipulate where and why: _____

8. Has your organization ever been charged with or paid a fine for non-compliance with State and/or Federal statutes or regulations? Yes No

If yes, stipulate for which project, when and why: _____

III. EXPERIENCE

1. Normally performs _____% of the work with own forces.

(List Trades) _____

2. Propose to perform _____% of the work for this project with own forces.

(List Trades) _____

3. List major construction projects your organization has in-progress using the format below:
(Include as an attachment identified by item and sub-item.)

Name and Location of Project: _____

Contract Amount: _____

Percent Complete: _____

Projected Completion Date: _____

Owner Reference Contact:

Name

Telephone

Address

A/E Reference Contact:

Name

Telephone

Address

4. Total number and dollar amount of contracts currently in progress:

Number _____ \$ _____

5. Largest single contract amount currently in-progress: \$ _____

Project Name: _____

Projected Completion Date: _____

6. Volume of work completed over last 5 years: (Through 12/31)

2020 \$ _____

2019 \$ _____

2018 \$ _____

2017 \$ _____

2016 \$ _____

7. List major construction projects your organization has completed in the last 5 years with completion dates and references. Other projects of particular significance may also be listed. (Include as an attachment identified by item and sub-item.)

Name and Location of Project: _____

Contract Amount: _____

Date Completed: _____

Owner Reference Contact:

Name

Telephone

Address

A/E Reference Contact:

Name	Telephone
Address	

8. List pending claims and/or litigation at time of submitting Proposal. (Show project name, owner and summary explanation.)

IV. SAFETY PROGRAM

1. List your organization's Workers Compensation Experience Modification Rate (EMR) for the last five years, as obtained from your insurance agent.

2020	\$	
2019	\$	
2018	\$	
2017	\$	
2016	\$	

2. Complete matrix for the five past years, as obtained from OSHA No. 200 Log:

	2020	2019	2018	2017	2016
Number of injuries and illnesses					
Number of lost time accidents					
Number of recordable cases					
Number of fatalities					
Number of employee direct hire fixed hours worked. (round to 1,000's)					

3. Are regular project safety meetings held for Field Supervisor(s)? Yes No
 If yes, frequency: Weekly Bi-monthly Monthly As Needed

4. Are project safety inspections conducted? Yes No

If yes, who performs inspection?

How often?

Who is required to attend?

5. Does organization have a written safety program? Yes No

If yes, provide a copy. It will become a compliance document upon contract award.

6. Does your organization have a safety orientation program for new employees? Yes No

For employees promoted to Field Supervisor? Yes No

If yes, does your Supervisor Safety Program include instructions on the following?

	Yes	No
Safety work practices	<input type="checkbox"/>	<input type="checkbox"/>
Tool box safety meetings	<input type="checkbox"/>	<input type="checkbox"/>
First aid procedures	<input type="checkbox"/>	<input type="checkbox"/>
Accident investigation	<input type="checkbox"/>	<input type="checkbox"/>
Fire protection	<input type="checkbox"/>	<input type="checkbox"/>
New worker's orientation	<input type="checkbox"/>	<input type="checkbox"/>

V. QUALITY CONTROL PROGRAM

1. Submit a complete quality control program which will become a compliance document upon contract award.
2. This plan should address all aspects of quality control including responsibility for surveillance work, acceptance, rejection, documentation and resolution of deficiencies, trend analysis and corrective action and interface with Owner's inspectors.

4. Are project safety inspections conducted? Yes No

If yes, who performs inspection?

How often?

Who is required to attend?

5. Does organization have a written safety program? Yes No

If yes, provide a copy. It will become a compliance document upon contract award.

6. Does your organization have a safety orientation program for new employees? Yes No

For employees promoted to Field Supervisor? Yes No

If yes, does your Supervisor Safety Program include instructions on the following?

	Yes	No
Safety work practices	<input type="checkbox"/>	<input type="checkbox"/>
Tool box safety meetings	<input type="checkbox"/>	<input type="checkbox"/>
First aid procedures	<input type="checkbox"/>	<input type="checkbox"/>
Accident investigation	<input type="checkbox"/>	<input type="checkbox"/>
Fire protection	<input type="checkbox"/>	<input type="checkbox"/>
New worker's orientation	<input type="checkbox"/>	<input type="checkbox"/>

V. QUALITY CONTROL PROGRAM

1. Submit a complete quality control program which will become a compliance document upon contract award.
2. This plan should address all aspects of quality control including responsibility for surveillance work, acceptance, rejection, documentation and resolution of deficiencies, trend analysis and corrective action and interface with Owner's inspectors.

PART 3
HUB SUBCONTRACTING PLAN
for
CONSTRUCTION SERVICES

(Firm Name)

(Address)

(City/State/Zip Code)

(Telephone)

(Fax)

(E-Mail Address)

for

RELLIS Runway 35R Rehabilitation
The Texas A&M University System RELLIS Campus
Bryan, Texas
Project No. 01-3331

I. HUB PROGRAM

The purpose of the HUB Program is to promote full and equal business opportunities for all businesses in State contracting. The Texas A&M University System (“A&M System”) shall make a good faith effort to meet or exceed either the State of Texas Disparity Study goals or the agency’s goal and to assist HUBs in receiving a portion of the total contract value of all contracts that the agency expects to award in a fiscal year. It is the policy of the A&M System to contract directly with HUBs or indirectly through subcontracting opportunities in accordance with the Texas Government Code, [Chapter 2161 Subchapter F, Comptroller of Public Accounts HUB Rules](#), and [Texas Administrative Code Section § 20.285](#).

The A&M System has established its own HUB goals as allowed in Texas Government Code, Chapter 2161.123(d)(5). Therefore, respondents are required to use the following:

- **11.20% for heavy construction other than building contracts;**
- 26% for all building construction, including general contractors and operative builders contracts;
- 11% for all special trade construction contracts;
- 38% for professional services contracts;
- 11% for all other services contracts; and
- 44% for commodities contracts.

A Historically Underutilized Business (HUB) is defined by statute as a for-profit entity that has not exceeded the size standard prescribed by [34 TAC §20.294](#), and has its principal place of business in Texas, and is at least 51 percent owned by an Asian Pacific American, Black American, Hispanic American, Native American, American woman and /or Service Disabled Veteran with a Service related disability of 20% or greater, who reside in Texas and actively participate in the control, operations and management of the entity's affairs.

The total expected value of this contract is \$100,000 or more and the A&M System has determined that subcontracting opportunities are probable for this contract. Therefore, the Respondent is required to submit a HUB Subcontracting Plan (HSP) with their proposal. The Respondents will use the procedures prescribed in Article II when developing the HSP.

All Respondents must submit a HUB Subcontracting Plan according to the procedures and steps listed below.

The Owner will review the information/documentation submitted and use it as a basis to determine if the Respondent’s Plan provides evidence that a good faith effort will be made as required. If it is determined that the submitted Plan is not sufficient, the Respondent’s submittal/proposal will be considered non-responsive and shall be rejected for the reasons recorded in the project files. An accepted HSP Subcontracting Plan will become a part of any contract with the Respondent resulting from this solicitation and then can only be modified by contract change order.

For information regarding The Texas A&M University System HUB Program and HUB subcontracting requirements, please contact Mr. Keith Williams, HUB Coordinator, kwilliams@tamus.edu, (979) 458-3265.

II. HUB SUBCONTRACTING PLAN (HSP) PROCEDURES

An HSP is required as part of bids, proposals, offers, or other applicable expression of interest valued at \$100,000 or more. Responses that do not include the HSP or if the agency determines that the HSP was not developed in good faith, shall be rejected as a material failure to comply with the advertised specifications.

The procedures for the HSP requirements of this Request for Proposal are a **two-step process** as follows; 1) Initial HSP to be submitted with this RFP, and 2) Complete HSP to be submitted within sixty (60) days of award. These two steps are defined below.

1) **All Respondents.** The following items **must be submitted** with your RFP response in order to meet the HUB Subcontracting Plan requirements.

- a. Cover sheet, Page 1 of Part 3
- b. Letter of transmittal attesting that the respondent has read and understands the Policy on Historically Underutilized Businesses (see Attachment A)
- c. Historically Underutilized Business Subcontracting Plan: Complete the HSP form by submitting Sections 1, Section 2-a. & b. and Section 4 ONLY. Include percentages within section 2b for all opportunities in which you anticipate HUB participation. While it is required that Method B be used to complete the good faith effort, the Method B pages and supporting documentation is not required at this time. See Item 2) below regarding requirements for the Awarded Respondent.

Note that it is understood that final percentages for all opportunities may change upon execution of subcontracts and this will be captured within the submittal required by the Awarded Respondent.

[CLICK HERE](#) for The Texas A&M University System specific state of Texas HUB Subcontracting Plan form to be utilized (for FY21).

- d. Participation Plan explaining how the Respondent intends to make a good faith effort for each subcontracting opportunity identified in Section 2 of the HSP form. This plan shall include the following items:
 - The Respondent shall state whether it is a Texas certified HUB.
 - The Respondent shall state that it intends to make a good faith effort to meet or exceed the stated A&M System HUB goal of **11.20% for heavy construction**. The awarded Respondent must show the full good faith effort to include documentation for each opportunity that was not awarded to a HUB subcontractor as stated in step 2). This documentation may include all bid responses received for each of these opportunities.
 - Provide a copy of a solicitation notice letter that was sent to HUB vendors for at least one subcontracting opportunity as part of this CSP. The notice shall in all instances and at a minimum include the scope of work, information regarding location to review plans and specifications, information about bonding and insurance requirements, and identify a contact person.
 - Provide a copy of a solicitation letter that was sent to trade organizations or development centers for at least one subcontracting opportunity as part of this CSP. The notice shall in all instances and at a minimum include the scope of work, information regarding location to review plans and specifications, information about bonding and insurance requirements, and identify a contact

person.

- Provide a list of the trade organizations or development centers that you notified in your outreach efforts for this CSP.
- Provide information and documentation that describes how you located HUB vendors for solicitation of opportunities on this CSP. For example, did you use the [CMBL/HUB Directory](#) listings? Did you advertise in trade organization newsletters or newspapers? Etc.

2) **Awarded Respondent Only.** A revised and complete HSP must be submitted within sixty (60) calendar days from the date of award notification. The following items must be submitted with this revised HSP in order to meet the full HUB Subcontracting Plan requirements.

- a. Complete Section 1, page 1 of the HSP form.
- b. Complete Section 2a through d. Any changes to 2b shall be noted accordingly. Note that Method B is required so “No” should be checked on both 2c and 2d.
- c. Complete Section 4
- d. Complete Method B attachment for each opportunity listed in Section 2b. Reminder that all supporting documentation listed in Section B-3 shall be provided as part of this attachment. The following are additional items of note as part of the good faith effort required:

- The respondent shall provide potential HUB subcontractors reasonable time to respond to the respondent’s notice. “Reasonable time to respond” in this context is no less than seven (7) working days from receipt of notice, unless circumstances require a different time period, which is determined by the A&M System HUB Program and documented in the contract file.
- The respondent shall use the State of Texas Centralized Master Bidders List (CMBL)/HUB Directory, internet resources, and/or other directories as identified by the State of Texas or the A&M System HUB Program office when searching for HUB subcontractors.

NOTE: A complete list of all certified HUBs may be electronically accessed at the state of Texas [HUB Directory](#).

- The respondent shall provide the notice described in this section to **three (3) or more** HUBs for **each** subcontracting opportunity as stated in Section B3a. The A&M System encourages respondents to seek and find a “Diverse Group” of Historically Underutilized Businesses in each category in which a subcontract of services is solicited.
- The respondent shall provide notice to trade organizations or development centers that assist in identifying HUBs by disseminating opportunities to their membership/participants.
- The respondent shall negotiate in good faith with qualified HUBs, not rejecting qualified HUBs who were also the best value responsive bidder.
- Provide written justification of the selection process if a non-HUB subcontractor is selected in Section B-4c.

III. HSP CHANGES

If at any time during the term of the contract, it becomes necessary to make a change to the approved HSP, such proposed change must be received for review and approval by the TAMUS HUB Program Office before the change will be effective under the contract. The contractor must comply with provisions of TAC §20.14 relating to development and evaluation of HSP, in order to substitute or subdivide the work and/or substitute or add subcontractors prior to any alteration of the HSP. In the event that a change is necessary, the requested changes shall not reduce the level of HUB participation that was a part of the proposal at the time of construction contract award unless approved by the A&M System HUB Program office. The reasons for proposed change(s) shall be requested on a separate process through e-Builder.

The contractor will be required to submit a revised HSP for additional subcontracting opportunities that were not identified in the original HSP and created when the original scope of work expands through a change order, contract amendment or a contract renewal.

IV. REPORTING REQUIREMENTS

The A&M System requires a respondent to whom a contract has been awarded, to report to the System the identity and the amount paid to its subcontractors, HUBs and non-HUBs on the [Progress Assessment Report \(PAR\) form](#) through the pay application process in e-Builder. During the course of the contract, the A&M System shall monitor and document the performance of the contractor through e-Builder. The A&M System may also request payment documentation in accordance with the Comptroller of Public Accounts HUB Rules that confirms the performance of the contractor.

Note: When the prime contractor/vendor is a HUB, it must perform at least 25% of the total value of the contract with its own or leased employees, as defined by the Internal Revenue Service, in order for the Owner to receive 100% HUB credit for the entire contract. If a HUB prime contractor's HSP identifies that it is planning to perform less than 25% of the total value of contract with its own or leased employees, the HUB contractor must report to the Owner the value of the contract that was actually performed by the HUB prime contractor and the amount to be performed by its HUB subcontractors.

The A&M System HUB Program office shall audit the contractor's compliance with the HSP. If the contractor is found deficient, the A&M System shall give the contractor an opportunity to submit documentation and explain why the failure to fulfill the HSP should not be attributed to a lack of good faith effort by the contractor.

If a determination is made that the contractor failed to implement the HSP in good faith, the A&M System, in addition to any other remedies, may report nonperformance to the Comptroller of Public Accounts in accordance with 34 TAC, Chapter §20.115 (relating Debarment).

During the term of the contract, the System shall determine whether the value of the subcontracts to HUBs meets or exceeds the HSP provisions specified in the contract.

(Attachment A)

(SUBMIT ON YOUR BUSINESS LETTERHEAD)

Mr. Jeff Zimmermann
The Texas A&M University System
Moore/Connally Building
301 Tarrow, Suite 273
College Station, Texas 77840-7896

Subject: HUB Subcontracting Plan
Project Number: 01-3331
RELLIS Runway 35R Rehabilitation
The Texas A&M University System RELLIS Campus
Bryan, Texas

Dear Mr. Zimmermann:

I am pleased to forward this HUB Subcontracting Plan as an integral part of our written response submitted in connection with your competitive sealed proposal for project number 01-3331.

I have read and understand The Texas A&M University System's Policy on Utilization of Historically Underutilized Businesses (HUBs) and the goals for HUB participation on this project.

Sincerely,

(Signature)
(Printed Name)
(Printed Title)

01-3331 RELIS Runway 35R Rehabilitation
Applicable Commodity Codes

<u>Class</u>	<u>Item</u>	<u>Description</u>
913	62	Construction, Concrete, Pour-In-Place, Form, Place, Finish
913	71	Maintenance and Repair, Highway and Roads, Including Removal of Asphalt, Concrete, Bitumens, etc.
745	56	Joint Sealants: Asphalt, Elastomeric Materials, Glass Filament, Impervious Membranes, Plastic, Rubber, Silicones, Water Stops, etc.
961	54	Milling Services: Asphalt, Grain, Cottonseed, Vegetable, Wood, etc.
550	72	Stripes and Legends, Plastic, Prefabricated, Reflective, Including Pavement Marking Tape, (See 832-48 for Marking Tape other than for Pavement)
968	61	Pavement Marking Services, Including Removal of Markings

**THE TEXAS A&M UNIVERSITY SYSTEM
AGREEMENT BETWEEN OWNER AND CONTRACTOR**

THIS AGREEMENT is made this ___day of_____, 201_ between _____, hereinafter called the “Contractor,” and the Board of Regents of The Texas A&M University System, hereinafter called the “Owner.” Capitalized terms used in this Agreement, unless otherwise defined herein, shall have the meanings ascribed to them in the Owner’s current Uniform General and Supplementary Conditions (UGSC).

WITNESSETH, that the Contractor and the Owner, for the consideration hereinafter named, agree as follows:

**ARTICLE I
SCOPE OF WORK**

The Contractor shall furnish all the materials and perform all the Work called for in the Contract Documents entitled: _____
Prepared by: _____

**ARTICLE II
TIME OF COMPLETION**

The Contractor shall begin Work on the date indicated in the Notice to Proceed to be issued by the Owner. The Work to be performed under the Contract shall be substantially completed by _____ **consecutive calendar days** plus any extended days approved by the Owner, in accordance with the UGSC, and shall be fully and finally completed within thirty (30) days thereafter. For each consecutive calendar day after the date of Substantial Completion, plus any extensions of time granted by Change Order, that the Work is not substantially completed, Contractor shall pay to Owner liquidated damages in accordance with the UGSC.

**ARTICLE III
THE CONTRACT SUM**

The Owner shall pay the Contractor for the performance of the Contract, subject to additions and deductions provided therein, the sum of _____
(\$_____).

Contract Award Amount

ARTICLE IV PROGRESS PAYMENTS

The Owner shall make periodic payments as approved by the Owner in accordance with the UGSC.

ARTICLE V ACCEPTANCE AND FINAL PAYMENT

Final payment shall be made after final acceptance of the Work, provided the Work is fully completed and the Contract fully performed as provided in the UGSC.

ARTICLE VI LIENS

No mechanic, contractor, subcontractor, supplier or other person can or will contract for or in any manner have or acquire any lien upon the buildings or works covered by the Contract, or the land upon which the same is situated.

ARTICLE VII THE CONTRACT DOCUMENTS

The UGSC, the Special Conditions, the Specifications, the Drawings, the Addenda issued prior to this Agreement, the Change Orders issued after this Agreement, the Historically Underutilized Business (HUB) Subcontracting Plan, this Agreement, and, to the extent not inconsistent with the foregoing documents, the Contractor's Technical Proposal (including any unit prices stated therein), form the Contract Documents. This Agreement supersedes all prior agreements, written or oral, between the Contractor and the Owner and shall constitute the entire agreement and understanding between the parties with respect to the Project. This Agreement and each of its provisions shall be binding upon the parties and may not be waived, modified, amended or altered except by a writing signed by authorized representatives of the Owner and the Contractor.

ARTICLE VIII MISCELLANEOUS PROVISIONS

Assignment. This Agreement is a personal service contract for the services of Contractor, and Contractor's interest in this Agreement, its duties and/or the fees due to Contractor may not be assigned or delegated to a third party.

Child Support Certification. A child support obligor who is more than 30 days delinquent in paying child support and a business entity in which obligor is a sole proprietor, partner, shareholder, or Owner with an Ownership interest of at least 25 percent is not eligible to receive payments from state funds under a contract to provide property, materials, or services until all arrearages have been paid or the obligor is in compliance with a written repayment agreement or court order as to any existing delinquency. The Family Code requires the following statement:

“Under Section 231.006, Family Code, the vendor or applicant certifies that the individual or business entity named in this contract, bid, or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate.”

Eligibility Certification. A state agency may not accept a bid or award a contract that includes proposed financial participation by a person who received compensation from the agency to participate in preparing the specifications or request for proposals on which the bid or contract is based. The Government Code requires the following statement: “Under Section 2155.004, Government Code, the vendor certifies that the individual or business entity named in this bid or contract is not ineligible to receive the specified contract and acknowledges that this contract may be terminated and payment withheld if this certification is inaccurate.”

Franchise Tax Certification. If Contractor is a taxable entity subject to the Texas Franchise Tax (Chapter 171, *Texas Tax Code*), then Contractor certifies that it is not currently delinquent in the payment of any franchise taxes or that Contractor is exempt from the payment of franchise taxes.

Payment of Debt or Delinquency to the State. Pursuant to Section 2252.903, *Texas Government Code*, Contractor agrees that any payments owing to Contractor under this Agreement may be applied directly toward any debt or delinquency that Contractor owes the State of Texas or any agency of the State of Texas regardless of when it arises, until such debt or delinquency is paid in full. "Debt or delinquency" means a debt, tax delinquency, student loan delinquency, or child support delinquency that results in a payment law prohibiting the comptroller from issuing a warrant or initiating an electronic funds transfer.

Entire Agreement; Modifications. This Agreement supersedes all prior agreements, written or oral, between Contractor and Owner and shall constitute the entire agreement and understanding between the parties with respect to the Project. This Agreement and each of its provisions shall be binding upon the parties and may not be waived, modified, amended or altered except by a writing signed by Contractor and Owner.

Captions. The captions of paragraphs in this Agreement are for convenience only and shall not be considered or referred to in resolving questions of interpretation or construction.

Governing Law and Venue. This Agreement is construed under and in accordance with the laws of the State of Texas, and is performable in the country in which the Project is located; however, mandatory venue for all legal proceedings against Owner is to be in the county in which the primary office of the chief executive officer is located.

Waivers. No delay or omission by either party in exercising any right or power arising from non-compliance or failure of performance by the other party with any of the provisions of this Agreement shall impair or constitute a waiver of any such right or power. A waiver by either party of any covenant or condition of this Agreement shall not be construed as a waiver of any subsequent breach of that or of any other covenant or condition of this Agreement.

Binding Effect. This Agreement shall be binding upon and inure to the benefit of the parties and their respective permitted assigns and successors.

Records Availability and Retention. Records of Contractor's costs, reimbursable expenses pertaining to the Project and payments shall be available to Owner or its authorized representative during business hours and shall be retained for four (4) years after final Payment or abandonment of the Project, unless Owner otherwise instructs Contractor in writing.

Severability. Should any term or provision of this Agreement be held invalid or unenforceable in any respect, the remaining terms and provisions shall not be affected and this Agreement shall be construed as if the invalid or unenforceable term or provision had never been included.

Illegal Dumping. Contractor shall ensure that it and all of its Subcontractors and assigns prevent illegal dumping of litter in accordance with Title 5, *Texas Health and Safety Code*, Chapter 365.

Notices. All notices, consents, approvals, demands, requests or other communications relied on by the parties shall be in writing. Written notice shall be deemed to have been given when delivered in person to the designated representative of Contractor or Owner for whom it is intended; or sent by U.S. Mail to the last known business address of the designated representative; or transmitted by fax machine to the last known business fax number of the designated representative. Mail notices are deemed effective upon receipt or on the third business day after the date of mailing, whichever is sooner. Fax notices are deemed effective the next business day after faxing. Such notices of claims or disputes or other legal notices required by this Agreement shall be sent to the persons and at the locations set forth below.

Names and Addresses for Notices:

If to Owner:

Billy C. Hamilton, Deputy Chancellor and Chief Financial Officer
Office of Facilities Planning & Construction
The Texas A&M University System
301 Tarrow Street, 2nd Floor
College Station, Texas 77840-7896

With Copies to:

Brett McCully, Chief Facilities Officer
Office of Facilities Planning & Construction
The Texas A&M University System
301 Tarrow Street, 2nd Floor
College Station, Texas 77840-7896

[Director Name], Director
Office of Facilities Planning & Construction

The Texas A&M University System
[Address]

If to Contractor:

[Name]
[Company Name]
[Address]
[City, State, Zip Code]

The parties may make reasonable changes in the person or place designated for receipt of notices upon advance written notice to the other party.

Party Representatives

The Owner's Designated Representative authorized to act in the Owner's behalf with respect to the Project is:

[Director Name], Director
Office of Facilities Planning & Construction
The Texas A&M University System
[Address]

The Contractor's designated representative authorized to act on the Contractor's behalf and bind the Contractor with respect to the Project is:

[Name]
[Company Name]
[Address]
[City, State, Zip Code]

The parties may make reasonable changes in their designated representatives upon advance written notice to the other party and in accordance with Paragraph 22.15.

Public Information. Contractor acknowledges that Owner is obligated to strictly comply with the Public Information Act, Chapter 552, *Texas Government Code*, in responding to any request for public information pertaining to this Agreement, as well as any other disclosure of information required by applicable Texas law.

Upon Owner's written request, Contractor will provide specified public information exchanged or created under this Agreement for or on behalf of A&M System to Owner in a non-proprietary format acceptable to Owner.

Contractor acknowledges that Owner **may be** required to post a copy of the fully executed Agreement on its Internet website in compliance with Section 2261.253(a)(1), *Texas Government Code*.

Contractor certifies that the requirements of Subchapter J, Chapter 552, and *Texas Government Code*, (added by SB 943 during the 86th Legislative Session) may apply to this RFQ and resultant agreement and the Respondent agrees that the resultant agreement can be terminated if the Respondent knowingly or intentionally fails to comply with a requirement of that subchapter.

Contractor Certification regarding Boycotting Israel. Contractor acknowledges that Owner is obligated to comply with Chapter 2270, *Texas Government Code*. By executing this Agreement, Contractor certifies it does not and will not, during the performance of this Agreement, boycott Israel. Contractor acknowledges this Agreement may be terminated if this certification is inaccurate.

Contractor Certification regarding Business with Certain Countries and Organizations. Contractor acknowledges that Owner is obligated to comply with Subchapter F, Chapter 2252, *Texas Government Code*. By executing this Agreement, Contractor certifies it is not engaged in business with Iran, Sudan, or a foreign terrorist organization. Contractor acknowledges this Agreement may be terminated if this certification is inaccurate.

Prohibition on Contracts Related to Persons Involved in Human Trafficking. Under Section 2155.0061, Government Code, the vendor certifies that the individual or business entity named in this contract is not ineligible to receive the specified contract and acknowledges that this contract may be terminated and payment withheld if this certification is inaccurate.

Respondent is responsible to ensure that employees participating in work for any A&M System member have not been designated by the A&M System as Not Eligible for Rehire as defined in System policy [32.02, Section 4](#). Non-conformance to this requirement may be grounds for termination of any resultant agreement.

[SIGNATURES PROVIDED ON FOLLOWING PAGE]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the day and year first above written.

BOARD OF REGENTS OF
THE TEXAS A&M UNIVERSITY SYSTEM
(THE OWNER)

CONTRACTOR

By _____
Deputy Chancellor and Chief Financial Officer

By _____
(Signature)

Date _____

(Print or Type Name)

Date _____

APPROVAL RECOMMENDED:

Chief Facilities Officer
Office of Facilities Planning & Construction

Name(s) of individual(s), sole proprietors,
partner(s), shareholder(s) or owner(s) with
an ownership interest of at least 25% of the
business entity executing this Contract.

Date _____

Name: _____

APPROVED AS TO FORM:

Name: _____

General Counsel

Name: _____

Date _____

Name: _____

PERFORMANCE BOND

STATE OF TEXAS

COUNTY OF BRAZOS

KNOW ALL MEN BY THESE PRESENTS

That we, _____, as Principal, and _____, as Surety, 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 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 (the "Contract"), which Contract is incorporated into this Performance Bond by this reference, with the State of Texas acting by and through the Board of Regents of The Texas A&M University System, as Obligee, dated _____ for the _____, Project No. _____

NOW, THEREFORE, if the Principal shall faithfully perform the Contract in accordance with the Contract Documents, including any warranties, and shall fully indemnify, and save harmless the State of Texas from all costs and damage that the State of Texas may suffer by reason of the Principal's default or failure to perform and shall fully reimburse and repay the State of Texas all outlay and expense that the State of Texas may incur in making good any such default or failure to perform, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

In the event the Principal is declared in default under the Contract, Surety will, within fifteen (15) days of the determination of such default, take over and assume responsibility for completion of such Contract and become entitled to the payment of the balance of the Contract Price, or the Surety shall make other arrangements satisfactory to the Obligee for the completion of the defaulted Work. Conditioned upon the Surety's faithful performance of its obligations, the Surety's liability shall not exceed the penalty of this Bond.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the Work to be performed under the Contract or to the Specifications accompanying the same shall in any manner affect its obligation on this Performance Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the Work or to the Specifications.

The Surety agrees to pay to the State of Texas upon demand all loss and expenses, including attorney's fees and court costs, incurred by the State of Texas by reason of or on account of any breach of this obligation by the Surety.

This Bond is issued pursuant to the requirements of Section 2253.021, Texas Government Code, as amended.

IN WITNESS WHEREOF, the Principal and Surety have executed and sealed this instrument this _____ day of _____, 20____.

_____, Principal

(PRINCIPAL'S SEAL if a corporation)

By: _____
Name: _____
Title: _____

_____, Surety

(SURETY'S SEAL)

By: _____
Name: _____
Attorney-in-Fact

PAYMENT BOND

STATE OF TEXAS

COUNTY OF BRAZOS

KNOW ALL MEN BY THESE PRESENTS

That we, _____, as Principal, and _____, as Surety, 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 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 (the "Contract"), which Contract is incorporated into this Payment Bond by this reference, with the State of Texas acting by and through the Board of Regents of The Texas A&M University System, as Obligee, dated _____ for the _____ Project No. _____.

NOW, THEREFORE, if the Principal shall promptly make payments to all claimants, as defined in Chapter 2253, Texas Government Code, supplying labor and materials in the prosecution of the work provided for in said Contract, 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 material in the prosecution of the Work provided for in said Contract, and all such claimants shall have a direct right of action under the Bond as provided in Chapter 2253, Texas Government Code.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the Work to be performed under the Contract shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the Work to be performed under the Contract.

The Surety agrees to pay the State of Texas upon demand all loss and expense, including attorney's fees and court costs, incurred by the State of Texas by reason of or on account of any breach of this obligation by the Surety.

IN WITNESS WHEREOF, the Principal and Surety have duly signed and sealed this instrument this _____ day of _____, 20____.

_____, Principal

(PRINCIPAL'S SEAL)
if a corporation)

By: _____
Name: _____
Title: _____

_____, Surety

(SURETY'S SEAL)

By: _____
Name: _____
Attorney-in-Fact

**THE TEXAS A&M UNIVERSITY SYSTEM
Uniform General and Supplementary Conditions
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Uniform General and Supplementary Conditions For The Texas A&M University System

The Texas A&M University System has incorporated its Supplementary Conditions that apply to all A&M System and member institution construction projects into the Texas Building and Procurement Commissions' Uniform General Conditions. Material changes are indicated by the bold and italicized typeface shown here. Superseded sections of the Texas Building and Procurement Commissions' Uniform General Conditions are not included in the A&M System Uniform General and Supplementary Conditions. All users are advised to read and understand this entire document.

Article 1. Definitions

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

- 1.1 *Architect/Engineer (A/E)* means a person registered as an architect pursuant to Tex. Occ. Code Ann., Chapter 1051, as a landscape architect pursuant to Tex. Occ. Code Ann., Chapter 1052, a person licensed as a professional engineer pursuant to Tex. Occ. Code Ann., Chapter 1001 and/or a firm employed by Owner or a 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.
- 1.2 *Change Order* means a written modification of the Contract between the Owner and Contractor, signed by the Owner, the Contractor and the A/E.
- 1.3 *Change Order Proposal* means a Contractor-generated document in response to a Change Order Request (COR).
- 1.4 *Close-out documents* means the product brochures, product/equipment maintenance and operations instructions, manuals, and other documents/warranties, as-built record documents, affidavit of payment, release of lien and claim, and as may be further defined, identified, and required by the Contract Documents.
- 1.5 *Contract* means the entire agreement between the Owner and the Contractor, including all of the Contract Documents.
- 1.6 *Contract Date* is the date when the agreement between the Owner and the Contractor becomes effective.

- 1.7 *Contract Documents* means those documents identified as a component of the agreement (contract) between the Owner and the Contractor. These may include, but are not limited to, Drawings, Specifications, these Uniform General and Supplementary Conditions, Special Conditions, Change Orders, and all pre-bid and/or pre-proposal addenda.
- 1.8 *Contractor* means the individual, corporation, 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 General or Prime Contractor. The Contract Documents refer to Contractor as if singular in number.
- 1.9 *Contract Sum* means the total compensation payable to the Contractor for completion of the Work in accordance with the terms of the Contract.
- 1.10 *Contract Time* means the period between the Date of Commencement (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 Change Order.
- 1.11 *Date of Commencement* means the date designated in the Notice to Proceed for the Contractor to commence the Work.
- 1.12 *Day* means a calendar day, unless otherwise specifically stipulated.
- 1.13 *Drawings* means that product of the A/E which graphically depicts the Work.
- 1.14 *Final Completion* means the date determined and certified by the A/E and Owner on which the Work is fully and satisfactorily complete in accordance with the Contract.
- 1.15 *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 the Owner.
- 1.16 *Owner's Designated Representative (ODR)* means the individual assigned by the Owner to act on its behalf, and to undertake certain activities as specifically outlined in the Contract. The ODR is the only party authorized to direct changes to the scope, cost, or time of the Contract.
- 1.17 *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.

- 1.18 *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.
- 1.19 *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.
- 1.20 *Shop Drawings* means the drawings, diagrams, illustrations, schedules, performance charts, brochures and other data prepared by the Contractor or its agents, which detail a portion of the Work.
- 1.21 *Site* means the geographical area of the location of the Work.
- 1.22 *Special Conditions* means 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 these Uniform General and Supplementary Conditions.
- 1.23 *Specifications* mean the written product of the 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.
- 1.24 *Subcontractor* means a business entity that enters into an agreement with the Contractor to perform part of the Work or to provide services, materials or equipment for use in the Work.
- 1.25 *Substantial Completion* means the date determined and certified by the 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.
- 1.26 *Unit Price Work* means Work or a portion of the Work paid for based on incremental units of measurement.
- 1.27 *Unilateral Change Order* means a Change Order issued by the Owner without the agreement of the Contractor. ***A Unilateral Change Order has the same effect as a contract modification.***
- 1.28 *Work* means the administration, procurement, materials, equipment, construction and all services necessary for the Contractor, and/or its agents, to fulfill the Contractor's obligations under the Contract.

Article 2. Laws Governing Construction

- 2.1. Environmental Regulations. The 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, the Owner is responsible for obtaining and maintaining permits related to stormwater run-off. The 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 the Contractor. The 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 the request for the Substantial Completion Inspection.
- 2.2. Wage Rates. The Contractor shall not pay less than the wage scale of the various classes of labor as shown on the "Prevailing Wage Schedule" provided by the Owner. The specified wage rates are minimum rates only. The 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. The Contractor shall notify each worker, in writing, of the following as they commence work on the Contract: the worker's job classification, the established minimum wage rate requirement for that classification, as well as the worker's actual wage. The notice must be delivered to and signed in acknowledgement of receipt by the worker and must list both the wages and fringe benefits to be paid or furnished for each classification in which the worker is assigned duties. When requested by the Owner, the Contractor shall furnish evidence of compliance with the Texas Prevailing Wage Law.
- 2.2.1.1 The Contractor shall submit a copy of each worker wage-rate notification to the ODR with the application for progress payment for the period during which the worker was engaged in activities on behalf of the Project.
- 2.2.1.2 The "Prevailing Wage Schedule" is determined by the Owner in compliance with Tex. Gov't Code, Chapter 2258. Should the Contractor at any time become aware that a particular skill or trade not reflected on the Owner's Prevailing Wage Schedule will be or is being employed in the Work, whether

by the Contractor or by a Subcontractor, the Contractor shall promptly inform the ODR of the proposed wage to be paid for the skill along with a justification for same. The 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.

2.2.1.3 Penalty for Violation. The Contractor and any Subcontractor will pay to the State a penalty of sixty dollars (\$60) for each worker employed for each calendar day, or portion thereof, that the worker is paid less than the wage rates stipulated in the Prevailing Wage Schedule.

2.2.1.4 Complaints of Violations.

2.2.1.4.1 Owner's Determination of Good Cause. Upon receipt of information concerning a violation of Tex. Gov't Code, Chapter 2258, the Owner will, within 31 days, make an initial determination as to whether good cause exists that a violation occurred. The Owner will send documentation of the initial determination to the Contractor against whom the violation was alleged, and to the worker involved. Upon making a good-cause finding, the 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, such amounts being subtracted from successive progress payments pending a final decision on the violation.

2.2.1.4.2 If the Contractor and claimant worker reach an agreement concerning the claim, the Contractor shall promptly notify the Owner in a written document countersigned by the worker.

2.2.1.4.3 Arbitration Required. If the violation is not resolved within 14 days following initial determination by the Owner, the Contractor and the claimant worker must participate in binding arbitration in accordance with the Texas General Arbitration Act, Tex. Civ. Prac. & Rem. Code,

Chapter 171. If the Contractor and the claimant worker do not agree on an arbitrator within 10 days, after the date arbitration is required, a district court may be petitioned by any of the parties to the arbitration to appoint an arbitrator whose decision will be binding on all parties. (See Tex. Gov't Code, § 2258.053)

2.2.1.4.4 Arbitration Award. If an arbitrator assesses an award against the Contractor, the Contractor shall promptly furnish a copy of said award to the Owner. The Owner may use any amounts retained under Article 2.2.1.4.1 to pay the worker the amount as designated in the arbitration award. If the retained funds are insufficient to pay the worker in accordance with the arbitration award, the worker has a right of action against the Contractor, and/or the surety to receive the amount owed, plus attorneys' fees and court costs. The Owner has no duty to release any funds to either the claimant or the Contractor until it has received the notices of agreement or the arbitration award.

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

2.3. Venue for Suits. ***The venue for any suit arising from the Contract will be in a court of competent jurisdiction in Brazos County, Texas.***

2.4. Licensing of Trades. The 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 the Contractor, or one of its Subcontractors, loses its license during the term of performance of the Contract, the Contractor shall promptly hire or contract with a licensed provider of the service at no additional cost to the Owner.

2.5. Royalties, Patents & Copyrights. The Contractor shall pay all royalties and license fees, defend all suits or claims for infringement of any patent rights, and shall save the Owner harmless from loss on account thereof.

- 2.6. State Sales and Use Taxes. The Owner qualifies for exemption from certain State and Local Sales and Use Taxes pursuant to the provisions of Tex. Tax Code, Chapter 151. The Contractor may claim exemption from payment of applicable State taxes by complying with such procedures as prescribed by the State Comptroller of Public Accounts. ***Contractor shall not be entitled to reimbursement for taxes paid on items that are exempt from taxation.***

Article 3. General Responsibilities of Owner and Contractor

- 3.1. Owner's General Responsibilities. The 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 the Notice to Proceed with Construction, a conference will be convened for attendance by the 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 the Owner's Designated Representative (ODR), who has the express authority to act and bind the Owner to the extent and for the purposes described in the Contract, including responsibilities for general administration of the Contract.

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

3.1.2.2 All directives on behalf of the Owner will be conveyed to the Contractor by the ODR in writing.

3.1.3 Owner Supplied Materials and Information.

- 3.1.3.1 The Owner will furnish to the 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 The Owner will provide information, equipment, or services under the Owner's control to the Contractor with reasonable promptness. ***The Owner makes no representation as to the accuracy or completeness of the site information furnished to the Contractor by the Owner, and is not responsible for any interpretations or conclusions reached by the Contractor with respect to the information.***
- 3.1.4 Availability of Lands. The 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 the Contractor. The Contractor shall comply with all Owner-identified encumbrances or restrictions specifically related to use of lands so furnished. The Owner will obtain and pay for easements for permanent structures or permanent changes in existing facilities, unless otherwise required in the Contract Documents.
- 3.1.5 Limitation on Owner's Duties.
- 3.1.5.1 The 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. The Owner is not responsible for any failure of Contractor to comply with laws and regulations applicable to the Work. The Owner is not responsible for the failure of Contractor to perform or furnish the Work in accordance with the Contract Documents. 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 the Contractor.
- 3.1.5.2 The Owner will not take any action in contravention of a design decision made by the A/E in preparation of the Contract Documents, when such actions are in conflict with statutes under which the A/E is licensed for the protection of the public health and safety.

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

3.2.1 Site Visits

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

3.2.1.2 The A/E has the authority to interpret Contract Documents and inspect the Work for compliance and conformance with the Contract. Except as referenced in Article 3.1.5.2, the Owner retains the sole authority to accept or reject Work and issue direction for correction, removal, or replacement of Work.

3.2.2 Clarifications and Interpretations. It may be determined that clarifications or interpretations of the Contract Documents are necessary. Upon direction by the ODR such clarifications or interpretations will be provided by the A/E consistent with the intent of the Contract Documents. The A/E will issue these clarifications with reasonable promptness to the Contractor as Architect'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, the Contractor shall so notify the Owner in accordance with the provisions of Article 11.

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

3.2.3.1 The Contractor's means, methods, techniques, sequences, procedures, safety, or programs incident to the Project nor will the 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 furnishing or performing the Work.

3.2.3.3 The Contractor's failure to perform or furnish the Work in accordance with the Contract Documents.

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

3.3 Contractor's General Responsibilities. The 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. The Contractor is solely responsible for all construction means, methods, techniques, safety, sequences, coordination and procedures. ***The Contractor is responsible for having visited the Site and having ascertained all pertinent local conditions such as existing subsurface concealed conditions, location, accessibility and general character of the Site or building, the character and extent of existing work, the character and extent of existing work within adjacent sites, and any other work being performed thereon at the time Contractor's bid or proposal is submitted.***

3.3.1 Project Administration. The 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 the A/E and ODR in accordance with these Uniform General and Supplementary Conditions and provisions of Division 1 Specifications, and as outlined in the Pre-construction Conference.

3.3.2 Contractor's Superintendent. The Contractor shall employ a competent resident Superintendent who will be present at the Project Site during the progress of the Work. The Superintendent is subject to the approval of the ODR. The Contractor shall not change approved Superintendents during the course of the Project without the written approval of the ODR unless the Superintendent leaves the employ of the Contractor.

3.3.3 Labor. The 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, the 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 Non-Compliant Work. Should the A/E and/or the ODR identify Work as non-compliant with the Contract Documents, the ODR will communicate the finding to the Contractor and the Contractor will correct such Work at its expense. The approval of Work by either the A/E or ODR does not relieve the Contractor from the obligation to comply with all requirements of the Contract Documents.
- 3.3.6 Subcontractors. The Contractor shall not employ any Subcontractor, supplier or other person or organization, whether initially or as a substitute, against whom the Owner may have reasonable objection. The Owner will communicate such objections in writing. The Contractor is not required to employ any Subcontractor, supplier or other person or organization to furnish any of the work to whom the Contractor has reasonable objection. The Contractor will not substitute Subcontractors without the acceptance of the Owner.
- 3.3.6.1 All Subcontracts and supply contracts shall be consistent with and bound to the terms and conditions of the Contract Documents including provisions of the agreement between the Contractor and the Owner.
- 3.3.6.2 The 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 the Contractor. The Contractor shall require all Subcontractors, suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with Owner only through the Contractor. The Contractor shall furnish to the Owner a copy of each first-tier subcontract promptly after its execution. The Contractor agrees that the Owner has no obligation to review or approve the content of such contracts and that providing the Owner such copies in no way relieves the 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 the Contractor in the same manner in which the Contractor is bound to the Owner.
- 3.3.7 Continuing the Work. The Contractor shall carry on the Work and adhere to the progress schedule during all disputes, disagreements or alternative resolution processes with the Owner. The Contractor

shall not delay or postpone any Work because of the pending resolution of any disputes, disagreements or processes, except as the Owner and the Contractor may agree in writing.

- 3.3.8 Cleaning. At all times, the Contractor shall keep the Site and the Work clean and free from accumulation of waste materials or rubbish caused by the construction activities under the Contract. The 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 Completion Inspection.
- 3.3.9 Acts and Omissions of Contractor, its Subcontractors and Employees. The Contractor is responsible for acts and omissions of its employees and all its Subcontractors, their agents and employees. The Owner may, in writing, require the Contractor to remove from the Project any of Contractor's or its Subcontractor's employees that the ODR finds to be careless, incompetent, or otherwise objectionable.
- 3.3.10 Indemnification of Owner. The Contractor covenants and agrees to FULLY INDEMNIFY and HOLD HARMLESS, the Owner and the employees, officers, Regents, volunteers, and representatives of the Owner, individually or collectively, from and against any and all costs, claims, liens, damages, losses, expenses, fees, fines, penalties, proceedings, actions, demands, causes of action, liability and suits of any kind and nature, including but not limited to, personal or bodily injury, death and property damage, made upon the Owner directly or indirectly arising out of, resulting from or related to Contractor's activities under this Contract, including any acts or omissions of Contractor, any agent, officer, director, representative, employee, consultant or Subcontractor of Contractor, and their respective officers, agents, employees, directors and representatives while in the exercise of performance of the rights or duties under this Contract. The indemnity provided for in this paragraph does not apply to any liability resulting from the negligence of the Owner, its officers or employees, separate contractors or assigned contractors, in instances where such negligence causes personal injury, death or property damage. IN THE EVENT CONTRACTOR AND OWNER ARE FOUND JOINTLY LIABLE BY A COURT OF COMPETENT JURISDICTION, LIABILITY WILL BE APPORTIONED COMPARATIVELY IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS, WITHOUT WAIVING ANY GOVERNMENTAL IMMUNITY AVAILABLE TO THE STATE UNDER TEXAS LAW AND WITHOUT WAIVING ANY DEFENSES OF THE PARTIES UNDER TEXAS LAW.

- 3.3.10.1 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.
- 3.3.10.2 The Contractor shall promptly advise the Owner in writing of any claim or demand against the Owner or the Contractor known to the Contractor related to or arising out of the Contractor's activities under this Contract.
- 3.3.11 Ancillary Areas. The Contractor shall operate and maintain operations and associated storage areas at the Site of the Work in accordance with the following:
- 3.3.11.1 The Contractor shall confine all Contractor operations, including storage of materials and employee parking upon the Site of the Work, to areas designated by the Owner.
- 3.3.11.2 The Contractor may erect, at its own expense, temporary buildings that will remain its property. The Contractor shall remove such buildings and associated utility service lines upon completion of the Work, unless the Contractor requests and the Owner provides written consent that it may abandon such buildings and utilities in place.
- 3.3.11.3 The Contractor shall use only established roadways or construct and use such temporary roadways as may be authorized by the Owner. The Contractor shall not allow load limits of vehicles to exceed the limits prescribed by appropriate regulations or law. The Contractor shall provide protection to road surfaces, curbs, sidewalks, trees, shrubbery, sprinkler systems, drainage structures and other like existing improvements to prevent damage, and shall repair any damage, thereto at the expense of the Contractor.
- 3.3.11.4 The Owner may restrict the Contractor's entry to the Site to specifically assigned entrances and routes.
- 3.3.12 Separate Contracts. Additional Contractor responsibilities when the Owner awards separate contracts:
- 3.3.12.1 The Owner reserves the right to award other contracts in connection with other portions of the Project under these or similar contract conditions.

3.3.12.2 The Owner reserves the right to perform operations related to the Project with the Owner's own forces.

3.3.12.3 Under a system of separate contracts, the conditions described herein continue to apply except as may be amended by Change Order.

3.3.12.4 *The Contractor shall cooperate with other contractors employed on the Project by the Owner, including providing access to the Site and project information as requested.*

Article 4. Historically Underutilized Business (HUB) Subcontracting Plan

4.1. General Description. ***The purpose of the HUB Program is to promote full and equal business opportunities for all businesses in State contracting.***

In accordance with 34 TAC §20.14(d)(1)(D)(iii), 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 contracts that have been in place for five years or less shall qualify for meeting the HUB goal. This limitation is designed to encourage vendor rotation as recommended by the 2009 Texas Disparity Study.

The Texas A&M University System has determined that the agency's goals are higher than the State's goals. Therefore, respondents are required to use the following: 11.2% for heavy construction other than building contracts; 26% for all building construction, including general contractors and operative builders contracts; 11% for all special trade construction contracts; 38% for professional services contracts; 11% for all other services contracts; and 44% for commodities contracts.

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 TAC §20.11-20.28, outline the State's policy to encourage outreach to and potential 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 more is required to make a good faith effort to award subcontracts to HUBs in accordance with 34 TAC §20.14 by submitting a HUB Subcontracting Plan at the time of bidding and complying with the HUB Subcontracting Plan after it is accepted by the Owner and during the term of the contract.
- 4.2. Compliance with Approved HUB Subcontracting Plan. Contractor, having been awarded the 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 substituting a Subcontractor, promptly notify the 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 the 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 Plan as the 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 the Owner that demonstrates Contractor's performance of the HUB Subcontracting Plan.
- 4.2.6 Promptly and accurately explain and provide supplemental information to Owner to assist in the Owner's investigation of the Contractor's good faith effort to fulfill the HUB Subcontracting Plan and the requirements under 34 TAC §20.14.
- 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, the Owner may, in addition to all other remedies available to it, report the failure to perform to the Texas Procurement and Support Services under its Vendor Performance and Debarment Program and may bar the Contractor from future contracting opportunities with the Owner.

Article 5. Bonds & Insurance

5.1. Construction Bonds. The Contractor is required to tender to Owner, prior to commencing the Work, performance and payment bonds, as required by Tex. Gov't Code, Chapter 2253.

5.1.1. Performance Bond. A Performance Bond is required if the Contract Sum is in excess of \$100,000. The Performance Bond is solely for the protection of the 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 Attorney General of Texas. The Performance Bond shall be effective through the Contractor's warranty period.

5.1.2. Payment Bond. A Payment Bond is required if the Contract Sum is in excess of \$25,000. The Payment Bond is to be for the Contract Sum and is payable to the Owner solely for the protection and use of payment bond beneficiaries who have a direct contractual relationship with the Contractor or a Subcontractor. The form of the bond shall be approved by the Attorney General of Texas.

5.1.3. 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 the Owner, on the Owner's form, and in compliance with the relevant provisions of the Texas Insurance Code. If any bond is for more than 10 percent of the surety's capital and surplus, the 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 10 percent of its capital and surplus. If a surety upon a bond loses its authority to do business in the State, the Contractor shall, within thirty (30) days after such loss, furnish a replacement bond at no added cost to the Owner.

5.1.4. Power of Attorney. Each bond shall be accompanied by a valid power-of-attorney issued by the surety company, attached to the bond, and signed and sealed with the corporate embossed seal, authorizing the attorney in fact who signs the bond to commit the surety 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 thereunder shall be conducted in compliance with Tex. Gov't Code, Chapter 2253. IF FOR ANY REASON A STATUTORY PAYMENT OR PERFORMANCE BOND IS NOT

HONORED BY THE SURETY, THE CONTRACTOR SHALL FULLY INDEMNIFY AND HOLD THE 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 the 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 the Contractor on such Contract, and that reliance on notices sent to the Owner may result in loss of their rights against the Contractor and/or his surety. The 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 the Owner and the Contractor is less than \$25,000.00. These provisions set out the requirements for filing a valid lien on funds unpaid to the Contractor as of the time of filing the claim, actions necessary to release the lien and satisfaction of such claim.
- 5.1.9. Sureties. Sureties shall be listed on the US Department of the Treasury's Listing of Approved Sureties stating companies holding Certificates of Authority as acceptable sureties on Federal Bonds and acceptable reinsuring companies (Department Circular 570) **and have a rating of A- or better with A.M. Best Company.**

5.2. Insurance Requirements.

The Contractor shall carry insurance in the types and amounts indicated in this Article for the duration of the Contract. The required insurance shall include coverage for Owner's property in the care, custody and control of Contractor prior to construction, during construction and during the warranty period. The insurance shall be evidenced by delivery to the 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, the Owner, and/or its agents, shall be entitled to receive without expense, copies of the policies and all endorsements. The 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 the Owner.

5.2.1 The Contractor shall provide and maintain the insurance coverage with the minimum amounts described below until the end of the warranty period unless otherwise stated in Special Conditions. Failure to maintain insurance coverage, as required, is grounds for Suspension of Work for Cause pursuant to Article 14. The Contractor will be notified of the date on which the Builder's Risk insurance policy may be terminated through Substantial Completion notices, acceptance notices and/or other means as deemed appropriate by the Owner.

5.2.2 Coverage shall be written on an occurrence basis by companies authorized and admitted to do business in the State of Texas or eligible surplus lines insurers operating in accordance with the Texas Insurance Code and have a financial strength rating of A- or better and a financial strength rating of VII or better as measured by A.M. Best Company or otherwise acceptable to Owner, and shall include:

5.2.2.1 Workers' Compensation Insurance with limits as required by the Texas Workers' Compensation Act, with the policy endorsed to provide a waiver of subrogation as to the Owner, and Employer's Liability insurance of not less than:

Coverage	Limit
Statutory Benefits (Coverage A)	Statutory
Employers Liability (Coverage B)	\$1,000,000 Each Accident
	\$1,000,000 Disease/Employee
	\$1,000,000 Disease/Policy Limit

Workers' Compensation policy must include under Item 3.A. on the information page of the workers' compensation policy the state in which work is to be performed for the Owner. No 'alternative' form of insurance will be permitted

5.2.2.2 Commercial General Liability Insurance, including 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 (or Subcontractors) liability for bodily injury and property damage with a combined bodily injury (including death) and property damage minimum limit of:

\$1,000,000	per occurrence
\$2,000,000	general aggregate
\$1,000,000	products and completed operations aggregate
\$1,000,000	personal/advertising injury
\$300,000	damage to rented premises
\$5,000	medical payments

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-Aggregate Limits of Insurance (Per Project) or its equivalent.

- 5.2.2.3 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.

*Specific 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.

If this Contract is for asbestos abatement only, the All-Risk Builder's Risk or All-Risk Installation Floater (e) is not required.

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

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

- 5.2.2.5 All Risk Builder's Risk Insurance (or All Risk Installation Floater for instances in which the Project involves solely the

installation of equipment). Coverage shall be All-Risk, including, but not limited to, Fire, Extended Coverage, Vandalism and Malicious Mischief, Flood, Earthquake, Theft and damage resulting from faulty workmanship, design or materials. If Builder's Risk, limit shall be equal to 100 percent of the Contract. If Installation Floater, limit shall be equal to 100 percent of the contract cost. The policy shall be written jointly in the names of the Owner, the Contractor, Subcontractors and, Subcontractors shall be named as additional insured. The policy shall have endorsements as follows:

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

5.2.2.5.2 This insurance shall not contain an occupancy clause suspending or reducing coverage should the Owner occupy, or begin beneficial occupancy before the Owner has accepted final completion.

5.2.2.5.3 Loss, if any, shall be adjusted with and made payable to the Owner as Trustee for the insureds as their interests may appear; the right of subrogation under the Builder's Risk policy shall be waived as to the Owner. The Owner shall be named as Loss Payee. For renovation projects or projects that involve portions of work contained within an existing structure, refer to Special Conditions for possible additional Builder's Risk insurance requirements.

5.2.2.6 "Umbrella" Liability Insurance. The Contractor shall obtain, pay for and maintain umbrella liability insurance during the contract term, insuring the Contractor (or Subcontractor) for an amount of not less than the amount specified in the Special Conditions that provides coverage at least as broad as and applies in excess and follows form of the primary liability coverages required hereinabove. The policy shall provide "drop down" coverage where underlying primary insurance coverage limits are insufficient or exhausted.

If the Contract is for asbestos abatement only, the "Umbrella" Excess Liability is not required.

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 until after thirty (30) days prior written notice has been given to the Owner.
- 5.2.3.2 It is agreed that the Contractor's insurance shall be deemed primary with respect to any insurance or self insurance carried by the Owner for liability arising out of operations under the Contract with the Owner.
- 5.2.3.3 The 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 the Owner. The additional insured status must cover completed operations as well. This is not applicable to the workers' compensation policy.
- 5.2.3.4 The workers' compensation and employers' liability policy will provide a waiver of subrogation in favor of the Owner.
- 5.2.4 Without limiting any of the other obligations or liabilities of the Contractor, the Contractor shall require each Subcontractor performing work under the Contract, at the 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, the Contractor may include its Subcontractors as additional insureds on its own coverage as prescribed under these requirements. The Contractor's certificate of insurance shall note in such event that the Subcontractors are included as additional insureds and that Contractor agrees to provide Workers' Compensation for the Subcontractors and their employees. The Contractor shall obtain and monitor the certificates of insurance from each Subcontractor in order to assure compliance with the insurance requirements. The Contractor must retain the certificates of insurance for the duration of the Contract plus 5 years and shall have the responsibility of enforcing these insurance requirements among its Subcontractors. The Owner shall be entitled, upon request and without expense, to receive copies of these certificates.
- 5.2.5 Workers' Compensation Insurance Coverage must meet the statutory requirements of Tex. Lab. Code, §401.011(44), and those specific to construction projects for public entities as required by Tex. Lab. Code, §406.096.

Article 6. Contract Documents

6.1. Drawings and Specifications

- 6.1.1 Copies Furnished. The Contractor will be furnished one (1) digital copy of Drawings and Specifications free of charge.
- 6.1.2 Ownership of Drawings and Specifications. All Drawings, Specifications and copies thereof furnished by the A/E are to remain A/E's property. These documents are not to be used on any other project, and with the exception of one contract set for each party to the Contract, 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 agreement between the Owner and the 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 between and/or within the Contract Documents, the higher quality, greater quantity, more restrictive, and/or more expensive requirement ***shall be required*** and shall be the basis of Contractor pricing. The Contractor shall notify the A/E and the 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 pricing or commencing the Work, the Contractor shall examine and compare the Contract Documents, information furnished by the Owner, relevant field measurements made by the 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 The Contractor shall promptly report to the ODR and to the A/E the discovery of any apparent error, omission or inconsistency in the Contract Documents prior to execution of the Work.
- 6.1.6.2 It is recognized that the 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 the 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.
- 6.1.6.4 When performing as a Design-Build firm, the 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, the Contractor has a shared responsibility for discovery and resolution of discrepancies, errors, and omissions in the Contract Documents. In such case, the Contractor's responsibility pertains to review, coordination, and recommendation of resolution strategies within budget constraints, but does not establish a liability for design.
- 6.1.6.6 The Contractor has no liability for errors, omissions, or inconsistencies in the Drawings and Specifications unless the Contractor knowingly failed to report a recognized problem to the Owner or the Work is executed under a Design-Build contract as outlined above. Should the Contractor fail to perform the examination and reporting obligations of these provisions, the Contractor is responsible for avoidable costs, direct, and/or consequential damages.
- 6.1.6.7 *The Owner makes no representations, express or implied, about the adequacy or accuracy of the Drawings, Specifications or other Construction Documents provided or their suitability for their intended use. Owner expressly disclaims any implied warranty that the Construction Documents are adequate, accurate or suitable for their intended use.***

6.2 Requirements for Record Documents.

The Contractor shall maintain at the Site one copy of all Drawings, Specifications, addenda, approved submittals, contract modifications, and all Project correspondence. The Contractor shall 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. The Contractor shall provide Owner and A/E access to these documents.

- 6.2.1 The Contractor shall maintain the record set of Drawings and Specifications which reflect the "As Constructed" conditions and representations of the Work performed, whether it be directed by addendum, Change Order or otherwise. The Contractor shall make available all records prescribed herein for reference and examination by the Owner and its representatives and agents.
- 6.2.2 The Contractor shall update the "As-Constructed" Drawings and Specifications monthly prior to submission of periodic partial pay estimates. Failure to maintain such records constitutes cause for denial of a progress payment otherwise due.
- 6.2.3 Prior to requesting the Substantial Completion Inspection by the ODR and A/E, the Contractor shall furnish the ODR a complete set of the marked up "As-Constructed" set maintained at the Site and one photocopy of same. Concurrently with furnishing these record drawings, the Contractor shall furnish a preliminary copy of each operating and maintenance manual (O&M) required by the Contract Documents, for review by the A/E and the ODR.
- 6.2.4 Once determined acceptable, the Contractor shall provide to Owner mylar prints of professionally drafted "As-Constructed" drawings, along with an electronic copy on CD, "As-Constructed" specifications in bound volume(s) along with an electronic copy on CD, two sets of photocopies or prints of the mylar "As-Constructed" drawings, two sets of operating and maintenance manuals, two sets of approved submittals, and other record documents as required elsewhere in the Contract Documents. ***All electronic copies shall be provided in a format acceptable to the ODR.***

Article 7. Safety

- 7.1. General. It is the duty and responsibility of the Contractor and all of its Subcontractors to be familiar with, enforce and comply with all requirements of Public Law 91-596, 29 U.S.C. §§651 et. seq., the Occupational Safety and Health Act of 1970 (OSHA), and all amendments thereto. The Contractor shall prepare a Safety Plan specific to the Project and submit it to the ODR and A/E prior to commencing Work. In addition, the 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. The 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 of their facilities, and with respect to access to their facilities and/or utilities.
- 7.2.2 Coordinate the exchange of material safety data sheets 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 MSDS for all materials in use on Site throughout the construction phase and make such file available to the Owner and its agents as requested.
- 7.3. Emergencies. In any emergency affecting the safety of persons or property, the 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 anytime 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 the 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 the Owner within 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 the 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 the ODR and other parties as may be directed within 24 hours of the event.
 - 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 the ODR and A/E with an incident report no later than 36 hours after the occurrence of the event. In the event of a catastrophic incident (one fatality or three 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 by Contractor to Owner within one week after occurrence, unless otherwise directed by Owner's legal counsel. Contractor shall provide the ODR with written notification within one week of such catastrophic event if legal counsel delays submission of a 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 the ODR immediately.

7.5.1 The Contractor shall bind all Subcontractors to the same duty.

7.5.2 Upon receiving such notice, the 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, the ODR will issue a written report to the 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 The Owner may hire third-party contractors to perform any or all such steps.

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

7.6. Trenching Plan. When the Project requires excavation which either exceeds a depth of four feet, or results in any worker's upper body being positioned below grade level, the Contractor is required to submit a trenching plan to the ODR prior to commencing trenching operations. The plan is required to be prepared and sealed by a professional engineer registered in the State of Texas, and employed by the Contractor. Said engineer cannot be anyone who is otherwise either directly or indirectly engaged on this Project.

Article 8. Quality Control

8.1. Materials & Workmanship. The Contractor shall execute Work in a good and workmanlike manner in accordance with the Contract Documents. The Contractor shall develop and provide a Quality Control Plan specific to this Project and acceptable to the Owner. Where Contract Documents do not

specify quality standards, the Contractor shall complete and construct all Work in compliance with generally accepted construction industry standards. Unless otherwise specified, the Contractor shall incorporate all new materials and equipment into the Work under the Contract.

8.2. Testing

8.2.1 *Contractor Testing.* The Contractor is responsible for coordinating and paying for all routine and special tests required to confirm compliance with quality and performance requirements of the Contract Documents. This “quality control” testing shall include any particular testing required by the Specifications and the following general tests:

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 Routine, 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 Owner Testing. The Owner reserves the right to subject materials and systems incorporated into the Project to routine tests as may be specified or as deemed necessary by the ODR or the A/E to insure compliance with the quality and/or performance requirements of the Contract Documents and/or with laws, ordinances, rules, regulations and/or orders of any public authority having jurisdiction. The results of such “quality assurance” testing will be provided to the Contractor and, to the extent provided, the Contractor may rely on findings.

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

8.2.4 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 proving compliance remains with the Contractor. The tests are subject to the following conditions:

- 8.2.4.1 The Contractor's selected laboratory must be acceptable to the Owner.
- 8.2.4.2 The quality and nature of the tests must be acceptable to the Owner.
- 8.2.4.3 All tests must be taken in the presence of the A/E and/or ODR, or their representatives.
- 8.2.4.4 If tests confirm that the material/systems comply with Contract Documents, the Owner will pay the cost of the test.
- 8.2.4.5 If tests reveal noncompliance, the Contractor will pay the laboratory fees and costs of that particular test and all future tests of that failing Work, necessary to eventually confirm compliance with Contract Documents.
- 8.2.4.6 Proof of noncompliance with the Contract Documents will make the Contractor liable for any corrective action which the ODR determines appropriate, including complete removal and replacement of non-compliant work or material.
- 8.2.5 Notice of Testing. The Contractor shall give the ODR and the A/E timely notice of its readiness and the date arranged so the ODR and A/E may observe such inspection, testing or approval.
- 8.2.6 Test Samples. The Contractor is responsible for providing Samples of sufficient size for test purposes and for coordinating such tests with the Work Progress Schedule to avoid delay.
- 8.2.7 Covering Up Work If the Contractor covers up any Work without providing the Owner an opportunity to inspect, the Contractor shall, if requested by the ODR, uncover and recover the Work at Contractor's expense.

8.3 Submittals

- 8.3.1 Contractor's Submittals. The Contract shall submit with reasonable promptness consistent with the Work 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, the Contractor shall review each submittal for compliance with the Contract Documents and certify its approval

by an approval stamp affixed to each copy. Submittal data presented without the Contractor's certification will be returned without review or comment, and any delay resulting from such certification is the Contractor's responsibility.

8.3.1.1 Within twenty-one (21) calendar days of the effective date of the Notice to Proceed with construction, the Contractor shall submit to the ODR, and the A/E, a submittal schedule/register, organized by specification section, listing all items to be furnished for review and approval by the 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 The 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 the 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. The Contractor shall show and allow a minimum of thirty (30) calendar days duration after receipt by the A/E and ODR for review and approval. If re-submittal is required, allow a minimum of an additional fifteen (15) calendar days for review. Submit the updated submittal register with each request for progress payment. The Owner may establish routine review procedures and schedules for submittals at the preconstruction conference and/or elsewhere in the Contract Documents. ***Failure to update and provide the submittal schedule/register as required shall constitute cause for Owner to withhold payment otherwise due.***

8.3.1.3 The 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. The Contractor shall revise and/or update both schedules monthly to ensure consistency and current project data. The Contractor shall provide to the ODR the updated submittal register and schedule with each application for progress payment. The Contractor shall refer to the 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, the Contractor represents and certifies that it has determined and verified all applicable field measurements, field construction criteria, materials, catalog numbers and similar data; 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 the Contractor of responsibility for any deviation from the requirements of the Contract unless the Contractor informs the 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 the **A/E's and** Owner's written specific approval of the particular deviation.

8.3.3 Correction and Resubmission. The 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. When applicable, the Contractor shall direct attention of the A/E and the ODR in writing to any new revisions other than the corrections requested on previous submissions.

8.3.4 Limits on Shop Drawing Approvals. The Contractor shall not commence any Work requiring a submittal until approval of the submittal. The Contractor shall construct all such work in accordance with approved submittals. Approval of Shop Drawings and Samples is not authorization to Contractor to perform extra work or changed work unless authorized through a Change Order. The A/E's and ODR's approval, 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.

8.3.5 No Substitutions Without Approval. The ODR and the A/E may receive and consider the Contractor's request for substitution when the Contractor agrees to reimburse the Owner for review costs and satisfies 8.3.5.1, 8.3.5.2, and 8.3.5.3 in combination with one or more

of the items in 8.3.5.4 through 8.3.5.11 of the following conditions, as determined by the Owner. If the Contractor does not satisfy these conditions, the ODR and A/E will return the request without action except to record noncompliance with these requirements. The Owner will not consider the request if the Contractor cannot provide the product or method because of failure to pursue the Work promptly or coordinate activities properly.

8.3.5.1 The Contract Documents do not require extensive revisions.

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

8.3.5.3 The request is timely, fully documented, and properly submitted.

8.3.5.4 The Contractor cannot provide the specified product, assembly or method of construction within the Contract Time.

8.3.5.5 The request directly relates to an "or-equal" clause or similar language in the Contract Documents.

8.3.5.6 The request directly relates to a "product design standard" or "performance standard" clause in the Contract Documents.

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

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

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

8.3.5.10 The Contractor cannot coordinate the specified product, assembly or method of construction with other materials

and the Contractor certifies it can coordinate the proposed substitution.

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

8.3.6 Unauthorized Substitutions at Contractor's Risk. The Contractor is financially responsible for any additional costs or delays resulting from using materials, equipment or fixtures other than those specified. The Contractor shall reimburse the 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 the ODR. If mock-ups are freestanding, they shall remain in place until otherwise directed by the Owner.

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

8.5 Inspection During Construction.

8.5.1 The 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 the Owner and its agents.

8.5.2 The Contractor shall not cover up any work with finishing materials or other building components prior to providing the 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, the Contractor shall not cover up corrected Work until the Owner indicates approval.

8.5.2.2 The Contractor shall provide notification of at least five (5) working days or otherwise as mutually agreed, to the ODR of the anticipated need for a cover-up inspection. Should the ODR fail to make the necessary inspection within the agreed period, the Contractor may proceed with cover up 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 the Date of Commencement (Start Date) and for achieving Substantial Completion. The Contract Time can be modified only by Change Order. Failure to achieve Substantial Completion within the Contract Time, and Final Completion within thirty (30) days following Substantial Completion or as otherwise agreed to in writing will cause damage to the Owner and may subject the Contractor to Liquidated Damages as provided in Article 9.11.

9.2. Notice to Proceed. The Owner will issue a Notice to Proceed which shall state the dates for beginning Work (the Date of Commencement) and for achieving Substantial Completion and Final Completion of the Work.

9.3. Work Progress Schedule. Refer to Special Conditions and Division 1 General Administration Specifications for additional schedule requirements. Unless indicated otherwise in those documents, Contractor shall submit to the ODR and the A/E its 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. Unless otherwise indicated in the Contract Documents, the Work Progress Schedule shall be based upon a computerized Critical Path Method (CPM) with full reporting capability. 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, and acceptance of all the Work of the Contract. When acceptable to the Owner, the initially accepted schedule shall be the Baseline Schedule for comparison to actual conditions throughout the contract duration.

9.3.1 Schedule Requirements. The Contractor shall submit an electronic and a 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 the Contractor's actual plans for its completion. The Contractor shall organize and provide adequate detail so the Work Progress Schedule is capable of measuring and forecasting the effect of delaying events on completed and uncompleted activities.

9.3.1.1 The Contractor shall re-submit 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 the Contractor's representation to the Owner of the accurate depiction of all progress to date and that the Contractor will follow the schedule as submitted in performing the Work.

9.3.2 Schedule Updates. The Contractor shall update the Work Progress Schedule and the Submittal Schedule monthly, as a minimum, to reflect progress to date and current plans for completing the Work, and submit a paper and electronic copy of the update to the A/E and ODR as directed. The Owner has no duty to make progress payments unless accompanied by the updated Work Progress Schedule. The Contractor shall show the anticipated date of completion reflecting all extensions of time granted through Change Order as of the date of the update. The Contractor may revise the Progress Schedule logic only with the Owner's concurrence when in the Contractor's judgment it becomes necessary for the management of the Work. The Contractor shall identify all proposed changes to the schedule logic to the Owner and to the A/E via an Executive Summary accompanying the updated schedule for review prior to implementation of revisions.

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

9.3.3.1 Acceptance of the Work Progress Schedule, or an update and/or revision thereto does not indicate any approval of the 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 the Owner's consent, alter the terms of the Contract, or waive either the Contractor's responsibility for timely completion or the Owner's right to damages for the Contractor's failure to do so.

9.3.3.3 The 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 completion date(s) and Contract Time.

9.4. Ownership of Float. Unless indicated otherwise in the Contract Documents, the Contractor shall develop the Work Progress Schedule and its execution plan to provide a minimum of 10 percent total float at the project level at acceptance of the Baseline Schedule. Float time contained in the Work Progress Schedule is not for the exclusive benefit of the Contractor or the 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. The Contractor is accountable for completing the Work in the time stated in the Contract, or as otherwise amended by Change Order.

9.5.1 If, in the judgment of the 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, the Contractor, when so informed by the 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 Expediting delivery of materials.

9.5.1.5 Other action proposed if acceptable to Owner.

9.5.2 Within ten (10) calendar days after such notice from the ODR, the Contractor shall notify the ODR in writing of the specific measures taken and/or planned to increase the rate of progress. The Contractor shall include an estimate as to the date of scheduled progress recovery and an updated Work Progress Schedule illustrating the Contractor's plan for achieving timely completion of the

Project. Should the ODR deem the plan of action inadequate, the Contractor shall take additional steps or make adjustments as necessary to its plan of action until it meets with the 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 the Contractor from completing the Work within the Contract Time, the Contractor is entitled to an extension of time. The Owner will make an equitable adjustment and extend the number of calendar days lost because of excusable delay, as measured by the 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 completion date.

9.6.2.1 "A Weather Day" is a day on which the Contractor's current schedule indicates Work is to be done, and on which inclement weather and related site conditions prevent the Contractor from performing seven continuous hours of Work between the hours of 7:00 a.m. and 6:00 p.m. Weather days are excusable non-compensatory delays. When weather conditions at the Site prevent Work from proceeding, the Contractor shall immediately notify the ODR for confirmation of the conditions. At the end of each calendar month, the Contractor shall submit to the 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 the ODR, any time extension granted will be issued by Change Order **for those weather days during that month which exceed the number expected, as shown in the Rainfall Table located in Special Conditions**. If the Contractor and Owner cannot agree on the time extension, the Owner may issue a Unilateral Change Order for a fair and reasonable time extension.

9.6.2.2 Excusable Delay. The Contractor is entitled to an equitable adjustment of time, issued via Change Order, for delays caused by the following:

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

- 9.6.2.2.2 Unanticipated physical conditions at the Site which the A/E corrects by means of changes to the Drawings and Specifications or for which the ODR directs changes in the Work identified in the Contract Documents.
- 9.6.2.2.3 Changes in the Work that affect activities identified in the Contractor's schedule as "critical" to completion of the entire Work, if such changes are ordered by the ODR or the A/E.
- 9.6.2.2.4 Suspension of Work for unexpected natural events (sometimes called "acts of God"), civil unrest, strikes or other events which are not within the reasonable control of the Contractor.
- 9.6.2.2.5 Suspension of Work for convenience of the ODR, which prevents Contractor from completing the Work within the Contract Time.

9.6.3 The Contractor's relief in the event of such delays is the time impact to the critical path as determined by analysis of the Contractor's schedule. In the event that the Contractor incurs additional direct costs because of the delay, they are to be determined pursuant to the provisions of Article 11.

9.7 No Damages for Delay. *The 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 the 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, the 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 the Owner shall be included with the Contractor's proposed costs for such change. Time extensions requested for inclement weather are covered by paragraph 9.6.2.1 above. If the Contractor believes that the completion of the Work is delayed by a circumstance other than for changes directed to the Work or weather, it shall give the ODR written notice, stating the nature of the delay and the activities potentially affected, within five (5) calendar days after the onset of the event or circumstance giving rise to the delay. The Contractor shall provide sufficient written evidence to document the delay. In the case

of a continuing cause of delay, only one **notice of delay** is necessary. The Contractor shall state claims for extensions of time in numbers of whole or half calendar days.

9.9.1 Within ten (10) calendar days after the cessation of the delay, the Contractor shall formalize its request for extension of time in writing to include a full analysis of the impact of the delay on the Work Progress Schedule 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 the Contractor or the Surety furnishing a performance or payment bond from any obligations under the Contract or such bond. Those obligations remain in full force until the discharge of the Contract.

9.9.3 Contents of Time Extension Requests. The 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. The 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 the 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 the Contractor's Work Progress Schedule, and any concurrent delays.

9.9.3.3 Description and documentation of steps taken by the 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. The Owner will respond to the Time Extension Request by providing to the 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 the Contractor.

9.9.4.1 The Owner will not grant time extensions for delays that do not affect the Contract Completion Date.

9.9.4.2 The Owner will respond to each properly submitted Time Extension Request within fifteen (15) calendar days following receipt. If the Owner cannot reasonably make a determination about the Contractor's entitlement to a time

extension within that time, the Owner will notify the Contractor in writing. Unless otherwise agreed by the Contractor, the Owner has no more than fifteen (15) additional calendar days to prepare a final response. If the Owner fails to respond within forty-five (45) calendar days from the date the Time Extension Request is received, the Contractor is entitled to a time extension in the amount requested.

9.10 Failure to Complete Work Within the Contract Time. **TIME IS OF THE ESSENCE OF THIS CONTRACT.** The Contractor's failure to substantially complete the Work within the Contract Time or to achieve Final Completion as required will cause damage to the Owner. These damages are liquidated by agreement of the Contractor and the Owner, as set forth in Article 9.11 below.

9.11 Liquidated Damages. ***For each consecutive calendar day after the date of Substantial Completion, plus any extensions of time granted by Change Order, that the Work is not substantially completed, Contractor shall pay to Owner, within ten (10) days following written demand, an amount determined by the following schedule:***

AACC		Liquidated Damages
<u>From</u>	<u>To</u>	<u>per day</u>
\$1,000,000	\$14,999,999.99	\$ 2,500
\$15,000,000	\$29,999,999.99	\$ 5,000
\$30,000,000	\$44,999,999.99	\$ 7,500
\$45,000,000	\$59,999,999.99	\$10,000
\$60,000,000	\$69,999,999.99	\$12,500
\$70,000,000	\$79,999,999.99	\$15,000
\$80,000,000	\$99,999,999.99	\$17,500
\$100,000,000 and over		\$20,000

not as a penalty but as liquidated damages representing the parties' estimate at the time of contract execution of the damages that Owner will sustain for late completion. Owner may also recover the liquidated damages from any money due or that becomes due Contractor. The amount of liquidated damages may be adjusted by Owner in Special Conditions.

The parties stipulate and agree that the actual damages sustained by Owner for late completion of the Project will be uncertain and difficult to ascertain, that calculating Owner's actual damages would be impractical, unduly burdensome, and cause unnecessary delay, and that the amount of daily liquidated damages set forth above is a reasonable estimate.

Payment of the liquidated damages does not preclude recovery by Owner of other damages or losses under other provisions of the Contract, except for claims related to delays in Substantial Completion or Final Completion. Owner's right to receive liquidated damages shall not affect Owner's right to terminate the Contract as provided in these UGSC or elsewhere in the Contract Documents, nor shall termination of the Contract release Contractor from the obligation to pay the liquidated damages.

Article 10. Payments

10.1. Schedule of Values. The Contractor shall submit to the ODR and the A/E for acceptance a Schedule of Values, or Work Breakdown, accurately itemizing material and labor for the various classifications of the Work based on the organization of the specification sections and using the same activity names and terms as the Work Progress Schedule. 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 the ODR, and submitted not less than twenty-one calendar (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 costs for general conditions, fees, contingencies, and Owner cash allowances, if applicable, so that the sum of the items will equal the Contract Sum. As appropriate, the Contractor shall assign labor and/or material values to each item, the subtotal thereof equaling the value of the Work in place when complete.

10.1.2 The 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, and. make the worksheets available to the ODR at the time of Contract execution. Thereafter the Contractor shall grant the Owner during normal business hours access to said notarized 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. The Contractor will receive periodic progress payments for Work performed, materials in place, suitably stored on site, or as otherwise agreed to by the Owner and the Contractor. Payment is not due until receipt by the ODR or his designee of a correct and complete Pay Application in electronic and/or hard copy format as set forth in Special

Conditions or Division 1 Specifications, and certified by the A/E. Progress payments are made provisionally and do not constitute acceptance of Work not in accordance with the Contract Documents. The 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 the A/E and the ODR a complete, clean copy of a preliminary pay worksheet or Preliminary Pay Application, to include the following:

10.2.1.1 The 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 reports.

10.2.1.4 Such additional documentation as Owner may require as set forth elsewhere in the Contract Documents.

10.2.2 Contractor's Application for Progress Payment. As soon as practicable, but in no event later than seven days after receipt of the Preliminary Pay Worksheet, the A/E and ODR will meet with the Contractor to review the Preliminary Pay Worksheet and to observe the condition of the Work. Based on this review, the ODR and the A/E may require modifications to the Preliminary Pay Worksheet prior to the submittal of an application for progress payment, and will promptly notify the Contractor of revisions necessary for approval. As soon as practicable, the Contractor shall submit its Invoice on the appropriate and completed form, reflecting the required modifications to the Schedule of Values required by the A/E and/or ODR. The Contractor shall attach all additional documentation required by the 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 the Contractor's invoice are paid or will be paid within the time specified in Tex. Gov't Code, Chapter 2251. No invoice is complete unless it fully reflects all required modifications, and attaches all required documentation including the Contractor's affidavit.

10.2.3 Certification by A/E. Within five days or earlier following the A/E's receipt of the Contractor's formal invoice, the A/E will review the application for progress payment for completeness, and forward to

the ODR. The A/E will certify that the application is complete and payable, or that it is incomplete, stating in particular what is missing. If the Invoice is incomplete, the Contractor shall make the required corrections and resubmit the Invoice for processing.

10.3 Owner's Duty to Pay. The Owner has no duty to pay the Contractor except on receipt by the ODR of: 1) a complete Invoice certified by the A/E, and 2) the Contractor's updated Work Progress Schedule, and 3) confirmation that the Contractor's as-built documentation at the Site is kept current.

10.3.1 Payment for stored materials and/or equipment confirmed by the Owner and A/E to be on-site or otherwise properly stored is limited to 85 percent of the invoice price or 85 percent of the scheduled value for the materials or equipment, whichever is less.

10.3.2 Retainage. The Owner will withhold from each progress payment, as retainage, 5 percent of the total earned amount, or the amount authorized by law. Retainage is managed in conformance with Tex. Gov't Code, Chapter 2252, Government Code, subchapter B.

10.3.2.1 The 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 total Contract must be completed before the Owner can consider a retainage reduction or release.

10.3.3 Price Reduction to Cover Loss. The Owner may reduce any Periodic Invoice, or application for Progress Payment, prior to payment to the extent necessary to protect the Owner from loss on account of actions of the Contractor including, but not limited to:

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.
- 10.3.4 Title to all material and Work covered by progress payments transfers to the Owner upon payment.
 - 10.3.4.1 Transfer of title to Owner does not relieve the Contractor of the sole responsibility for the care and protection of materials and Work upon which payments have been made until final acceptance of the entire Work, or the restoration of any damaged Work, or waive the right of the Owner to require the fulfillment of all the terms of the Contract.
- 10.4 Progress payments to the Contractor do not release the Contractor or its surety from any obligations under the Contract.
 - 10.4.1 Upon the Owner's request, the Contractor shall furnish manifest proof of the status of Subcontractor's accounts in a form acceptable to the Owner.
 - 10.4.2 Pay estimate certificates must be signed by a corporate officer or a representative duly authorized by the Contractor.
 - 10.4.3 The Contractor shall 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 the Owner's representative approves the application for payment.
- 10.5 Off-Site Storage. With prior approval by the 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 the Owner.
 - 10.5.1 Store materials in a Bonded Commercial Warehouse.
 - 10.5.2 Provide separate 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 Owner must be filed with the Owner's representative.

- 10.5.3 Inspection by Owner's representative is allowed at any time. The 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 Project 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 the ODR, A/E, and Inspector 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 the 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.

Article 11. Changes

- 11.1. Change Orders. A Change Order issued after execution of the Contract is a written order to the Contractor, signed by the ODR, the Contractor, and the 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 the Contractor indicates his agreement therewith, including the adjustment in the Contract Sum and/or the Contract Time. The ODR may issue written authorization for the Contractor to proceed with work of a Change Order in advance of final execution by all parties. ***In the absence of an agreement with the Contractor on a Change Order, the Owner may issue a Unilateral Change Order that will have the full force and effect of a contract modification. The issuance of a Unilateral Change Order does not prejudice the Contractor's rights to make claims or to appeal disputed matters under terms of the Contract.***

- 11.1.1 The Owner, without invalidating the Contract, **and without prior approval of the 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, and shall be performed under the applicable conditions of the Contract Documents. If such changes cause an increase or decrease in the 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.
- 11.1.2 It is recognized by the parties hereto and agreed by them that the Drawings and Specifications 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 Drawings and Specifications, 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, 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, *quantum meruit*, 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, whether direct, consequential or otherwise in any wise incident to, arising out of, or resulting directly or indirectly from the work performed by Contractor under such Change Order.
- 11.1.3 Procedures for administration of Change Orders shall be established by the Owner and stated elsewhere in the Contract Documents.
- 11.1.4 Except as provided above, no order, oral statement, or direction of the Owner or his duly appointed representative shall be treated as a change under this article or entitle the Contractor to an adjustment.
- 11.1.5 The Contractor agrees that the 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 the Contractor. Further, the Contractor agrees to include in all its subcontracts a provision to the effect that the Subcontractor agrees that the 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 this 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 Change Order that application of the agreed unit prices to the quantities of work proposed will cause substantial inequity to the Owner or the Contractor, the applicable unit prices shall be equitably adjusted as provided in the Special Conditions or as agreed to by the parties and incorporated into the Change Order.

11.3 Claims for Additional Costs

11.3.1 If the Contractor wishes to make a claim for an increase in the Contract Sum not related to a requested change, it shall give the Owner and the 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 give rise to the additional cost or time, except in an emergency endangering life or property in which case the Contractor shall act in accordance with Article 7.2.1. No such claim shall be valid unless so made. If the Owner and the 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 Change Order.

11.3.2 If the 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 the Owner to stop the Work pursuant to Article 14 where the Contractor was not at fault, or 3) any written order for a minor change in the Work issued pursuant to Article 11.4, the Contractor shall make such claim as provided in Article 11.3.1.

11.3.3 Should the Contractor or its Subcontractors fail to call attention of the A/E to obvious discrepancies or omissions in the Bid/Proposal Documents during the pre-bid/pre-proposal period, but claim additional costs for corrective work after contract award, the Owner may assume intent to circumvent competitive bidding for necessary corrective work. In such case, the Owner may choose to let a separate contract for the corrective work, or issue a Unilateral

Change Order to require performance by the Contractor. Claims for time extensions or for extra cost resulting from delayed notice of contract document discrepancies or omissions will not be considered by the Owner.

- 11.4. Minor Changes. The A/E, with concurrence of the 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 the Contractor shall carry out promptly and record on as-built record documents.
- 11.5. Concealed Site Conditions. 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 bid/proposal documents, or if unknown conditions of an unusual nature are discovered differing materially from the conditions usually inherent in work of the character shown and specified, the ODR and the A/E shall be notified in writing of such conditions before they are disturbed. Upon such notice, or upon its own observation of such conditions, the A/E, with the approval of the 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 the ODR.
- 11.6. Extension of Time. All Changes to the Contract Time shall be made as a consequence of requests as required under Article 9.6, and as documented by Change Order as provided under Article 11.1.
- 11.7 Administration of Change Orders. All changes in the Contract shall be administered in accordance with procedures approved by the Owner, and when required make use of such electronic information management system(s) as the Owner may employ.
- 11.7.1 Routine changes in the Contract shall be formally initiated by the **ODR, Contractor or** A/E by means of a contract change form detailing requirements of the proposed change for pricing by the Contractor. This action may be preceded by communications between the 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 the Contractor. Except for emergency conditions described below, approval of the Contractor's cost proposal by the Owner will be required for authorization to proceed with the Work being changed. The Owner will not be responsible for the cost of work changed without prior approval and the 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 the A/E and ODR using current estimating guides and/or practices. Photocopies of Subcontractor and vendor proposals shall be furnished unless specifically waived by the ODR. Contractor shall provide written response to a Contract Revision within twenty-one (21) calendar 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 **written** communication and authorization between the Contractor and Owner. 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, the 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 the Contractor alone (see Article 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 the ODR.
- 11.8 Pricing Change Order Work. The amounts that the Contractor and/or its Subcontractors add to a Contract Change for profit and overhead will also be considered by the Owner before approval is given and a Change Order issued. The amounts established hereinafter are the maximums that are acceptable to the Owner.
- 11.8.1 For work performed by its forces, the Contractor will be allowed its actual costs for materials, **equipment charges**, the total amount of wages paid for labor, the total cost of Federal Old Age Benefit (Social Security Tax) and for Worker's Compensation and Comprehensive General Liability Insurance, plus Bond cost if the change results in an increase in the Bond premium paid by the Contractor. To the total of the above costs, the Contractor will be allowed to add a percentage as noted below to cover overhead and profit combined. Overhead shall be considered to include insurance other than mentioned above, field and office supervisors and

assistants, including safety and scheduling personnel, use of small tools, incidental job burdens and general home office expenses, and no separate allowance will be made therefore. Allowable percentages for overhead and profit on changes will not exceed 15 percent if the total of self-performed work is less than or equal to \$10,000, 10 percent if the total of self-performed work is between \$10,000 and \$20,000 and 7.5 percent if the total of self-performed work is over \$20,000, for any specific change priced.

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 the Contractor will be allowed to add a maximum mark-up of 10 percent if the total of all subcontracted work is less than or equal to \$10,000, 7.5 percent if the total of all subcontracted work is between \$10,000 and \$20,000 and 5 percent if the total of all subcontractor work is over \$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. The Owner does not accept and will not pay for additional contract cost identified as indirect, consequential, or as damages caused by delay.

11.8.4 On contracts based on a Guaranteed Maximum Price (GMP), the Construction Manager-at-Risk or Design Build Firm shall NOT be entitled to a percentage mark-up on any change order work unless the Change Order increases the Guaranteed Maximum Price.

Article 12. Project Completion and Acceptance

12.1. Closing Inspections

12.1.1 Substantial Completion Inspection. When the Contractor considers the entire Work or part thereof Substantially Complete, it shall notify the ODR in writing that the Work will be ready for Substantial Completion Inspection on a specific date. The Contractor shall include with this notice the Contractor's Punchlist to indicate that it has previously inspected all the Work associated with the request for inspection, has corrected items where possible, and includes all items scheduled for completion or correction prior to final inspection. The failure to include any items on this list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. If any of the items on this list prevents the facility from being used as intended, the Contractor shall not request a Substantial Completion Inspection. The Owner and its

representatives will review the list of items and schedule the requested inspection, or inform the Contractor in writing that such an inspection is premature because the Work is not sufficiently advanced or conditions are not as represented on the Contractor's list.

12.1.1.1 Prior to the Substantial Completion Inspection, the Contractor shall furnish a copy of its marked-up As-Built Drawings 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. 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, the A/E, ODR, the Contractor and other Owner representatives as determined by the Owner, will jointly attend the Substantial Completion Inspection, which shall be conducted by the ODR or their delegate. If the ODR determines that the Work is Substantially Complete, the ODR will issue a Certificate of Substantial Completion to be signed by the A/E, Owner and Contractor, establishing the date of Substantial Completion, **and identifying responsibilities for security, maintenance, and insurance**. A/E will provide with this certificate a list of punchlist items (the Pre-Final Punchlist) for completion prior to final inspection. This list may include items in addition to those on the Contractor's punchlist, which the inspection team deems necessary to correct or complete prior to Final Inspection. If the Owner occupies the facility upon determination of Substantial Completion, the Contractor shall complete all corrective Work at the convenience of the Owner, without disruption to Owner's use of the facility for its intended purposes.

12.1.2 Final Inspection. The 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, the 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, the Contractor shall give written notice to the ODR and A/E that the Work will be ready for

Final Inspection on a specific date. The 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, the ODR, A/E and the Contractor will inspect the Work. The A/E will submit to the 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 The Contractor must 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, the Contractor shall notify the A/E and ODR in writing stating the disposition of each Final Punchlist item. The 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 the ODR will issue a certificate establishing the date of Final Completion. Completion of all Work is a condition precedent to the 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 the Owner.

12.1.4 Purpose of Inspection. Inspection is for determining the completion of the Work, and does not relieve the 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 the 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 the Owner's rights under the Contract or relieve the Contractor of its responsibility for performance or warranties.

12.1.5 Additional Inspections

12.1.5.1 If the Owner's inspection team determines that the Work is not Substantially Complete at the Substantial Completion Inspection, the ODR or A/E will give the Contractor written notice listing cause(s) of the rejection. The ODR will set a time for completion of incomplete or defective work. The Contractor must complete or correct all work so designated

prior to requesting a second Substantial Completion Inspection.

12.1.5.2 If the Owner's inspection team determines that the Work is not complete at the Final Inspection, the ODR or the A/E will give the Contractor written notice listing the cause(s) of the rejection. The ODR will set a time for completion of incomplete or defective work. The 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 the Owner of additional inspections resulting from the Work not being ready for one or more of these inspections is the responsibility of the Contractor. The Owner may issue a Unilateral Change Order deducting these costs from Final Payment. Upon the Contractor's written request, the 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 the 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. The Owner may occupy or use all or any portion of the Work following Substantial Completion, or at any earlier stage of completion. Should the Owner wish to use or occupy the Work, or part thereof, prior to Substantial Completion, the ODR will notify the Contractor in writing. Work performed on the premises by third parties on the Owner's behalf does not constitute occupation or use of the Work by the Owner for purposes of this Article. All Work performed by the Contractor after

occupancy, whether in part or in whole, shall be at the convenience of the Owner so as to not disrupt Owner's use of, or access to, occupied areas of the Project.

12.3 Acceptance & Payment

12.3.1 Request for Final Payment. Following the certified completion of all Work, including all punch list items, cleanup, and the delivery of record documents, the Contractor shall submit a certified Application for Final Payment. The Contractor must include in the Application of Final Payment all sums held as retainage and forward to the A/E and the ODR for review and approval.

12.3.2 Final Payment Documentation. The 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, record documents and all other items required by the Contract. The Contractor shall submit Consent of Surety to Final Payment 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, or otherwise satisfied within the period of time required by Tex. Gov't Code, Chapter 2251. The 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. The Contractor may not subsequently submit a claim on behalf of a Subcontractor or vendor unless the Contractor's affidavit notes that claim as an exception.

12.3.3 A/E Approval. The 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, the A/E will either 1) return the Application for Final Payment to Contractor with corrections for action and resubmission or 2) accept it, note its approval and send to Owner.

12.3.4 Offsets and Deductions. The Owner may deduct from the Final Payment all sums due from the Contractor. If the Certificate of Final Completion notes any Work remaining, incomplete, or any defects not remedied, the Owner may deduct the cost of remedying such deficiencies from the Final Payment. On such deductions, the Owner will identify each deduction, the amount, and the explanation of the deduction on or by the 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 Unilateral Change Order as may be applicable.

12.3.5 Final Payment Due. Final Payment is due and payable by the Owner, subject to all allowable offsets and deductions, on the 31st day following the Owner's approval of the final Application for Payment. If the Contractor disputes any amount deducted by the Owner, the 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 the Owner, relating to the condition of the Work except those arising from:

12.3.6.1 Faulty or defective Work appearing after Substantial Completion (latent defects); and/or

12.3.6.2 Failure of the Work to comply with the requirements of the Contract Documents; and/or

12.3.6.3 Terms of any warranties required by the Contract, or implied by law; and/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 the Contractor except those specifically identified in writing and submitted to the 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 the Contractor and closed until the expiration of all warranty periods.

Article 13. Warranty and Guarantee

13.1. Contractor's General Warranty and Guarantee. Contractor warrants to the 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 best finish and workmanship. The Contractor further warrants that unless otherwise specified, all materials and equipment incorporated in the Work under the Contract are new. The 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 Sum for the cost of repair or diminution in value of the Work by reason of such defect. Absent such a written agreement, the 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 the 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 the Owner, at any time, or by any repair or correction of such defect made by the Owner.

13.2. Warranty Period. Except as may be otherwise specified or agreed, the Contractor shall repair all defects in materials, equipment, or workmanship appearing within one year from the date of Substantial Completion of the Work. 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 responsible, unless Owner is compelled to undertake maintenance or operation due to the neglect of the Contractor.

13.3.2 Normal wear and tear under normal usage after acceptance of the Work by the 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 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 the Contractor. The ODR will certify the date of service commencement in the Certificate of Substantial Completion.

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

13.5.2 The Contractor may satisfy any such obligation by obtaining and assigning to the Owner a complying warranty from a manufacturer, supplier, or Subcontractor. Where an assigned warranty is tendered and accepted by the Owner which does not fully comply with the requirements of the Contract, the Contractor remains liable to the 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 the Owner, or any agent of the Owner designated as responsible for management of the Warranty Period, of the discovery of a defect, the Contractor shall promptly remedy the defect(s), and provide written notice to the Owner and designated agent indicating action taken. In case of emergency where delay would cause serious risk of loss or damage to the Owner, or if the Contractor fails to remedy within 30 days, or within another period agreed to in writing, the Owner may correct the defect and be reimbursed the cost of remedying the defect from the Contractor or its Surety.

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

Article 14. Suspension and Termination

14.1 Suspension of Work for Cause. The Owner may, at any time without prior notice, suspend all or any part of the Work, if after reasonable observation and/or investigation, the 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 The Owner will give the 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, the Contractor shall immediately stop the Work so identified. As soon as practicable following the issuance of such a notice, the 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 the Contractor, the 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 the Contractor, and the suspension has prevented the 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) calendar days written notice to the Contractor, the 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 days for its own convenience. The Owner will give the 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, will be suspended and the date on which the suspension of Work will cease. When a suspension prevents the Contractor from completing the Work within the Contract Time, it is an Excusable Delay. A notice of suspension for convenience may be modified by the Owner at any time on seven (7) calendar days written notice to the Contractor. If the Owner suspends the Work for its convenience for more than sixty (60) consecutive calendar days, the Contractor may elect to terminate the Contract pursuant to the provisions of the Contract.
- 14.3 Termination by Owner for Cause.
- 14.3.1 The Owner may, without prejudice to any right or remedy, terminate the employment of the Contractor and take possession of the Site and of all materials, equipment, tools, construction equipment and

machinery thereon owned by the Contractor, 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; and/or
 - 14.3.1.2 Persistent disregard of laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, including the ODR; and/or
 - 14.3.1.3 Persistent failure to prosecute the Work in accordance with the Contract, and to insure its completion within the time, or any approved extension thereof, specified in this Contract; and/or
 - 14.3.1.4 Failure to remedy defective work condemned by the ODR; and/or
 - 14.3.1.5 Failure to pay Subcontractors, laborers, and material suppliers pursuant to Tex. Gov't Code Chapter 2251; and/or
 - 14.3.1.6 Persistent endangerment to the safety of laborers or of the Work; and/or
 - 14.3.1.7 Failure to supply or maintain statutory bonds or to maintain required insurance, pursuant to the Contract; and/or
 - 14.3.1.8 Any material breach of the Contract; and/or
 - 14.3.1.9 The Contractor's insolvency, bankruptcy, or demonstrated financial inability to perform the Work.
- 14.3.2 Failure by the 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 the Owner decide to terminate the employment of the Contractor under the provisions of Article 14.3.1, it will provide to the Contractor and its Surety thirty (30) days prior written notice.
- 14.3.4 Should the Contractor or its Surety, after having received notice of termination, remedy to the satisfaction of the Owner the condition(s) upon which the notice of termination was based, the notice of

termination shall be rescinded in writing by the Owner. If so rescinded, the Work may continue without an extension of time.

14.3.5 If the Contractor or its Surety fails to remedy the condition(s) to the satisfaction of the Owner within thirty (30) days following receipt of notice, the Owner may ***immediately terminate the Contract, make arrangements*** for completion of the Work, and deduct the cost of completion from the unpaid Contract Sum.

14.3.5.1 Cost of completion includes additional Owner costs such as A/E services, the cost of other consultants, and contract administration.

14.3.5.2 The Owner will make no further payment to the Contractor or its Surety until all costs of completing the Work are paid. If the unpaid balance of the Contract Sum exceeds the costs of administering and finishing the Work, the Contractor will receive the excess funds. If such costs exceed the unpaid balance, the Contractor or its Surety will pay the difference to the Owner.

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

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

14.4 Termination for Convenience of Owner. The 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:

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

14.4.2 Upon receipt of the notice of termination, the 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:

14.4.2.1 Stop all work.

14.4.2.2 Place no further subcontracts or orders for materials or service.

14.4.2.3 Terminate all subcontracts.

14.4.2.4 Cancel all materials and equipment orders as applicable.

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

14.4.3 When the Contract is terminated for the Owner's convenience, the Contractor may recover from the Owner payment for all Work executed ***before the notice of termination along with the actual and reasonable cost of any additional work required to secure the Project and property related to the Contract following the notice of termination. The Contractor will not be entitled to recover any other costs or damages arising from the termination for convenience of the Owner including, but not limited to, claims for lost business opportunities.***

14.5 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 the Contractor or a Subcontractor or their agents or employees or any other persons performing any of the Work under a contract with the Contractor, then the Contractor may, upon thirty (30) additional days' written notice to the ODR, terminate the Contract and recover from the Owner payment for all Work executed ***before the work stoppage along with the actual and reasonable cost of securing the Project and property related to the Contract during the period of work stoppage. The Contractor will not be entitled to recover any other costs or damages arising from the work stoppage including, but not limited to, claims for lost business opportunities.*** If the cause of the work stoppage is removed prior to the end of the thirty (30) day notice period, the Contractor may not terminate the Contract ***but may be entitled to an equitable adjustment in the Contract Sum and Contract Time.***

14.6 Settlement on Termination. When the Contract is terminated for any reason, at any time prior to 180 days after the effective date of termination,

the Contractor shall submit a final termination settlement proposal to the Owner based upon recoverable costs as provided under the Contract. If the Contractor fails to submit the proposal within the time allowed, the Owner may determine the amount due to the Contractor because of the termination and pay the determined amount to the Contractor.

Article 15. Dispute Resolution

15.1 Unresolved Contractor Disputes. The dispute resolution process provided for in Tex. Gov't Code, Chapter 2260, shall be used by the Owner and the Contractor to attempt to resolve any claim for breach of contract made by the Contractor, that is not resolved under procedures described throughout these Uniform General and Supplementary Conditions, or Special Conditions of the Contract.

15.2 Alternative Dispute Resolution Process. The Owner may establish a dispute resolution process to be utilized in advance of that outlined in Tex. Gov't Code, Chapter 2260.

15.3 Nothing in the Contract shall 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 in the Contract shall waive or be construed to waive the state's sovereign immunity.

Article 16. Miscellaneous

16.1 Special Conditions. When the Work contemplated by the Owner is of such a character that the foregoing Uniform General and Supplementary Conditions of the Contract cannot adequately cover necessary and additional contractual relationships, the Contract may include Special Conditions. Special Conditions shall relate to a particular project and be peculiar to that project but shall not weaken the character or intent of the Uniform General and Supplementary Conditions.

16.2 Federally Funded Projects. On Federally funded projects, the Owner may waive, suspend or modify any Article in these Uniform General and Supplementary Conditions which conflicts with any Federal statute, rule, regulation or procedure, where such waiver, suspension or modification is essential to receipt by the 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, the Owner may administer its design and construction management through an Internet-based management system. In such cases, the 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, the Owner will make the software accessible via the Internet to all project team members.

16.3.1.2 The Owner shall administer the software.

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

16.4 Public Information. Contractor acknowledges that Owner is obligated to strictly comply with the Public Information Act, Chapter 552, *Texas Government Code*, in responding to any request for public information pertaining to this Agreement, as well as any other disclosure of information required by applicable Texas law.

Upon Owner's written request, Contractor will provide specified public information exchanged or created under this Agreement that is not otherwise excepted from disclosure under chapter 552, Texas Government Code, to Owner in a non-proprietary format acceptable to Owner. As used in this provision, "public information" has the meaning assigned Section 552.002, *Texas Government Code*, but only includes information to which Owner has a right of access.

Contractor acknowledges that Owner may be required to post a copy of the fully executed Agreement on its Internet website in compliance with Section 2261.253(a)(1), *Texas Government Code*.

END OF UNIFORM GENERAL AND SUPPLEMENTARY CONDITIONS

SPECIAL CONDITIONS

The following supplements modify, change, delete from or add to the “UNIFORM GENERAL AND SUPPLEMENTARY CONDITIONS,” of The Texas A&M University System. Where any Article of the Uniform General Conditions or Supplemental Uniform General Conditions is modified or any paragraph or clause thereof is modified or deleted by these supplements, the unaltered conditions of the article, paragraph, sub-paragraph or clause shall remain in effect. The following supplements shall control over any inconsistencies or conflicts with the UGSC.

Article 2 Laws Governing Construction

2.2.1.2.1 Prevailing Wage Schedules

The rates of pay for some classifications which prevail in the locality of this Project are included at the end of these Special Conditions. Contributions by a worker toward retirement plans, health insurance, apprentice programs, etc., are part of the worker's pay; contributions by the employer are not. Contractors shall identify, briefly describe, and request a predetermination of rates for crafts (or apprentice programs) not included in the following Wage Predetermination. Such request shall be made within 15 days after contract award to the Chief Facilities Officer, Facilities Planning & Construction, The Texas A&M University System, phone number 979-458-7000.

2.2.1.2.2 Apprenticeship Program

Apprentices who are enrolled in a federally certified apprenticeship program may be used at the percentage rates of the journeyman scale stipulated in their apprenticeship agreement.

2.8 Legal Restrictions on Specific Activities

~~2.8.1 PCB Ballast Disposal Requirements~~

~~The transporting and disposal of lighting ballasts is subject to Environmental Protection Agency (EPA), D.O.T. and State of Texas laws, codes and guidelines. Any ballast that is not specifically marked "No PCB's" shall be considered to contain PCB's and shall be transported to an EPA approved incinerator and destroyed by incineration. Contractor shall furnish Owner with copies of tickets before and after transportation and a certificate of destruction from the firm that destroys the ballasts. The disposal company must be approved by the Owner.~~

2.8.2 Asbestos Removal:

If, in the process of performing the Work, the Contractor suspects that asbestos has been found, the Owner shall be notified immediately. The Owner shall cause the suspicious material to be tested and, if found to be asbestos, will be responsible for its removal. It

will be the Contractor's responsibility to protect its workers and other persons by regulating access to the affected area.

2.8.3 Endangered Species

2.8.3.1 No activity is authorized that is likely to jeopardize the continued existence of a threatened or endangered species as listed or proposed for listing under the Federal Endangered Species Act (ESA), and/or the State of Texas Parks and Wildlife Code on Endangered Species, or to destroy or adversely modify the habitat of such species. The Owner has previously coordinated with the appropriate agencies and has determined that there is no known occurrence of threatened or endangered species at the project site.

2.8.3.2 If a threatened or endangered species is encountered during construction, the Contractor shall immediately cease work in the area of the encounter and notify the Owner, who will immediately implement actions in accordance with endangered species act and applicable State statutes. These actions shall include reporting the encounter to the Texas Parks and Wildlife Department, and obtaining any necessary approvals or permits to enable the work to continue. The Contractor shall not resume work in the area of the encounter until authorized to do so by the ODR.

~~2.8.4 Airport Restrictions:~~

~~Prior to construction, the contractor will be responsible for submitting and obtaining clearance documentation from the Federal Aviation Administration for the construction crane(s) from the FAA's Obstruction Evaluation Group. Reference is made to the following FAA website for applicability and procedure: <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>. The local airport manager shall be copied on all correspondence to and from the FAA.~~

~~2.9 Archeological Discoveries:~~

~~2.9.1 No activity which may affect a State Archeological Landmark is authorized until the Owner has complied with the provisions of the Texas Antiquities Code. The Owner has previously coordinated with the appropriate agencies and impacts to known cultural or archeological deposits have been avoided or mitigated. However, the Contractor may encounter unanticipated cultural or archeological deposits during Construction. Should an encounter occur the Contractor shall cease all work in the affected area and immediately notify the ODR. The ODR will take the appropriate notification steps and work will not resume until authorized by the ODR.~~

2.10 Underground Utilities

2.10.1 In accordance with State Law, all persons performing Work requiring digging or ground penetration are required to call 811 in advance and provide detailed information regarding planned Work. Notification shall occur not earlier than the 14th day prior to the date excavation is to begin or later than 48 hours before the excavation is to begin, excluding weekends and holidays. Additional information can be found at

<http://www.texas811.org>

The following is excerpted from TAMU Standard Administrative Procedure (SAP)
[24.99.99.M0.01](#)

To increase the level of safety, TAMU has a policy that is more strict than State law* and requires an advance locate be performed for 1) any ground penetration on campus, to any depth, when mechanized equipment such as augers, trenchers, excavators, etc. will be used, and 2) for all other ground penetrations to a depth greater than 12 inches. Hand-digging or soft excavation is required whenever any excavation is performed to a depth less than 12 inches without a utility locate. An advance utility locate is always required if the excavation will be deeper than 12 inches. In the case of ground penetration resulting from agricultural tilling or other recurring instructional or research-based agricultural work on the TAMU campus, an exception to the requirement to perform an advance utility locate will be made after an initial utility locate is performed to determine that the area to be tilled or worked is clear of underground utilities.

*State law requires that all persons performing work requiring digging or ground penetration to a depth of 16 inches or more are required to call 811 in advance and provide detailed information regarding planned work. By Texas Utilities Code, Title 5, Chapter 251 - Underground Facility Damage Prevention and Safety, a person who intends to excavate shall notify Texas 811 not earlier than the 14th day before the date the excavation is to begin or later than the 48th hour before the time the excavation is to begin, excluding Saturdays, Sundays, and legal holidays. Failure to comply with the Texas Utilities Code could result in a fine up to \$1000 for the first offense, in addition to other potential liabilities.

TAMU is a member of the Texas 811 utility locate program. TAMU owns and is directly responsible for performing locates for the following utility systems: electrical, domestic water, chilled and heating hot water, sanitary and storm sewer, TAMU-owned natural gas, irrigation, and TAMU-owned telecommunications. **A locate request for all utility systems on campus is initiated by calling 811.**

SSC Grounds Management is a contract service at TAMU responsible for all irrigation systems located on campus. Communications with SSC Grounds Management is through the TAMU Aggieworks Center at 979-458-5500, or the TAMU Communications Center at 979-845-4311. A locate request for irrigation systems on campus is initiated by calling 811. By calling 811, the TAMU Communications Center and SSC Grounds Management will be notified of the need for an irrigation system locate.

Other utility systems NOT owned by TAMU, such as Atmos Energy's natural gas

distribution and other third-party systems such as telecom, water, electrical, etc. must also be located prior to excavating or penetrating the ground. **A locate request for third-party owned utility systems on campus is initiated by calling 811.**

For additional information and assistance contact Utilities & Energy Services 979-845-3234 or go to this website <http://utilities.tamu.edu> and look under **Digging on Campus?**

FOR EMERGENCIES: An emergency excavation is sometimes necessary to respond to a situation that endangers life, health or property, or when service to the customer will be interrupted. When an emergency locate is needed on the TAMU campus, both Texas 811 and the TAMU Communications Center (at 979-845-4311) shall be contacted promptly with details of the emergency. The same information required on the Texas 811 Utility Locate Required Information form under normal conditions will also be required with an emergency.

2.10.1.1 Routine Utility Locate Request Procedure:

- 2.10.1.1.1 The locate requestor is responsible to clearly mark the site perimeter to be excavated or penetrated, by using water-based white paint and/or white flags, prior to calling Texas 811.
- 2.10.1.1.2 Call 811 to request a utility locate. After clearly marking the site perimeter where locate will be performed, requestor must have the [Texas 811 Utility Locate Required Information](#) form completed and available.
- 2.10.1.1.3 The utility locator(s) will mark buried lines with paint and/or flags within the marked excavation perimeter. Utility flag colors are red for electric, orange for telecom, yellow for fuel gas, green for sanitary sewer, and blue for all other water systems.
- 2.10.1.1.4 The requestor shall not commence any digging, excavation, or ground penetration for at least two full working days (48 hours, excluding weekends and holidays) after the locate request is made.
- 2.10.1.1.5 If digging, excavation, or ground penetration must be performed more than 14 days after the initial locate is performed, then the requestor/excavator must request another locate at least 48 hours (excluding weekends and holidays) in advance of ground penetration so the locate markings can be refreshed.

2.11 Unmanned Aerial System Operations

- 2.11.1 Prior to any use of an unmanned aerial system the contractor or subcontractor shall complete the TAMUS UAS Flight Application which is located at the following website <https://www.tamus.edu/business/risk-management/uas/>. This application shall be submitted a minimum of 14 days prior to the planned flight. The contractor shall provide the ODR the application and the approval notification.

Article 3. General Responsibilities of the Owner & Contractor

3.3 Contractor's General Responsibilities.

Delete Paragraph 3.3.2 "Contractor's Superintendent" and replace with the following:

3.3.2 Contractor's Personnel: As a minimum the Contractor's on-site personnel shall consist of the following and shall be in attendance at the site during the progress of the Work.

3.3.2.1 The Contractor shall employ a part-time Project Manager. The Project Manager shall be satisfactory to the Owner and shall not be changed without approval of the Owner at least fourteen (14) days prior to the change unless the Project Manager leaves the employment of the Contractor. The Project Manager shall have authority to act on the Contractor's behalf. All communications with the Project Manager shall be as binding as if given to the Contractor. All verbal communications shall be confirmed in writing.

3.3.2.2 The Contractor shall employ a full-time Superintendent for the project. The Superintendent shall be satisfactory to the Owner and shall not be changed without approval of the Owner at least fourteen (14) days prior to the change unless the Superintendent leaves the employment of the Contractor. The Superintendent will also serve as the Quality Control Supervisor (QCS) on this project.

3.3.2.3 The Contractor shall employ a part-time Project Scheduler/Expediter on-site to provide the project team with complete scheduling information; expediting and status of material delivery; shop drawing and other submittal status and request for information status. The Project Scheduler/Expediter shall be experienced with the CPM scheduling software proposed by the Contractor and have project experience of similar scope and size.

3.3.2.4 The Contractor shall employ full-time Project Engineers and QCS as determined by the Contractor for proper execution of the Work and to meet the conditions of the Contract Documents.

3.3.2.5 Quality Control Program: The Contractor shall establish a Quality Control Program ~~that shall include one full time Quality Control Supervisor (QCS). The QCS will assist the Owner's representative in the verification of the materials and installation of the Work. The Contractor shall be responsible for Quality Control and the Owner will provide Quality Assurance. The QCS shall not have less than 10 years of experience with projects of similar size and scope.~~

Article 5. Bonds and Insurance

[Only required if determined necessary by Owner. Amounts to range from one million to five million. Contact System Risk Management for assistance]

5.2.2.2 Additional Insurance is required as follows:

5.2.2.2.1 ~~In addition to the insurance required under Article 5, of the Uniform General and Supplementary Conditions, the Contractor's Public Liability and Property Damage~~

~~Insurance shall include an umbrella policy in the amount of \$_____.~~

~~5.2.2.2 In addition to the insurance required under Article 5, of the Uniform General and Supplementary Conditions, the Contractor's Public Liability and Property Damage Insurance shall include \$_____ insurance coverage for asbestos abatement work and/or demolition work.~~

~~5.2.2.5 Insert the following at beginning of paragraph:~~

~~_____ The Owner reserves the right to extend coverage for builder's risk insurance for the project at its sole discretion. Contractor shall provide builder's risk insurance cost for the project. The Owner may accept the builder's risk program submitted by Contractor or may choose to place it under its own builder's risk program.~~

~~_____ If Owner chooses to place project under its own builder's risk program delete remainder of paragraph 5.2.2.5 and replace with the following:~~

~~_____ All Risk Builder's Risk Insurance will be provided by the Owner. Coverage shall be All-Risk, including, but not limited to, Fire, Extended Coverage, Vandalism and Malicious Mischief, Flood, Earthquake, Theft and damage resulting from faulty workmanship, design or materials. The Builder's Risk policy limit shall be equal to 100 percent of the Contract. Each builder's risk claim shall be subject to a \$15,000 deductible payable by the Contractor. The policy shall be written in the name of the Owner. The policy shall have endorsements as follows:~~

~~_____ Delete paragraph 5.2.2.5.3 and replace with the following:~~

~~5.2.2.5.3 Loss, if any, shall be adjusted with and made payable to the Owner as Trustee for the insureds as their interests may appear. Owner, General Contractor and all subcontractors hereby mutually waive their rights of recovery against one another with respect to losses covered under the builder's risk policy and shall provide mutual waivers of subrogation with regard to losses covered by the builder's risk insurance. It is hereby agreed and understood that said waivers apply even if the contractor's negligence causes a covered loss, and regardless of the extent of that contractor's insurable interest in the covered property. The Owner and Contractor shall be named as Loss Payee. For renovation projects or projects that involve portions of work contained within an existing structure, refer to Special Conditions for possible additional Builder's Risk insurance requirements.~~

~~5.2.2.7 Aviation Insurance In the event any fixed, rotary aircraft or drones are used in connection with this Agreement and in the execution of the work, a minimum of \$1,000,000 of aviation liability insurance must be maintained with the following requirements: the Owner must be named as an "additional insured" and a waiver of hull damage must be provided in favor of the Contractor and Owner. Also, if any aircraft is to be used to perform lifts at the project site, a "slung cargo" endorsement must be included to cover the full replacement value of any equipment or material being lifted. All such lifts must be~~

~~coordinated with the Contractor for approval prior to lift execution. There shall be no restriction of coverage or specific exclusion on the aviation policy as it relates to invasion of privacy. If drones are to be used, all use must be in compliance with FAA regulations.~~

Article 6. Contract Documents

6.1.1.1 The Contractor will be furnished online complete sets of the Contract Drawings and Specifications.

Article 9. Construction Schedule

9.6.2.1.1 Rainfall Table

The number of weather days expected for each month during the term of this Contract is compiled by the State Climatologist, based on U.S. Weather Bureau records. The number of weather days shown in the Rainfall Table for the first and last months of the Contract will be prorated in determining the total number of weather days expected during the term of this Contract.

Texas A&M University (College Station/Bryan)

January	5	May	5	September	6
February	5	June	4	October	4
March	5	July	4	November	4
April	5	August	4	December	5

~~Tarleton State University~~

January	3	May	6	September	4
February	3	June	4	October	4
March	3	July	3	November	3
April	5	August	4	December	3

~~Prairie View A&M University~~

January	5	May	5	September	5
February	5	June	4	October	4
March	4	July	4	November	5
April	5	August	4	December	5

~~Texas A&M University at Galveston~~

January	5	May	4	September	6
February	4	June	4	October	4
March	3	July	5	November	4
April	4	August	6	December	6

Texas A&M University-Corpus Christi

January	3	May	4	September	7
February	3	June	4	October	4
March	2	July	3	November	3
April	3	August	4	December	3

Texas A&M International University

January	2	May	2	September	4
February	3	June	2	October	3
March	1	July	2	November	3
April	3	August	3	December	3

Texas A&M University-Kingsville

January	3	May	4	September	6
February	3	June	4	October	3
March	2	July	3	November	3
April	2	August	5	December	3

West Texas A&M University

January	1	May	4	September	3
February	2	June	5	October	3
March	2	July	4	November	2
April	2	August	4	December	1

Texas A&M University-Commerce

January	2	May	6	September	5
February	3	June	4	October	4
March	4	July	3	November	3
April	4	August	2	December	3

Texas A&M University-Texarkana

January	3	May	5	September	4
February	4	June	4	October	4
March	5	July	3	November	5
April	4	August	3	December	5

Texas A&M College of Dentistry-Dallas

January	2	May	5	September	3
February	2	June	3	October	4

March	3	July	2	November	3
April	4	August	2	December	2

~~Texas A&M University Central Texas~~

January	4	May	3	September	2
February	3	June	4	October	3
March	4	July	2	November	3
April	2	August	3	December	4

~~Texas A&M University San Antonio~~

January	2	May	5	September	4
February	2	June	4	October	4
March	2	July	2	November	3
April	3	August	3	December	2

9.6.2.2.6 Unanticipated asbestos material, hazardous material, archeological artifacts, or endangered species are discovered on a part of the construction site where Contractor is performing his work.

Article 11. Changes

11.8.1 For work performed by its forces, the Contractor will submit an itemized Change Order Proposal covering the additional Work and/or the Work to be deleted. The proposal shall be itemized for the various components of Work and divided by labor, materials and equipment in a detailed format satisfactory to the Owner. The Contractor shall include same detailed information from all subcontractors regardless of tier.

11.8.1.1 Estimated labor costs to be included for self-performed work shall be based on the actual cost per hour paid by the Contractor for those workers or crews of workers who the contractor reasonably anticipates will perform the change order work. Estimated labor hours shall include hours only for those workmen and working foremen directly involved in performing the change order work. Supervision above the level of working foremen (such as general foremen, non-working foremen, superintendent, project manager, etc.) is considered to be included in the Markup Percentages as outlined in paragraphs 11.8.1.6 and 11.8.2. Note: No separate allowances for warranty or safety expenses will be allowed as a direct cost of a change order. Costs attributed to warranty expenses and safety expense will be considered to be covered by the Markup Percentages as outlined in paragraphs 11.8.1.6 and 11.8.2

11.8.1.2 Labor burden allowable in change orders shall be defined as employer's net actual cost of payroll taxes (FICA, Medicare, SUTA, FUTA), net actual cost for employer's cost of union benefits (or other usual and customary fringe benefits if the employees are not

union employees), and net actual cost to employer for worker's compensation insurance taking into consideration adjustments for experience modifiers, premium discounts, dividends, rebates, expense constants, assigned risk pool costs, net cost reductions due to policies with deductibles for self-insured losses, assigned risk rebates, etc. Contractor shall reduce their standard payroll tax percentages to properly reflect the effective cost reduction due to the estimated impact of the annual maximum wages subject to payroll taxes. (An estimated percentage for labor burden may be used for pricing change orders. However, the percentage used for labor burden to price change orders will be examined at the conclusion of the project and an adjustment to the approved change orders will be processed if it is determined that the actual labor burden percentage should have been more or less than the estimated percentage used.)

- 11.8.1.3 Employee Stock Ownership Plan (ESOP) related fringe benefit costs are specifically considered non-reimbursable labor burden and any ESOP costs are considered covered by the allowable change order markups to cover overhead and profit.
- 11.8.1.4 Estimated material change order costs shall reflect the Contractor's reasonably anticipated net actual cost for the purchase of the material needed for the change order work. Estimated material costs shall reflect cost reductions available to the Contractor due to "non-Cash" discounts, trade discounts, free material credits, and/or volume rebates. Price quotations from material suppliers must be itemized with unit prices for each specific item to be purchased. "Lot pricing" quotations will not be considered sufficient substantiating detail.
- 11.8.1.5 Allowable change order estimated costs may include appropriate amounts for rental of major equipment specifically needed to perform the change order work (defined as tools and equipment with an individual purchase cost of more than \$750). For contractor owned equipment, the "bare" equipment rental rates allowed to be used for pricing change order proposals shall be 75% of the monthly rate listed in the most current publication of The AED Green Book divided by 173.3 to arrive at a maximum hourly rate to be applied to the hours the equipment is used performing the change order work. Further, for contractor owned equipment the aggregate equipment rent charges for any single piece of equipment used in all change order work shall be limited to 50% of the fair market value of the piece of equipment when the first change order is priced involving usage of the piece of equipment. Fuel necessary to operate the equipment will be considered as a separate direct cost associated with the change order work.
- 11.8.1.6 Allowable percentages for overhead and profit on changes will not exceed 15 percent if the total of self-performed work is less than or equal to \$10,000, 10 percent if the total of self-performed work is between \$10,000 and \$20,000 and 7.5 percent if the total of self-performed work is over \$20,000, for any specific change priced.
- 11.8.1.7 Change Order cost adjustments due an increase or decrease in bond or insurance costs (if applicable) shall not be subject to any Markup Percentage Fee.
- 11.8.1.8 As a further clarification, the agreed upon Markup Percentage Fee is intended to

cover the Contractor's profit and all indirect costs associated with the change order work. Items intended to be covered by the Markup Percentage Fee include, but are not limited to: home office expenses, branch office and field office overhead expense of any kind; project management; superintendents, general foremen; non-working foremen, estimating, engineering; coordinating; expediting; purchasing; detailing; legal, accounting, data processing or other administrative expenses; shop drawings; permits; auto insurance and umbrella insurance; pick-up truck costs; ESOP related costs; and warranty expense costs. The cost for the use of small tools is also to be considered covered by the Markup Percentage Fee. Small tools shall be defined as tools and equipment (power or non-power) with an individual purchase cost of less than \$750.

- 11.8.1.9 In no event will any lump sum or percentage amounts for "contingency" be allowed to be added as a separate line item in change order estimates. Unknowns attributable to labor hours will be accounted for when estimating labor hours anticipated to perform the work. Unknowns attributable to material scrap and waste will be estimated as part of material costs.
- 11.8.1.10 In the event the Contractor has been required to furnish comprehensive general liability insurance and/or performance and/or payment bonds as part of the base contract price, a final contract change order will be processed to account for the Contractor's net increase or decrease in comprehensive general liability insurance costs and/or net bond premium costs associated with change orders to Contractor's base contract price. Note: If a change order or a separate payment is made to reimburse the Contractor for the cost of a Performance and/or Payment Bond. The contractor will be required to remit any bond dividend or rebate that it will receive from the Surety after the successful completion of the project.
- 11.8.5 Contractor (subcontractor or sub-subcontractor) agrees that it is responsible for submitting accurate cost and pricing data to support its Change Order Proposals or other contract price adjustments under the contract. Contractor further agrees to submit change order proposals with cost and pricing data which is accurate, complete, current, and in accordance with the terms of the contract with respect to pricing of change orders. Contractor agrees that any "buy-out savings" on change orders shall accrue 100% to Owner. "Buy-out savings" here are defined as any savings negotiated by the Contractor with a subcontractor or a material supplier after receiving approval of a change order amount that was designated to be paid to a specific subcontractor or supplier for the approved change order work.
- 11.8.6 Contractor, subcontractor and sub-sub- contractor agrees that any designated Owner's representative will have the right to examine (copy or scan) the records of the Contractor, subcontractor or sub-sub contractor's records (during the contract period and up to three years after final payment is made on the contract) to verify the accuracy and appropriateness of the pricing data used to price all change order proposals and/or claims. Contractor agrees that if the Owner determines the cost and pricing data submitted (whether approved or not) was inaccurate, incomplete, not current, or not in

compliance with the terms of the contract regarding pricing of change orders, an appropriate contract price adjustment will be made. Such post-approval contract price adjustments will apply to all levels of contractors and/or subcontractors and to all types of change order proposals specifically including lump sum change orders, unit price change orders, and cost-plus change orders.

- 11.8.7 Contractor, subcontractor agrees to provide and require all Subcontractors and sub-subcontractors to provide a breakdown of allowable labor and labor burden cost information. This information will be used to evaluate the potential cost of labor and labor burden related to change order work. It is intended that this information represent an accurate estimate of the Contractor's actual labor and labor burden cost components. This information is not intended to establish fixed billing or change order pricing labor rates. However, at the time change orders are priced, the submitted cost data for labor rates may be used to price change order work. The accuracy of any such agreed upon labor cost components used to price change orders will be subject to later audit. Approved change order amounts may be adjusted later to correct the impact of inaccurate labor cost components if the agreed upon labor cost components are determined to be inaccurate.

Article 12. Project Completion and Acceptance

- 12.1.1.3 As part of each partial substantial completion, substantial completion and final completion the Contractor shall provide a breakdown of the contract costs in the following categories in Excel format:

<u>CODE</u>	<u>CATEGORY</u>
001	General Condition Items
002	Demolition
003	Asbestos Abatement
004	Parking Lots & Driveways
005	Paved Area - Non Parking
006	Sidewalks & Paved Walk Areas
007	Streets or Roads - (includes curbs & gutters)
008	Electrical Distribution (Site) - (includes elec. lines, equipment & site lighting)
009	Telephone Distribution - (includes site lines other than fiber optic phone lines)
010	Fiber Optics - (all site fiber optic lines including fiber optic phone lines)
011	Natural Gas Lines (Site)
012	Water Distribution (Site) - (includes heated & chilled water & steam lines)
013	Sanitary & Storm Sewers (Site)
014	Fences and Gates (other than temporary)
015	Landscaping
016	Irrigation System
017	Retaining Walls & Mow Strips
018	Improvements - General (Site) - (includes benches, monuments, statues, markers)
019	Tunnels (Utility)

- 020 Tunnels (Other)
- 021 Septic Systems
- 022 Golf Course Facilities
- 023 Stadiums
- 024 Outdoor Swimming Pools and Tennis Courts
- 025 Athletic Fields & Recreation Areas (Intramural, Track & Field, Practice Fields)
- 026 Fountains
- 027 Plazas and Pavilions for Bus Stops
- 028 Fire Field Training Areas
- 029 Paths and Trails (Bicycle, Jogging)
- 030 Airport Runways/Strip/Taxiways/Aprons
- 031 Seawalls/Bulkheads/Piers/Broadwalks
- 032 Non-Componentized Building & Building Improvements (\$100,000 - \$999,999)
- 055 Infrastructure & Infrastructure Improvements (chillers serving multiple buildings)

Plus the following 11 component categories for EACH building with a cost of \$1,000,000 or greater.

NOTE: If the project includes construction of only one building, the following category codes should be used, however, if a second building is included in the project the category codes should be 201.0 through 211.0, and if a third building is included the codes should be 301.0 - 311.0, etc.

- 101 Building Shell
- 102 Roof Coverings
- 103 Elevator System
- 104 Floor Coverings
- 105 Interior Finishes
- 106 HVAC System
- 107 Plumbing System
- 108 Electrical and Lighting System
- 109 Fire Protection System
- 110 Fixed Equipment Assets
- 111 Miscellaneous Construction Features
- 146 Sprinkler System
- 152 Security System
- 153 Network Cabling/Telephone

Componentization Descriptions:

Code

- 101.0 Building shell: the exterior walls, foundation, floors and roof structural system and decking. The walls consist of the wall layers starting with the exterior building skin and ending at the inner thermal layer;
- 102.0 Roof Coverings: includes the covering material used to establish the water barrier on the building's roof deck. The roof covering starts with the first membrane above

- the roof decking materials including the urethane layer, coating, shingles, films, metal panels, clay tiles and all materials installed above the roof deck;
- 103.0 Elevator system: comprised of the elevator and escalator conveyance systems including controls;
- 104.0 Floor Coverings: includes carpet, ceramic tile, stone, terrazzo, vinyl tile, wood, laminate and linoleum floor coverings, and other types of floor coverings and all padding and barrier sheeting installed above the concrete slab or wooden deck;
- 105.0 Interior finishes: all walls, partitions, ceiling and millwork that are inside the building shell walls. This will include but not limited to, all framework, interior doors, interior windows, sheet rock, paneling, paint and any other wall and ceiling coverings;
- 106.0 HVAC: includes the chillers, condensers, exhaust fans and coil units, heating strips, chilled/heating water supply and return piping, air ducts, registers, climate control panels and all circuitry connected to the power supply panel within the perimeter of the building;
- 107.0 Plumbing system: all piping, drains, fixtures, and associated equipment within the perimeter of the building used for moving domestic water, other fluid gases, compressed air or sewage;
- 108.0 Electrical and lighting systems: all telecommunication and alarm wiring, lighting fixtures, electrical conduit, wire, cables, circuits, switches and controls within the perimeter of the building;
- 109.0 Fire protection system: comprised of the piping, sprinkler heads and controls (Circuitry for fire detection, alarms, and warning devices are included in "Electrical");
- 110.0 Fixed equipment assets: is any equipment other than equipment comprised of the HVAC system, electrical system, fire protection system, plumbing system of elevator system that is installed and permanently attached to some part of the building's structure;
- 111.0 Miscellaneous construction features: any building component that does not fit into one of the other ten categories.
- 146.0 Sprinkler System: Building interior
- 152.0 Security System: Installed within building, not easily removed.
- 153.0 Network Cabling/Telephone: Installed within building, not easily removed (not fiber optics)

Article 13. Warranty and Guarantee

- 13.2.1 Specific requirements for warranties and guarantees to include parts, labor, and other costs are noted in various sections of the technical specifications. Warranties and guarantees are required for, but not limited to, the following:

Concrete Joint and Crack Sealants.....	2 years
New Concrete Panels from Spall	5 years

Until receipt of these guarantees, final inspection will not be conducted nor final payment released.

~~13.8. Service Contracts. The Contractor shall, prior to completion of the Work, deliver to the Owner service contracts for equipment furnished and/or installed by the Contractor in connection with the Work. Specific requirements for service contracts are noted in various sections of the technical specifications. Service contracts are required for, but not limited to, the following:~~

~~Elevators~~

~~Until receipt of these contracts, where applicable, final payment will not be released.~~

Article 16. Miscellaneous

16.4 Business Ethics Expectations

During the course of pursuing contracts with Owner and while performing contract work in accordance with this agreement, Contractor agrees to maintain business ethics standards aimed at avoiding any impropriety or conflict of interest which could be construed to have an adverse impact on the Owner's best interests.

Contractor shall take reasonable actions to prevent any actions or conditions which could result in a conflict with Owner's best interests. These obligations shall apply to the activities of Contractor's employees, agents, subconsultants, subconsultants' employees and other persons under their control.

Contractor's employees, agents, subconsultants (and their representatives) shall not make or offer, or cause to be made or offered, any cash payments, commissions, employment, gifts valued at \$50 dollars or more, entertainment, free travel, loans, free work, substantially discounted work, or any other considerations to Owner's representatives, employees or their relatives.

Contractor's employees, agents and subconsultants (and their relatives) shall not receive or accept any cash payments, commissions, employment, gifts valued at \$50 dollars or more, entertainment, free travel, loans, free work, or substantially discounted work or any other considerations from representatives of contractors, subcontractors, or material suppliers or any other individuals, organizations, or businesses receiving funds in connection with a Project.

Contractor agrees to notify Phillip Ray, Vice Chancellor for Business Affairs for The Texas A&M University System within 48 hours of any instance where the Contractor becomes aware of a failure to comply with the provisions of this article.

Upon request by Owner, Contractor agrees to provide a certified Management Representation Letter executed by a Contractor representative selected by Owner in a form agreeable to Owner stating that the representative is not aware of any situations violating the business ethics expectations outlined in this Agreement or any similar potential conflict of interest situations.

Contractor agrees to include provisions similar to this Article in all contracts with subconsultants receiving more than \$25,000 in funds in connection with a Project.

16.5 Notices.

All notices, consents, approvals, demands, requests or other communications relied on by the parties shall be in writing. Written notice shall be deemed to have been given when delivered in person to the designated representative of Contractor or Owner for whom it is intended; or sent by U.S. Mail to the last known business address of the designated representative; or transmitted by fax machine to the last known business fax number of the designated representative. Mail notices are deemed effective upon receipt or on the third business day after the date of mailing, whichever is sooner. Fax notices are deemed effective the next business day after faxing. Such notices of claims or disputes or other legal notices required by this Agreement shall be sent to the Owner:

Billy C. Hamilton, Deputy Chancellor and Chief Financial Officer
Office of Facilities Planning & Construction
The Texas A&M University System
301 Tarrow Street, 2nd Floor
College Station, Texas 77840-7896

With Copies to:

Brett McCully, Chief Facilities Officer
Office of Facilities Planning & Construction
The Texas A&M University System
301 Tarrow Street, 2nd Floor
College Station, Texas 77840-7896

Bruce Karr, Area Manager Engineering
Office of Facilities Planning & Construction
The Texas A&M University System
301 Tarrow Street, 2nd Floor
College Station, Texas 77840-7896

16.6 Public Information

Contractor acknowledges that Owner is obligated to strictly comply with the Public Information Act, Chapter 552, *Texas Government Code*, in responding to any request for public information pertaining to this Agreement, as well as any other disclosure of information required by applicable Texas law.

Upon Owner's written request, Contractor will provide specified public information exchanged or created under this Agreement that is not otherwise excepted from disclosure under chapter 552, *Texas Government Code*, to Owner in a non-proprietary format

acceptable to Owner. As used in this provision, “public information” has the meaning assigned Section 552.002, *Texas Government Code*, but only includes information to which Owner has a right of access.

Contractor acknowledges that Owner **may be** required to post a copy of the fully executed Agreement on its Internet website in compliance with Section 2261.253(a)(1), *Texas Government Code*.



THE TEXAS A&M UNIVERSITY SYSTEM

301 Tarrow Street, 2nd Floor

College Station, Texas 77840

Minimum Prevailing Wage Rate

County: Brazos

CLASSIFICATION	RATE	NOTES
Acoustic Ceiling Installer	15.73	
Asbestos Abatement Worker	13.06	
Carpenter	15.95	
Concrete – Pour and Finish	15.39	
Crane Operator	26.40	
Driver	14.47	
Drywall Installer	16.20	
Electrician – Journeyman	25.70	
Electrician – Apprentice	20.35	
Elevator Mechanic – Journeyman	55.83	
Elevator Mechanic – Apprentice	48.10	
Fire Protection – Controls	17.72	
Fire Protection – Pipefitter	20.61	
Formwork Builder	14.58	
Glazier	17.69	
HVAC – Journeyman	25.09	
HVAC – Apprentice	15.81	
HVAC – Controls	21.80	
Insulator	16.01	
Ironworker	17.42	
Laborer/Helper	12.73	
Mason	19.13	
Equipment Operator – Light	14.97	
Equipment Operator – Heavy	16.76	
Painter	13.18	
Pipefitter – Journeyman	32.50	
Pipefitter - Apprentice	19.35	
Plasterer	15.51	
Plumber – Journeyman	30.74	
Plumber – Apprentice	20.32	
Reinforcing Steel Worker	15.78	
Roofer	19.94	
Stone Mason	18.12	
Terrazzo Installer	13.08	
Tile Setter	15.73	
Waterproofer	14.91	

Note: Listed minimum prevailing wage rate is the base hourly wage rate including fringes.

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Work covered by Contract Documents.
- B. Contract Method.
- C. Starting Work.
- D. Work by Others.
- E. Contractor's Use of Premises.
- F. Owner Occupancy.

1.02 WORK COVERED BY CONTRACT DOCUMENTS:

- A. The Work of this Contract comprises the general maintenance and rehabilitation of Runway 35R located on the RELLIS Campus for the Board of Regents of The Texas A&M University System.
- B. The Drawings and Specifications do not necessarily indicate or describe all Work required for completion of Project.
- C. The Contract Documents describe the essential elements sufficiently to determine the scope of the Project.
- D. Provide all items required for complete operating systems including items not necessarily shown in these Contract Documents, but that can be reasonably inferred as being required for a complete operating system.
- E. The Drawings and Specifications indicate the basic quality of material and quality of construction required for the entire Project.

1.03 CONTRACT METHOD:

- A. Construct the Work under a single lump sum contract.

1.04 STARTING WORK:

- A. The Contractor shall not start work until the Notice to Proceed has been issued and all insurance certificates have been reviewed and accepted by The Texas A&M University System.

1. The Contractor shall furnish the required Insurance Certificates to the Contract Compliance Coordinator. (UGSC, Article 5).
2. The Contractor shall notify the ODR prior to commencing any Work.

1.05 WORK BY OTHERS (see UGSC 3.3.12):

A. Contractor shall cooperate and coordinate its Work with Work provided under other contracts. Separate Contracts will include, but not necessarily be limited to the following:

1. Owner's Testing Laboratory Services (Quality Assurance).
2. Owner's independent HVAC balancing, testing and adjusting.
3. Owner's commissioning agent.
4. Owner's movable furnishings.
5. Owner supplied equipment.
6. N.I.C. (Not In Contract) Work.

1.06 CONTRACTOR'S USE OF PREMISES (see UGSC 3.1.4 and 3.3.11):

A. Contractor shall have complete and exclusive use of premises within the construction limits indicated on the Drawings, for execution of Work.

1. Where it is necessary for the Contractor to use portions of existing buildings and/or grounds for operations, such use shall be strictly in accordance with requirements and approval of the Owner. Contractor shall provide proper and safe access to the Owner occupied areas at all times.
2. All interruptions of mechanical and electrical underground services shall be only at such time and for the lengths of time as approved by Owner. Where modifications to existing facilities or utility services are required, Contractor shall organize its work in order that inconvenience to the Owner is minimized. Give a minimum fourteen (14) days notice to ODR prior to interruption of services.
3. Unless otherwise indicated or specified, or unless otherwise directed by the Owner; water, gas, lighting, power and telephone conduits and wires, sewer lines, and other surface and subsurface structures and lines, shall be maintained by Contractor and shall not be disturbed, disconnected or damaged by the Contractor during progress of Work. Should Contractor in performance of the Work disturb, disconnect or damage any of the above, any cost arising from such disturbance or in replacing or repair shall be borne by the Contractor.

B. Contractor shall:

1. Not unreasonably encumber the Project site with materials and equipment.

2. Not load structure with weight that will endanger the structure.
3. Assume full responsibility for protection and safekeeping of stored materials.
4. Move stored materials which interfere with operations of Owner and other contractors.
5. Obtain and pay for use of additional storage land work areas needed for operations.

C. Upon receipt of notice that the Contractor is ready to commence the Work, Owner will make the Project site available to the Contractor to execute the Work.

D. The Contractor shall coordinate use of the premises with the ODR and must comply with the Owner's requirements concerning the Contractor's operations and use of the premises, parking, loading and unloading.

1.07 OWNER OCCUPANCY (see UGSC 12.2)

A. The Owner will occupy the area surrounding the Project site during the entire period of construction for the conduct of its normal operations. The Contractor shall cooperate with ODR in all construction operations to minimize conflict, and to facilitate the Owner's usage.

B. The Contractor shall at all times conduct its operations to ensure the least inconvenience to the general public.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01 23 00

ALTERNATES

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Identification of Alternates.
- B. Description of Alternates.

1.02 RELATED SECTIONS:

- A. Section 01 11 00 - Summary of Work.
- B. Divisions 2 through 35: Specific sections could be affected by any Alternate.

1.03 IDENTIFICATION OF ALTERNATES:

- A. Alternates will be selected at the option of Owner. Alternates accepted by Owner for incorporation into the Work are identified in the Contract.
- B. Coordinate related Work and modify surrounding Work as required to complete the Work, including changes required by each Alternate, designated in the Contract.

1.04 DESCRIPTION OF ALTERNATES:

- A. Alternate 1 – Rehabilitate Lane A as shown on the drawings with full scope of work shown on the drawings.
- B. Alternate 2 – Rehabilitate Lane X as shown on the drawings with full scope of work shown on the drawings.
- C. Alternate 3 – Rehabilitate the north end of 35R within the limits identified including all scope of work shown on the drawings.
- D. Alternate 4 – Rehabilitate the south end of 35R within the limits identified including all scope of work shown on the drawings.
- E. Alternate 5 – Removal of striping as shown on the drawings. All instrumented intersection additions as shown on the drawings.
- F. Alternate 6 – Reconstruction of the additional width of Taxiway 5 as shown on the drawings.

PART 2 - PRODUCTS

06/08

01 23 00 -1

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

06/08

01 23 00 -1

SECTION 01 25 00

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. General requirements for product options and substitution procedures.
- B. Material and product options.
- C. Substitutions.
- D. Coordination.

1.02 RELATED SECTIONS:

- A. Section 01 11 00 - Summary of Work.
- B. Section 01 31 00 - Project Management and Coordination
- C. Section 01 33 00 - Submittal Procedures
- D. Section 01 60 00 - Product Requirements.
- E. Section 01 77 00 - Closeout Procedures.

1.03 GENERAL:

- A. In addition to Uniform General and Supplementary Conditions, Article 8 (UGSC 8.3.5), comply with product option and substitution requirements specified in this Section.

1.04 MATERIAL AND PRODUCT OPTIONS:

- A. Materials and Products Specified by Reference Standards, by Performance, or by Description Only: Any product meeting specified requirements.
- B. Materials and Products Specified by Naming Products of One or More Manufacturers with a Provision for an Equivalent Product: Submit one of the products listed which complies with specified requirements or submit a request for substitution for a product of manufacturer not specifically named which complies with specified requirements.
- C. Materials and Products Specified by Naming Products of Several Manufacturers Meeting Specifications: Submit one of the products listed which complies with specified requirements or submit a request for substitution for a product of manufacturer not specifically named which complies with specified requirements.

1.05 SUBSTITUTIONS (UGSC 8.3.5)

- A. Within sixty (60) days after date of Owner's Notice to Proceed, A/E will consider requests from Contractor for substitutions. Subsequently, substitutions will be considered only when a material or product becomes unavailable due to no fault of Contractor or as follows:

1. Lockouts,
 2. Strikes,
 3. Bankruptcy,
 4. Discontinuation of product,
 5. Proven shortage,
 6. Other similar occurrences.
- B. Each proposed substitution of materials or products for that one specified is a representation by Contractor that it has personally investigated the substitution and determined that the proposed substitution is equivalent or superior to that specified in quality, durability and serviceability, design, appearance, function, finish, performance, and of size and weight which will permit installation in spaces provided and allow adequate service access. Additionally, Contractor agrees that it will provide and/or do the following:
1. Same warranty on substitution as for specified product or material,
 2. Coordinate installation and make other changes that may be required for Work to be complete in all respects,
 3. Waive claims for additional costs which may subsequently become apparent,
 4. Verify that proposed materials and products comply with applicable building codes and governing regulations and, where applicable, has approval of governing authorities having jurisdiction.
- C. The A/E will review requests from Contractor for substitutions with the ODR. Contractor shall not purchase or install substitute materials and products without written approval. The A/E will give written notice to Contractor and the ODR of acceptance or rejection within a reasonable time.
- D. Document each request for substitution with complete data substantiating compliance of proposed substitution with Contract Documents. As appropriate include:
1. Reason for the proposed substitution,
 2. Change in Contract Sum and Contract Time, if any,
 3. Effect on WPS and completion date,
 4. Changes in details and construction of related work required due to substitution,
 5. Drawings and samples,
 6. Product identification and description,
 7. Performance and test data,
 8. Itemized comparison of the qualities of the proposed substitution to the product specified including durability, serviceability, design, appearance, function, finish, performance, size and space limitations, vibration, noise, and weight,
 9. Availability of maintenance service, source and interchangeability of parts or components,
 10. Additional information as requested.

- E. In the event of credit change in the cost, the Owner shall receive all benefit of the reduction in cost of the proposed substitution. Credit shall be established prior to final approval of the proposed substitution and will be adjusted by Change Order.
- F. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals without separate written request, without having been reviewed and approved by Contractor, or when acceptance will require substantial revision of Contract Documents without additional compensation to A/E.
- G. In the event that the Contractor or Subcontractor has neglected to place an order for specified materials and products to meet the WPS, specified requirements, color schemes or other similar provisions, such failure or neglect shall not be considered as legitimate grounds for an extension of completion time nor shall arbitrary substitutions be considered to meet completion date.
- H. Only one request for substitutions will be considered for each product. When substitutions are not accepted, the Contractor shall provide specified product.
- I. Should substitution be accepted, and substitution subsequently is defective or otherwise unsatisfactory, replace defective material with specified material at no cost to Owner.

1.06 COORDINATION:

- A. When a specified, optional, specified by reference standard, or proposed substitution item of equipment or material is submitted which requires minor changes or additions to the designed structure, finishes or to mechanical and/or electrical services due to its requirements being different from those shown on the Contract Documents, itemize the changes required and attach to submittal. Do not proceed with changes without written approval from the A/E.
- B. Contractor shall make adjustments and changes required to coordinate Work for installation of optional materials and products, approved substitutions and materials and products specified by reference standards without additional costs to Owner or A/E.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01 26 00
CONTRACT MODIFICATION PROCEDURES

PART I - GENERAL

1.01 SECTION INCLUDES:

- A. The Uniform General and Supplementary Conditions (UGSC) specify that the Owner through the Owner's Designated Representative (ODR) can modify the construction contract.

1.02 CONTRACT CHANGES:

- A. UGSC, Article 11 states that the Owner may order changes in the Work within the general scope of the Contract, consisting of additions, deletions or other changes. Changes to the contract will be accomplished through e-Builder utilizing a construction change order approval process.
 - 1. The construction change order approval process can be started by either the ODR or the Contractor. After a Change Order is approved, the Contractor can add the work to the schedule of values.
 - 2. The Contractor shall record the actual material and labor cost of the proposed work utilizing the supplied Form C-15 (Adjustment for Changes in Work) along with all supporting documentation. (A Microsoft Excel copy of Form C-15 can be found in e-Builder documents module, folder 02.09 GC COs) The cost breakdown shall consist of labor and materials. Materials shall be itemized by easily identifiable components such as linear footage, square footage, cubic yardage, pounds, etc. All subcontractor pricing shall be broken down using the same format. If the Contractor requests a time extension for the work, adequate justification must be provided to validate the impact on the construction schedule (refer to UGC Article 9 and Section 01 32 00). Any bond and insurance cost shall be accompanied by documentation supporting the cost from the bonding and insurance companies. If the labor rate represents overtime or premium time that shall be included in the documentation along with documentation that the rates were preapproved by the ODR.
 - 3. The Owner and A/E will review the Contractor's cost and time proposals and make a decision whether to proceed, void, or negotiate all or certain items with the Contractor. If a price cannot be agreed to the ODR may require the Contractor to proceed with the change on a time and materials basis. The Contractor shall document all costs daily using Form C-14 (A Microsoft Excel copy of Form C-14 can be found in e-Builder documents module, folder 02.09 GC COs) along with all supporting documentation. Profit and overhead shall not be included on the C-14. When the work is

completed the daily C-14s shall be consolidated into C-15s to calculate profit and overhead.

4. When an action is taken by an actor, the e-Builder process will automatically notify the next actor in the process by email. When the process is complete the Contractor will be notified of the action by email.
5. The ODR can also issue a Unilateral Change Order (UGSC 1.28 and 11.1) to increase or decrease the contract amount.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Payment requests.

1.02 RELATED SECTIONS:

- A. Section 01 11 00 - Summary of Work.
- B. Section 01 77 00 - Closeout Procedures.

1.03 PAYMENT REQUESTS:

- A. Progress payments will be accomplished through e-Builder utilizing a payment application approval process.
- B. At the earliest convenient time and not less than 21 days prior to the first payment request, the Contractor shall develop a Schedule of Values (SOV), utilizing a supplied form, to reflect the value of the categories of work (A Microsoft Excel copy of the SOV template can be found in e-Builder documents module, folder 02.10 GC Pay Apps). The breakdown shall follow the trade divisions of the specifications and shall be itemized by submittal, floor, area, elevation or other building systems, as a minimum. The breakdown shall include a labor and material breakdown for each activity and be of such detail as may be required by the Owner and/or Architect, but in general shall limit each line item to less than \$100,000, or as approved by the Owner. If more than one building is involved, the breakdown shall be by building as well. At any time during the project an Excel copy of the latest SOV shall be made available upon request by the ODR.
 - 1. The initial SOV shall be submitted to the ODR for review and approval. It is, therefore, recommended that this schedule be prepared and submitted as soon as possible to prevent delay of the initial payment to the Contractor.
 - 2. The ODR's review of the SOV is to assure that the breakdown is in sufficient detail to meet the above requirements and to assure that reasonable dollar values are assigned to the various items of work.
- C. The progress payment application approval process can be started by the contractor. The process routes the payment application through all review and

approval steps.

All required supplemental information is indicated by a red asterisk or indicated on the screen. Only one file can be uploaded into each field. The naming convention for supplemental information is indicated when hovering over the blue circle next to the attachment name.

1. Progress payments will not be approved if the job site record drawings are not up to date and posted (UGSC 6.2). Payments will also not be approved if other periodic requirements are not completed.
 2. Historically Underutilized Business Progress Reports will be prepared and submitted with the pay request each month (UGSC, Article 4). Pay requests will not be approved without this completed form.
 3. All approved Change Orders shall be added to the Schedule of Values in the same level of detail as all other items of work.
- D. Contractor shall base each application for payment on value of work installed, and materials and equipment suitably stored at Site. Materials and equipment suitably stored off site in an insured or bonded warehouse may be included, if approved in writing by ODR. See UGSC 10.5 for additional requirements when requesting payment for materials stored off site.
- E. Payment for Stored Materials: The ODR shall be the sole authority for approval (proof of insurance or bond will be required).
1. Where the Schedule of Values separates items into labor amounts and material amounts, payment will be made for materials delivered and suitably stored on Site provided said material is required for installation according to the Contractor's Work Progress Schedule (WPS).

Invoices for stored materials will be submitted when required by the ODR. Stored material invoices will be accepted only after an approved shop drawing or sample has been received by the ODR.

Invoices for stored materials will only be considered when they exceed five hundred dollars (\$500) for each individual item. There will be no invoices accepted that contain tools, or expendable materials.

Invoices will only be considered that are referenced to the materials in the

SOV. Invoices that are not legible will not be considered for payment.

All stored materials will be checked by the Project Superintendent and verified by the ODR before being incorporated into the payment application.

2. Materials stored at an off-site location which are eligible for inclusion on progress payments are defined as finished goods made specifically for the Project, provided said material is required for installation according to the Contractor's WPS. Raw materials, work in progress at fabrication plants, and commodity items readily available for purchase are not eligible for inclusion in Contractor's Application for Payment.
3. Payment will be made under following provisions:
 - a. Items are listed separately on Application for Payment.
 - b. Include with Application for Payment:
 - (1) Paid receipts showing Contractor is unconditional owner.
 - (2) Fully executed Transfer of Title on photocopy of form provided herein.
 - (3) Location where materials are stored if off site, and method used to store.
 - (4) Identify items in offsite storage as property of Owner and furnish description of identification method.
 - (5) Inventory of items and methods used to verify inventory, including Contractor's certification that quantities have been received in good order.
 - (6) Proof of insurance for materials stored off site, in Owner's name.
 - (7) Proof of transportation arranged for delivery of material stored off site.
 - (8) Material delivered and stored on site or off site needs to parallel WPS.
 - c. ODR reserves right to verify storage by physical inspection at any time.
 - d. Payment does not relieve Contractor's obligations to protect, transport and install materials.
 - e. Title of materials upon which partial payments are made shall transfer to Owner. Partial payment does not constitute acceptance by ODR nor a waiver of any right or claim by ODR. Any costs incurred by Owner shall be paid by Contractor.

F. Final Payment Application (see UGSC 12.3): Administrative actions and submittals must precede or coincide with submittal of Contractor's final payment application.

1. Complete project closeout requirements specification in Section 01 77 00

and 01 78 00.

2. A final Change Order will be prepared if required, reflecting approval adjustments to Contract Sum not previously made by Change Orders.
3. After final acceptance of the work, the Contractor shall submit their final payment application in the same manner as a progress payment application and indicating that it is the final payment application. When Federal Funds or other grant funds are included, approval of that agency may also be required.

G. Cash Flow Schedule: A Cash Flow Schedule will be required within 21 days after approval of the SOV. This schedule shall show monthly payment requirements for the duration of the Contract. The schedule shall include a graphic analysis showing anticipated total completed to date accounts versus actual completed to date amounts. This Cash Flow Schedule is required to be updated monthly and submitted with each payment application.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Coordination of Contract Work.
- B. Correspondence.
- C. Meetings.
- D. Coordination of Submittals.
- E. Coordination of Contract Closeout.
- F. Coordination with Local Personnel.

1.02 RELATED SECTIONS:

- A. Uniform General and Supplementary Conditions Article 3
- B. Section 01 11 00 - Summary of Work.
- C. Section 01 25 00 - Substitutions Procedures.
- D. Section 01 31 50 - Project Meetings.
- E. Section 01 32 00 - Construction Progress Documentation
- F. Section 01 33 00 - Submittal Procedures
- G. Section 01 60 00 - Product Requirements.
- H. Section 01 73 50 - Cutting and Patching.
- I. Section 01 77 00 - Closeout Procedures.
- J. Section 01 78 00 - Closeout Submittals.
- K. All Divisions of Facility Services Subgroup

1.03 COORDINATION, GENERAL:

- A. Coordinate all portions of the Work under the Contract. Require each Subcontractor to coordinate their portion of the Work and provide their requirements for coordination of their Work with other related Work. (UGSC 3.3.6)

Contractor shall require and be responsible for cooperation and coordination between various trades and Subcontractors whose work is dependent upon one another. Schedule such work so as to prevent delays in dependent work and so that all related work will progress together. Fully inform each trade or Subcontractor of the relation of its work to other work, and require each to make necessary provisions for the requirements of such other work. No additional compensation for extra work incurred through the lack of cooperation and coordination between various trades and Subcontractors will be allowed.

- B. Coordinate mechanical and electrical Work with that of other trades in order that

various components of systems are installed at proper time, fit available space, and allow proper service access to those requiring maintenance, including equipment specified in other Divisions.

- C. Coordinate Work of sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate use of Project space and sequence of installation of mechanical, plumbing, and electrical Work which is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with proper allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas, except as otherwise shown, conceal pipes, ducts, conduit, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements. Provide escutcheon plates at penetrations through finished walls and ceilings with finish appropriate to adjacent finished surface.
- F. Coordination Drawings: Before materials are fabricated or installation of the Work, prepare coordination drawings (Section 01 34 00). Prepare drawings including plans, elevations, sections, and details as required to clearly define relationships between all building trades including HVAC, Electrical, Plumbing, Fire Sprinkler Systems and the structural components of the building such as ceilings, beams, columns, walls and floors. The drawings shall clearly define locations of sleeves, floor penetrations, Plumbing and HVAC piping, ductwork, equipment, light fixtures, electrical and control wiring conduits, panels, and their relationship to building structural components.
 - 1. In preparation of the coordination drawings the Contractor is required to hold coordination meetings with all trades providing the above Work for each building level and each mechanical and electrical room.
 - 2. Resolve conflicts between trades and prepare composite coordination drawings and upload to e-Builder for review by A/E and ODR. Allow sufficient time for review, in accordance with submittal procedures, prior to proceeding with fabricated or installation of the Work.
 - a. Prepare CAD coordination drawings to 3/8" = 1'0" scale for each floor level and for each mechanical and electrical room. The drawings shall indicate all work items located on each level shown on the drawing with the work items indicated by the following colors:

Building and structural components	black
HVAC ductwork and diffusers	dark green

HVAC piping	blue
Fire sprinkler piping and heads	red
Electrical conduits and equipment	orange
Domestic cold and hot water piping	brown
Plumbing storm and sanitary drain	purple
Plumbing gas piping	light green

- b. All piping and ductwork larger than 2½” in diameter shall be drawn two line; smaller piping and ductwork shall be drawn double thickness single line.
- c. Show access space around equipment as directed by Specifications.
- d. The superintendent for each trade and the Contractor shall sign the drawing indicating that he has reviewed the drawing for accuracy.

3. When conflicts cannot be resolved, Contractor shall request clarification from the A/E prior to proceeding with that portion of the Work affected by such conflicts or discrepancies. Prepare interference Drawings to scale and include plans, elevations, sections, and other details as required to clearly define the conflict between the various systems and other components of the building such as beams, columns, and walls, and to indicate the Contractor's proposed solution.

G. Remove and relocate items which are installed without regard to proper access, as directed by the A/E and ODR, at no additional cost to the Owner.

1.04 CORRESPONDENCE:

Correspondence relating to this Project should occur within e-Builder. Correspondence outside of e-Builder must show the Project name, Project number and Contract number and be uploaded to e-Builder.

1.05 MEETINGS:

A. In addition to project meetings specified in Section 01 31 50, hold coordination meetings and pre-installation conferences with appropriate personnel to assure coordination of Work.

1.06 COORDINATION OF SUBMITTALS:

A. Schedule and coordinate submittals specified in Sections 01 25 00, 01 32 00, 01 33 00, and 01 78 00 and other Sections of Divisions 2 through 35.

B. Coordinate requests for substitutions to assure compatibility of space, of operating

elements, and effect on Work of other sections.

1.07 COORDINATION OF CONTRACT CLOSEOUT:

- A. Coordinate completion and cleanup of Work of separate sections in preparation for Substantial Completion.
- B. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.08 COORDINATION WITH LOCAL PERSONNEL:

- A. Problems concerning traffic, parking or blocking streets must be referred to the appropriate campus personnel. Confine truck route egress and exit to Site as indicated on Drawings. Coordination is to be through the ODR.
- B. Any exterior problems, including the moving of utilities is to be referred to the campus facilities department. Coordination is to be through the ODR.
- C. The scheduling of utility outages must be coordinated with the campus facilities department at least fourteen (14) days in advance. This coordination is to be arranged through the ODR.

1.09 PROTECTION:

- A. Contractor shall assume responsibility for initiation and maintenance of protective requirements specified in Section 01 50 00, Temporary Facilities and Controls.

1.10 REPAIR OF DAMAGE:

- A. Damage: Restore accidental or careless damage to the Work to a condition as good as or better than existed before work was commenced and at no cost to the Owner.

1.11 SECURITY:

- A. Conform to requirements of public laws, ordinances and regulations and requirements of insurance carriers concerning security of Site while Work is in progress as well as when it has been suspended, if this occurs.

1.12 RECORD DOCUMENTS:

- A. Maintain project record documents at Site. Refer to Section 01 78 00 for requirements.

1.13 CONSTRUCTION LOADING:

- A. General: Concrete slabs on grade and suspended floors have not been designed for heavy loading.
- B. Slabs On Grade: Do not subject slabs on grade to excessive loading by shoring, storage of materials or operation of construction equipment unless adequately protected by planking. Maintenance of slabs in good condition is the responsibility of the Contractor, who shall remove all damaged areas of such slabs and replace them with new work at no cost to Owner.
- C. Suspended Floors: Do not subject suspended slabs to construction loads beyond 40 pounds per square foot unless adequately shored. Such shoring shall be designed for the Contractor by a registered (Texas) Structural Engineer, who shall certify prior to imposing construction loads on slabs, that the shoring as installed conforms with the shoring as designed. Submit three prints, for record only, of the shoring drawings to the A/E, signed by the Contractor's design engineer.

1.14 SPECIAL REQUIREMENTS:

- A. Existing Utilities: Schedule shut downs if needed in order to minimize inconvenience to Owner. Notify ODR in writing fourteen (14) days in advance of any anticipated shutdowns. Utility shutdowns will only be scheduled at a time mutually agreeable to the Owner and Contractor.
- B. Existing Valves and Switchgear: Owner will be responsible for opening and closing all valves and switches on all utility services. This will be done by campus facilities department personnel without cost, except when overtime work is required.
- C. Damaged Utilities and Services: When existing utilities are damaged, campus facilities department shall make repairs or permit Contractor to make repairs under supervision of facilities department personnel. If repairs are to utilities shown on Contract Documents, all costs or repairs incurred by Owner will be borne by Contractor.
- D. No additional compensation will be made to Contractor for reasons of premium time, after hours, overtime or for inefficiency of operation.
- E. Parking: Restricted to areas indicated on Drawings for Contractor's use. Contractor shall make arrangements and pay for any additional parking required off Project site.
- F. Deliveries and Removals: All deliveries of construction material, equipment, supplies, and similar operations, and removals shall be performed only in areas designated and approved by ODR.

- G. Circulation: Confine construction operations to designated areas avoiding any interruption of vehicular circulation to existing facilities. Should these requirements become unavoidable, submit a request to ODR in writing at least two weeks prior to anticipated interruption, stating predicted time, location and duration of interruption.
- H. Construction Scheduling: The Work shall be conducted in such a way as to cause a minimum of interference with the use of adjacent existing facilities during regular school and/or work hours.
- I. Noise Control: The Contractor shall execute the Work in this Contract as quietly as practical to avoid unnecessary disturbances.
 - 1. Any complaints duly registered by Owner of unacceptable noise levels shall be cause for use of special precautions and methods of operation by Contractor to reduce noises to acceptable levels at no additional cost to the Owner.
 - 2. The ODR shall be sole judge of tolerability of noise levels.
- J. Dust Control: Control all dust, to Owner's satisfaction, in working area and involved portions of the Project Site including access roads or drives.

PART 2 – PRODUCTS

NOT USED

PART 3 – PRODUCTS

NOT USED

END OF SECTION

SECTION 01 31 26

ELECTRONIC COMMUNICATIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Project Management Communications.

1.02 RELATED SECTIONS:

- A. Uniform General and Supplementary Conditions
- B. All Section of Division 1 – General Requirement.

1.03 GENERAL:

- A. Project Management Communications: The Contractor and Architect/Engineer shall use the Internet web based project management communications tool, E-Builder[®] and BIM360 Build software, and protocols included in these software tools during this project. E-Builder and BIM360 Build shall be the primary project management tools on the project. The use of project management communications as herein described does not replace or change any contractual responsibilities of the participants.

Project management communications is available through E-Builder[®] and BIM360 Build in the form and manner required by the Owner.

The project communications database is on-line and fully functional. User registration, electronic and computer equipment, and Internet connections are the responsibility of each project participant. The sharing of user accounts is prohibited.

- B. Training: Owner will provide a group training session. Users are required to attend the scheduled training sessions they are assigned to; requests for specific scheduled classes will be on a first come first served basis for available spaces. Companies may also obtain group training from E-Builder at their own expense, please contact E-Builder[®] for availability and cost.
- C. Support: E-Builder[®] will provide on-going support through on-line help files.
- D. Project Archive: Upon project completion or at intervals during the project, all project related documents and forms can be archived by E-Builder for a minimal fee if the contractor or consultants would like a copy of all the documents, processes and workflow form data. All legal rights in any discovery process are retained.
- E. Copyrights and Ownership: Nothing in this specification or the subsequent

communications supersedes the parties' obligations and rights for copyright or document ownership as established by the Contract Documents. The use of CAD and BIM files, processes or design information distributed in this system is intended only for the project specified herein.

- F. Purpose: The intent of using E-Builder® and BIM360 Build is to improve project work efforts by promoting timely initial communications and responses. Secondly, to reduce the number of paper documents while providing improved record keeping by creation of electronic document files.
- G. Authorized Users: Access to the web site will be by individuals who are licensed users.
1. Contractor shall determine number of user licenses required.
 2. Individuals shall be responsible for the proper use of their passwords and access to data as agents of the company in which they are employed.
- H. Owner's Administrative Users: Administrative users have access and control of user licenses and all posted items. DO NOT POST PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE! Improper or abusive language toward any party or repeated posting of items intended to deceive or disrupt the work of the project will not be tolerated and will result in deletion of the offensive items and revocation of user license at the sole discretion of the Administrative User(s).
- I. Communications: The use of fax, email and courier communication for this project is discouraged in favor of using E-Builder® and BIM360 Build to send messages. Communication functions are as follows:
1. Documents, comments, drawings and other records posted to the system shall remain for the project record. The authorship time and date shall be recorded for each document submitted to the system. Submitting a new document or record with a unique ID, authorship, and time stamp shall be the method used to make modifications or corrections.
 2. The system shall make it easy to identify revised or superseded documents and their predecessors.
 3. Server or Client side software enhancements during the life of the project shall not alter or restrict the content of data published by the system. System upgrades shall not affect access to older documents or software.
 4. The system shall provide a method for communication of documents. Documents shall allow security group assignment to respect the contractual parties' communication except for Administrative Users. DO NOT POST

PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE!

5. Documents of various types shall be logically related to one another and discoverable. For example, requests for information, daily field reports, supplemental sketches and photographs shall be capable of reference as related records.
6. The system shall be capable of generating reports for work in progress, and logs for each document type. Summary reports generated by the system shall be available for team members.
7. Document distribution to project members shall be accomplished both within the extranet system and via email as appropriate. Project document distribution to parties outside of the project communication system shall be accomplished by secure email of outgoing documents and attachments, readable by a standard email client.
8. Required Document Types:
 - a. RFI, Request for Information response.
 - b. Submittals review, including record numbering by drawing and specification section.
 - c. Transmittals, including record of documents & materials delivered in hard copy.
 - d. Meeting Minutes.
 - e. Review Comments.
 - f. Field Observation Reports.
 - g. Payment Applications
 - h. Construction Photographs.
 - i. Drawings.
 - j. Supplemental Sketches.
 - k. Schedules.
 - l. Specifications.
 - m. Punch list
 - n. Commissioning Issues
 - o. Contract Changes
 - p. Architectural Supplemental Instructions.
 - q. Project Issues

All information provided in E-Builder and BIM360 Build shall be the original information or data. The use of “see attached” and attaching another company form is not allowed.

- J. Record Keeping: Except for paper documents, which require original signatures, all documents shall be submitted by transmission in electronic form to the E-

Builder® and BIM360 Build web sites by licensed users.

1. The Owner and his representatives, the Architect and his consultants, and the Contractor and his sub-contractors and suppliers at every tier shall respond to documents received in electronic form on the web site, and consider them as if received in paper document form.
2. The Owner and his representatives, the Architect and his consultants, and the Contractor and his sub-contractors and suppliers at every tier reserves the right to and shall reply or respond by transmissions in electronic form on the web site to documents actually received in paper document form.
3. The Owner and his representatives, the Architect and his consultants, and the Contractor and his sub-contractors and suppliers at every tier reserves the right to and shall copy any paper document into electronic form and make same available on the web site.

K. Minimum Equipment and Internet Connection: In addition to other requirements specified in this Section, the Owner and his representatives, the Architect and his consultants, and the Contractor and his sub-contractors and suppliers at every tier required to have a user license(s) shall be responsible for the following:

1. Providing suitable computer systems for each licensed user at the users normal work location with high-speed Internet access, i.e. DSL, local cable company's Internet connection, or T1 connection.
2. Each of the above referenced computer systems shall have the following minimum system and software requirements.
 - a. Desktop configuration (Laptop configurations are similar and should be equal to or exceed desktop system.)
Operating System: Windows 7 or newer
Internet Browser: Chrome, Internet Explorer, Firefox, Safari,
Minimum Recommend Connection Speed: 256K or above
Processor Speed: 1 Gigahertz and above with 2GB RAM
Adobe Acrobat Reader & Microsoft Office Suite or equivalent

PART 2 – PRODUCTS
NOT USED

PART 3 – PRODUCTS
NOT USED

END OF SECTION

SECTION 01 31 50

PROJECT MEETINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. General Project Meeting Information.
- B. Pre-Construction Meeting.
- C. Progress Meetings.
- D. Pre-Installation Meetings.
- E. Lockset Hardware/Key Conference.

1.02 RELATED SECTIONS:

- A. Section 01 11 00 - Summary of Work.
- B. Section 01 25 00 - Substitutions Procedures
- C. Section 01 32 00 - Construction Progress Documentation
- D. Section 01 33 00 - Submittal Procedures
- E. Section 01 60 00 - Product Requirements.
- F. Section 01 73 50 - Cutting and Patching.
- G. Section 01 77 00 - Closeout Procedures.
- H. Section 01 78 00 - Closeout Submittals.

1.03 GENERAL:

- A. Contractors, Subcontractors and suppliers representatives attending the meetings/conferences of this section shall be qualified and authorized to act on behalf of the entity each represents.
- B. Contractor shall comply with the following meeting requirements during performance of the Contract.
 - 1. Arrangements: Arrange for a convenient, comfortable room in which to conduct the progress meetings, furnished as necessary to accommodate the people involved and to accomplish the purpose of the meeting. Owner will provide the room for the pre-construction meeting.
 - 2. Notices: All project meetings shall be on the e-Builder calendar at least seven (7) days in advance of the meeting date.
 - 3. Records: Minutes of all project meetings shall be kept in e-Builder and available to all concerned within four (4) days after the adjournment of the meeting.
 - 4. Schedule Updating: Immediately following each progress meeting, where revisions to the Work Progress Schedule (WPS) have been made or recognized, revise the progress schedule. Reissue revised colored copies of the WPS concurrently with minutes of each meeting.

1.04 PRE-CONSTRUCTION CONFERENCE (see UGSC 3.1.1):

- A. Chairman: The meeting will be presided over by the ODR.

B. Attendance: The following persons will be expected to attend:

1. Owner's Representatives.
Project Manager
User Coordinator
Physical Plant representative
2. A/E's Construction Administrator.
3. A/E's Consultants for Mechanical, Electrical and Structural Engineering.
4. A/E's special consultants as maybe required.
5. Contractor's General Superintendent and Project Manager.
6. Major Subcontractors including at least those for mechanical, plumbing and electrical work.

C. Agenda: Subjects shall include, but are not limited to the following:

1. Distribution of submittals. Refer to Sections 01 33 00 & 01 34 00.
2. Sequence of critical work.
3. Relation and coordination by the Contractor.
4. Designation of responsible personnel.
5. Processing of Change Orders.
6. Distribution of Construction Documents.
7. Access to Work to permit inspection.
8. Maintaining project Record Documents.
9. Use of the premises, access to the Site, office and storage areas, and Owner's requirements.
10. Major equipment deliveries and priorities.
11. Safety and first aid procedure.
12. Security procedures.
13. Housekeeping procedures.
14. Additional subjects as requested by the Owner, the Architect/Engineer or the Contractor.
15. List of major Subcontractors and suppliers.

1.05 PROGRESS MEETINGS:

A. Chairman: Contractor's Project Manager or Project Superintendent shall preside over the meeting; prepare agenda and record minutes in e-Builder.

B. Attendance: The following persons will be expected to attend:

1. Owner's Representatives.
Project Manager
User Coordinator
Physical Plant representative
2. Architect/Engineer's Construction Administrator.
3. Architect/Engineer's Consultants for mechanical, electrical and structural engineering until excused from attendance.
4. A/E's special consultants as maybe required.
5. Contractor's General Superintendent, Project Superintendent and Project Manager.

6. Subcontractors who have work in progress.
 7. Subcontractor who will start work within the next month.
 8. Others as requested by ODR, A/E, or Contractor.
- C. Agenda: The Contractor will provide an agenda including but not necessarily limited to the following items:
1. Present a brief narrative of construction progress since the last monthly meeting containing:
 - a. General description of work performed.
 - b. Expectation of meeting scheduled dates.
 - c. Description of current or anticipated delaying factors or problems, if any.
 2. Review the updated WPS and present a schedule analysis.
 3. Review the Submittal Schedule/Log.
 4. Review the COR Log.
 5. Review of Requests for Information.
 6. Review of project Record Documents.
 7. Review/approval of the Progress Payment.
 8. General discussion: Other outstanding/current business.
- D. Review of Pre-Installation Meetings
- E. Number of Meetings: A minimum of one progress meeting shall be held each month. Other weekly or biweekly progress meetings shall be held as determined by the ODR and shall cover those subjects as required by the ODR.

1.06 PRE-INSTALLATION MEETINGS:

- A. Provide a list of all pre-installation meetings anticipated.
- B. Convene a pre-installation meeting at the Project field office prior to commencing any work.
- C. Require attendance of entities directly affecting, or affected by, work of Section.
- D. Notify A/E and ODR ten (10) days in advance of meeting date.
- E. Contractor shall prepare agenda, preside at meeting and record minutes in e-Builder.
- F. Review conditions of installation, preparation and installation procedures, and coordination with related work. Review submittals for all Work to be installed.
- G. The Contractor shall maintain an adequate inspection system and perform such inspection to insure that the work called for by this contract conforms to the contract specifications and requirements.
- H. The Contractor shall maintain complete inspection records and make them available to the ODR.

I. Subcontractor foreman or project manager are required to attend this meeting.

1.07 LOCKSET HARDWARE/KEY CONFERENCE:

A key conference shall be conducted after approval of hardware submittal prior to the ordering of lock hardware. The Contractor shall, in conjunction with the ODR, A/E, User Coordinator and campus facilities department representative, establish a date for the key conference to be held. A key conference is required to review the function of the locks and to insure that all security requirements of the Using Agency will be met.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Work Progress Schedule (WPS).
- B. Daily reports.

1.02 RELATED SECTIONS:

- A. Section 01 11 00 - Summary of Work.
- B. Section 01 31 00 - Project Management and Coordination.
- C. Section 01 33 00 - Submittal Procedures.
- D. Section 01 77 00 - Closeout Procedures.

1.03 WORK PROGRESS SCHEDULE (see UGSC 9.3):

Coordination: Comply with Uniform General and Supplementary Conditions, Article 9. Coordinate both the listing and timing of reports and other activities required by provisions of this Section and other Sections, so as to provide consistency and logical coordination between the reports. Maintain coordination and correlation between separate reports by updating at monthly or shorter time intervals. Make appropriate distribution of each report and updated report to all parties involved in the Work including the A/E and the Owner. In particular, provide close coordination of the WPS, contract price breakdown, listing of subcontracts, schedule of submittals, progress reports, and payment requests.

- A. Initial Work Progress Schedule: Submit a bar-chart type progress schedule within ten (10) calendar days after receipt of Notice to Proceed. On this schedule, indicate a time bar for each major category or unit of work to be performed at the Site, properly sequenced and coordinated with other elements of work. Show completion of the activity sufficiently in advance of the date established for completion of the Work. Under no circumstances will construction operations begin other than initial mobilization until the preliminary Work Progress Schedule is submitted.
- B. Work Progress Schedule: Within thirty (30) calendar days after the receipt of the notice to proceed, submit a comprehensive Work Progress Schedule (WPS). This schedule shall address and include all comments received from the ODR and the A/E that were in reference to the preliminary Work Progress Schedule.

- 1. General: The Work Progress Schedule shall be in accordance with the Precedence Diagramming Method (PDM) consisting of a time scaled diagram and related computer generated analysis reports.

2. **Work Progress Schedule:** Based on development of the preliminary WPS and whatever updating and feedback may have occurred during project start-up, secure commitments for performing major elements of the Work. Submit a comprehensive WPS indicating, by stage-coded symbols, a time bar for each major category or unit of work to be performed at the Site; include minor elements of work which are involved in overall sequencing of the Work. Contractor shall identify all critical items, in red ink. Arrange schedule to graphically show the major sequences of Work necessary for the completion of related elements of Work. Prepare and maintain the schedule on either a sheet of sufficient size or a series of sheets showing required data clearly for the entire Construction Time. Provide monthly updates in color, graphically and digitally to the ODR.
3. **Area Separations:** Arrange the WPS with separations between buildings and floors as approved by the ODR.
4. **Network Diagram:** Activities shown on the WPS shall be categorized and described as follows:
 - a. Each individual construction activity.
 - b. A concise description of the work.
 - c. An activity duration shall not exceed 20 work days. Durations of greater than 20 work days are acceptable for non-construction activities or as required by the type of construction activity.
 - d. Each activity shall be coded with an activity code or hammock that relates that activity to an item on the Schedule of Values.
 - e. Each activity shall be coded with an activity code that relates that activity to a phase or building. This subdivision of the Project shall be mutually agreed upon between the ODR and the Contractor.
 - f. Items requiring fabrication and delivery longer than 180 days.
 - g. Times anticipated for shutdown and tying-in to existing services. Note: This does not serve as an official request to the ODR and each individual request for an outage shall be submitted in writing fourteen (14) calendar days prior to the anticipated outage, as described in Section 01 31 00 Project Management and Coordination. An integrated schedule containing all of the above categories, or individual schedules for each of the above categories, or both, shall be as required by the A/E and/or the ODR.
 - h. After Substantial Completion the Contractor shall show the following activities as a minimum:
 1. Completion of pre-final punchlist (Suggested duration 30

days minimum).

2. Final inspection (Suggested duration 5 days).
3. The above activities are to be Finish to Start.

i. The WPS shall show the following Major Milestone Target Finish Dates:

1. Completion of main structure foundation piers or footings.
2. First or ground floor slab complete.
3. Structure top out.
4. Building dry-in or enclosed. This is defined as the roof, exterior walls, exterior windows and openings closed in.
5. Start of conditioned air. This is defined as the building is ready to hold environmental conditions.
6. Any Early Occupancy required by the Contract.
7. Project phases as outlined in the Construction Documents.
8. Permanent Power Required
9. Other milestones as appropriate to the Project.

j. Application of Major Milestones Requirement:

1. The Major Milestone Target Finish Dates identified above are to allow for periodic assessment of critical points of delivery in the construction process. If the Work progresses behind the WPS to the extent that a Major Milestone Target is missed, the ODR may retain sufficient funds, otherwise due to the Contractor, to provide for the assessment of Liquidated Damages in the event that the lost time is not regained. There will be no such additional retainage of funds, provided the published Major Milestone Target Finish Dates are maintained throughout the life of the project.
2. In the event that a Major Milestone Target Finish Date has not been met according to the approved schedule, then an assessment equal to the number of days beyond the scheduled date, multiplied by the contractual liquidated damage amount will be withheld as additional retainage (see UGSC 10.3.2 and 10.3.3) from the current progress payment. The Contractor shall consider this action by the ODR as Notice under UGSC 9.5 and shall increase the rate of Work placement accordingly.
3. Contractor is expected to implement a recovery action plan that re-establishes the original project progress schedule within thirty (30) calendar days of the missed milestone target date.
4. Actions taken that restore the progress schedule within

this 30 day work cycle will entitle the Contractor to recover the assessed additional retainage amount for that occurrence.

5. Beyond thirty (30) calendar days, no reimbursement will be made and a deductive Change Order will be issued.
 6. All costs to recover lost time will be borne solely by the contractor.
- k. The WPS shall also show as a minimum the following activities:
1. Permanent power energized.
 2. Required inspections such as: above ceiling inspections, wall inspections and pre-final inspections.
 3. Sufficient time to correct the items listed in the above inspections.
 4. Chilled and heating water required.
- l. Each activity shall be represented by a graphical horizontal line, as follows:
1. Each line clearly and briefly described.
 2. Estimated duration.
 3. Early start, late start, early finish, late finish, actual start and actual finish.
 4. Each activity shall have its own number.
 5. Each activity, except for start and finish activities shall have at least one preceding and succeeding activity and each may have more than one.
 6. Line shall be drawn to the length as dictated by the item scale to indicate the activity's duration including both target duration and percent complete to date.
 7. Each activity shall be placed at its proper calendar location as determined by the time scale.
 8. Float shall be shown in its proper time scale for all activities. Float on specific activities shall be defined as the late finish date minus the early finish date. Total Float shall be the Contract Time less the duration of the critical path, or the amount of time non-critical activities can be delayed without causing the Contract Time to be exceeded.
 9. The path of critical activities shall be illustrated or accented in red, thereby easily distinguished from non-critical activities. There should only be one defined critical path.
 10. Milestones or intermediate completion dates shall be clearly shown.

11. Substantial Completion Date on the WPS shall coincide with time of completion indicated in the Contract Documents.
 12. The duration of each activity shall be shown in work days and include anticipated days lost due to inclement weather based on the Rainfall Table in Special Conditions 9.6.2.1.1.
 13. Upon review and acceptance of the WPS by the A/E and the ODR, the target bars shall be locked showing comparison between anticipated schedule and actual schedule.
 14. The original schedule shall be saved as the baseline schedule and each monthly update shall be saved as a different name or version.
5. Submittals: Submit two (2) color copies each of the Network Diagram and/or bar chart and two (2) copies each of the computer generated reports to the A/E and to the ODR. Also submit a digital copy of the WPS to the ODR. The ODR and A/E will request revisions, if necessary, and return to the Contractor.
 6. Distribution: Following the initial submittal to and response by the A/E and ODR, print and distribute WPS to A/E, ODR, the principal subcontractors, suppliers or fabricators, and others with a need-to-know schedule-compliance requirement. Post copies in the project meeting room and temporary field office. When revisions are made, distribute updated issues to the same entities and post updated issues in the same locations. Delete entities from distribution when they have completed their assigned Work and are no longer involved in performance of scheduled Work.
 - a. As major revisions are made during construction, distribute current issues to the same entities listed above and make postings accordingly.
 7. Reports: Computer generated printouts with data regarding each activity shown on the Network Diagram shall include the following:
 - a. Description of the activity.
 - b. Activity number.
 - c. Duration.
 - d. Early start, late start, early finish, late finish, actual start and actual finish dates.
 - e. Float.
 - f. Show dates as calendar dates.
 - g. Target start and target finish dates.

8. Report format shall be sorted in accordance with following format with “a” being the highest priority:
 - a. List of activities in ascending order according to activity number.
 - b. List of activities by amount of total float with activities having lowest float listed first, followed by activities with next lowest float.
 - c. List activities by early start date.

9. Submit two (2) color copies each of the updated WPS to the ODR and the A/E and an electronic copy (current/active version) to the ODR at the Monthly Progress Meeting each month, illustrating the following:
 - a. Show progress on all active items.
 - b. Show actual completed Work as contrasted to estimated Work (i.e. target bar schedule).
 - c. Show critical path activities marked to distinguish them from non-critical path activities.
 - d. Show target bars from the baseline schedule.

10. Submit a detailed, written analysis describing deviations from the previous month's schedule as follows:
 - a. Description of the critical path with changes from the previous month.
 - b. Changes in the network diagram and logic from the previous month.
 - c. Addition/deletion of activities.
 - d. Activities not finishing on the late finish date, the reason for the delay, the impact on the project and corrections to the project timeline.
 - e. Activities impacting meeting the Contract completion date and the reason and the corrective measures taken to correct the situation.
 - f. Any other items deviating from or impacting the WPS in relation to the previous month's WPS which would have an adverse effect on the Project.
 - g. Change Orders causing modifications in the Work which affect the duration, start or finish date of activities to the extent that the critical path is changed.

Note: Each of the above items shall be addressed monthly in this report.

11. Revisions to the schedule, including those created by Change Orders, shall

be made at no cost to the Owner.

12. Time Extensions: Contract time extensions will not be granted unless a Change Order causes either of the following:
 - a. An increase in the duration of the Critical Path.
 - b. The available float of a non-critical activity is consumed causing the activity to become critical and thereby altering the critical path.
13. Time extensions shall be limited to the duration of the revised critical path less the Contract Time.
14. Project Summary Schedule: A summary project bar chart schedule shall be submitted monthly. The summary activities will match the construction items found on the Schedule of Values. The recommended method of producing this schedule is through the use of hammock activities. All of the underlying construction activities should be linked to a hammock activity and the scheduled value for that item should be loaded onto the hammock activity. The monthly submittal of this schedule should include the originally submitted schedule as a target schedule and the current status of that activity. In addition a cost weighted plan versus actual overall project progress curve should be submitted. Immediately after the WPS has been accepted by the ODR a projected cash flow chart shall also be developed from this target schedule and transmitted to the ODR. This cash flow chart shall show graphically projected total billings versus actual total billings. This chart shall be updated monthly and submitted along with the Payment Application. It is a requirement for approval of the Payment Application.
15. Work Progress Schedules should use one of the following scheduling software: Primavera or Microsoft Project. No substitutions will be allowed unless approved by the owner. The scheduling system utilized shall be compatible with Windows XP operating system or later.

1.04 DAILY REPORTS:

- A. Prepare a daily report in e-Builder, recording the following information concerning events at the Site:
 1. List of Subcontractors at the Site with a brief description of the work being performed.
 2. Approximate count of personnel at the Site.
 3. High/low temperatures, general weather conditions.
 4. Accidents (refer to accident reports).
 5. Meetings and significant decisions.

6. Unusual events (refer to special reports).
7. Stoppages, delays, shortages, losses.
8. Meter readings and similar recordings, as required.
9. Emergency procedures, field orders.
10. Orders/requests by governing authorities.
11. Visitors.
12. Services connected, disconnected.
13. Equipment or system test and/or start-ups.
14. Partial completions, occupancies.
15. Status of long lead items that affect the critical path.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. General requirements.
- B. List of proposed subcontractors and suppliers.
- C. List of proposed materials.
- D. Field mock-ups and field samples
- E. Color schedules
- F. Brick selection.
- G. Precast architectural concrete and cut stone approvals.

1.02 RELATED SECTIONS:

- A. Section 01 11 00 - Summary of Work.
- B. Section 01 25 00 - Substitution Procedures.
- C. Section 01 31 00 – Project Management and Coordination
- D. Section 01 32 00 - Construction Progress Documentation.
- E. Section 01 60 00 - Product Requirements.
- F. Section 01 77 00 - Closeout Procedures.
- G. All Divisions of Facility Services Subgroup - Additional submittal requirements

1.03 GENERAL REQUIREMENTS (see UGSC 8.3):

- A. General: As indicated in UGSC 8.3.1.1 prepare a complete submittal register in e-Builder within twenty-one (21) days after the effective date of the Notice to Proceed with construction. The submittal register shall contain the submittal title, description, specification section and submittal category at a minimum. The entire review and approval process for all submittals with the exception of physical samples and colors shall occur in e-Builder. Correlate this submittal register with the listing of subcontractors and with the "list of materials" as specified in the Contract Documents.
- B. If the project includes multiple buildings then include the building number in the filename of submittals specific to a building. During the review and approval process for submittals do not change the file names for any attached files. E-Builder versions each file as notations and/or changes are made.
- C. The Contractor shall submit to the A/E for review all shop drawings, product data, samples and other submittals for all items required in the Technical Sections of the Specifications and for all items proposed for use in the Work. Do not combine submittals for specified work with requests for substitutions. Submit

requests for substitutions in accordance with Section 01 25 00. Individual submittals from the submittal register shall be grouped into submittal packages before forwarding to the A/E for review.

- D. The Contractor shall review and stamp approval and submit, with reasonable promptness and in orderly sequence, all shop drawings, product data and samples required.
- E. Submit shop drawings, product data and samples far enough in advance to allow ample time for A/E's review, resubmittal if required, and fabrication without creating any delay in the Work, or the work of any other contractor or subcontractor. No extensions of contract time will be authorized because of failure to submit submittal enough in advance to permit processing including resubmittals.
 - 1. Make all submittals a minimum of thirty (30) days prior to needed return date.
 - 2. Allow more review time for requests of substitutions.
- F. Submittal Content Requirements:
 - 1. Shop drawings shall be completely detailed and dimensioned with types, sizes, and gauges of materials noted. Where shop coat of paint is required on materials, brand name, and chemical content shall be noted on the drawings.
 - 2. Shop drawings shall be neatly, accurately, and legibly drawn, noted and referenced.
 - 3. Each item contained in the submittal shall be clearly referenced and noted establishing the item's location in the finished work.
 - 4. Member and item designations shall be the same as those used on the A/E's drawings, except that, where the A/E's has used the same designation for more than one member or item, the Contractor may add a suffix to the designation to differentiate between these members.
 - 5. Where published standard exist (such as ACI Standard 315 Details and Detailing of Concrete Reinforcement), these shall be followed in the preparation of shop drawings. Where no such standards are published by the industry or trade concerned, the shop drawings shall be prepared in a suitable form acceptable to the A/E.
- G. Submittal Format Requirements:
 - 1. Submittal Preparation: Mark each submittal with a permanent label or title block, as appropriate, for identification with the following information on the label or title block for proper processing and recording of action taken.
 - a. Title of submittal and date submitted.

- b. Sheet number and number of sheets included (as applicable). Number drawings consecutively.
 - c. Project Name, Project Number, and location of Project.
 - d. Name of Architect and Architect's Project Number.
 - e. Name of Contractor, subcontractor, fabricator supplier, and manufacturer, as appropriate.
 - f. Name of drawing and scale (as applicable).
 - g. Name and date of each revision.
 - h. Cross reference to A/E's Drawings and Specification Sections, as appropriate.
 - i. Provide a space on the label or adjacent to title block for the Contractor's review and approval markings, and appropriate space for the Architect's or Engineer's "Action" stamp.
 - j. Name of each item on each sheet submitted and indicate its location in the Project Work.
2. Submittal Numbering: When importing a submittal register e-Builder will automatically number each submittal in order they are entered. When individual submittals are added to a submittal package e-Builder will automatically number each package, the contractor shall identify the package specification section and e-Builder will automatically number the package version.

H. Contractor Duties and Responsibilities:

1. Coordinate requirements for submission of each shop drawing, product data and sample as required to properly execute the Work and as necessary to maintain satisfactory progress of the Work in accordance with the WPS and Submittal Schedule.
2. Review shop drawings, product data, and samples prior to submission to A/E. By submitting shop drawings, product data, and samples, Contractor represents that it has verified field measurements, field construction criteria, catalog numbers and similar data, and has coordinated each submittal with requirements of the Work and of the Contract Documents. Contractor's responsibility for errors and omissions in submittals is not relieved by A/E's review of submittals. Submittals received from sources other than Contractor will be returned to sender without A/E's review "action".
3. Contractor shall certify by stamped, signed, and dated notation on each submittal that "Submittal is in compliance with requirements of Contract Documents without deviation." Submittals without Contractor's stamp and submittals which, in A/E's or ODR's opinion, are incomplete, contain numerous errors, have not been checked, or have been checked only superficially, will be returned without disposition. Delays resulting there from shall be Contractor's responsibility.
4. Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by A/E's review of shop

drawings, product data, and samples unless Contractor has specifically informed the A/E in writing of such deviation at time of submission and A/E has given written acceptance to the specific deviation.

5. Contractor shall direct specific attention, in writing or on resubmitted shop drawings, product data or samples, to revisions other than those requested by A/E on previous submittals.
6. Contractor shall give prompt written notice to A/E of inability to comply with exceptions noted on the returned submittals or if unsatisfactory results are anticipated. Document specific reasons for inability to comply or specific unsatisfactory results that are anticipated. Propose substitution to comply with intent of the Contract Documents and produce satisfactory results in accordance with the substitution requirements of Section 01 25 00.
7. No portion of the Work requiring submission of a shop drawing, product data or sample shall be commenced until submittal has been reviewed with "Approved" or "Approved as Noted" status by A/E.
8. All portions of the Work shall be in accordance with approved submittals.

I. Architect's and Engineer's Action (UGSC 8.3.2):

1. Upon receipt of submittals requiring review, the A/E will review submittals and return them to the Contractor with results of the review indicated as follows:
 - Approved: Submittal has been reviewed for the limited purpose of checking for conformance information given and design concept expressed in the Contract Documents and no exceptions are taken; Contractor may proceed with work represented in submittal, provided no deviation to Contract Documents.
 - Approved as Noted: Submittal has been reviewed as stated above and certain exceptions are noted on the submittal. Contractor may proceed with work represented in submittal, unless otherwise noted.
 - Revise and Resubmit: Submittal has been reviewed as stated above, Contractor may not proceed with work represented in submittal, and submittal is not acceptable.
 - Rejected: Submittal has been reviewed as stated above; work represented in submittal has not been accepted.

J. Shop Drawings:

1. Definition: The term Shop Drawings refers to original drawings prepared by the Contractor, Subcontractor, supplier, fabricator or distributor illustrating a portion of the Work including fabrication drawings, manufacturing drawings, erection drawings, setting drawings, patterns, coordination drawings, schedules, design mix formulas, Contractor's engineering calculations, and layout drawings including ceiling layouts if different from the Contract Documents. Do not submit Contract

- Documents for Shop Drawings.
2. Sheet Size: Prepare drawings on minimum 8-1/2" x 11" to maximum 30" x 42" sheets.
 3. Submit shop drawings in PDF electronic file format.
 4. Contractor shall also develop and coordinate shop drawings into building information model
 3. Content: Shop Drawings shall include, but not be limited to the following:
 - a. The size thickness of members.
 - b. The method of anchoring and securing parts.
 - c. The quantity and location of each item.
 - d. Other pertinent data necessary to show the work to be done, where, and how it is to be done.
 - e. Materials and finishes.
 - f. How item fits to abutting work and requirements for related construction.
 - g. Required connections.
 - h. Overall size and weight.
 - i. Clearances and tolerances.
 - j. Verification of field conditions prior to fabrication.
 - k. Coordination of Shop Drawings and data with requirements for related construction.

K. Product Data:

1. Definition: Manufacturer's standard product specifications, installation instructions, rough-in diagrams and templates, standard wiring diagrams, printed performance and operational range diagrams, mill reports, operating and maintenance manuals, color charts, data sheets, brochures, drawings and diagrams, and other standard illustrative and descriptive data to clearly identify pertinent data, models and materials, uses, limitations, actual dimensions and clearances required, and technical performance data including wiring diagrams and controls. Specific item must be identified on catalog cut sheets.
2. Mark out information not applicable to this Project and supplement standard product data to show compliance with requirements.

L. Samples:

1. Definition: Samples include:
 - a. Partial sections of manufactured or fabricated work.
 - b. Small cuts or containers of materials.
 - c. Complete units of repetitively-used materials.
 - d. Swatches showing full range of color, texture and pattern.
 - e. Color range sets.
 - f. Units of work to be used for independent inspection and testing.

- g. Units of work to be used as a standard to judge materials and workmanship.
2. Provide samples for items where specified and for items requiring a choice of color, texture or finish. Samples shall illustrate the materials and workmanship and establish standards by which to judge the completed work.
3. Typical office samples shall be approximately 12" square or 12" long unless otherwise noted and shall clearly illustrate the applicable function, corners, joints, related parts, attachment devices, specified finish and full range of colors. Full size approved samples may be incorporated into the Work unless otherwise noted.

1.04 LIST OF PROPOSED SUBCONTRACTORS AND SUPPLIERS:

- A. General: Not later than sixty (60) days after award of Contract, submit the names of Subcontractors and material suppliers tabulated by each portion of the Work, in addition to the requirements set forth in UGSC 3.3.6.2. Performance or non-performance of any Subcontractor or material supplier will not relieve the Contractor of its responsibility for Work as called for in the Contract Documents.

1.05 LIST OF PROPOSED MATERIALS:

- A. Submit list of materials within forty-five (45) days after issuance of Notice to Proceed in accordance with UGSC 8.3.
- B. Materials List: Submit a list of the following types of materials proposed for installation:
 1. Material(s) not specified. (Refer to Section 01 25 00, Substitution Procedures).
 2. Material(s) selected from a Specification naming more than one manufacturer or supplier.
 3. Material(s) selected to conform to a reference specification when no manufacturer has been named.
- C. It will be assumed that materials omitted from the list will be furnished as specified when only one manufacturer has been specified. When more than one manufacturer has been named or when reference specifications have been used the A/E's selection will govern.
- D. The list shall be complete and tabulated by, each Specification section and/or portion of the Work. Include name of manufacturer of each material. For materials specified by reference standards, also include the following with the listing of each such product:
 1. Address of manufacturer.

2. Trade name.
3. Model or catalogue designation.
4. Manufacturer's data, including performance and test data and referenced standards.

1.06 FIELD MOCK-UPS AND FIELD SAMPLES (UGSC 8.4):

- A. The Contractor shall erect and maintain mock-ups and field samples as required by the various sections of the specifications. Mock-ups and field samples are required for, but not limited to the following:
 1. Concrete sidewalk finishes.
 2. Exterior face brick wall complete with required tooled mortar, sealants, related stonework, windows, glazing, roofing systems, flashings and other related exterior building materials. (see UGSC 8.4.1.1)
- B. Field samples and job site mock-ups shall be erected at the Project Site at a mutually agreed location. Contractor shall request approval for location on which to construct mock-up of field sample prior to proceeding. Each field sample or mock-up shall be complete and illustrate the range of finish and workmanship required in the completed Work and will be used by A/E and ODR, upon approval, as a standard to judge subsequent work.
- C. Where several mock-ups of alternate construction techniques or finishes are required and prepared, each shall be labeled for clear identification indicating base construction finish material, special techniques used and where important for duplication of effect line pressures, grit classification, lengths of exposure, surface preparation, undercoats, strength of reagents, etc.
- D. Contractor shall request review of mock-up or field sample upon completion prior to proceeding with actual construction work.
- E. Contractor shall protect mock-up or field samples from damage, dirt and discoloration after A/E's and Owner's approval. Retain on the job as a standard reference for materials, workmanship and appearance until removal is authorized. Do not alter, move or destroy mock-up or field sample until so authorized. Remove and dispose of mock-up only after approval is given by the ODR.

1.07 COLOR SCHEDULES:

- A. After receipt of all samples, A/E will present to the ODR a proposed comprehensive color schedule for review and approval.
 1. Once approved, the colorboard will be sent to and kept at the job site for reference. A second set of approved colors, in a 3-ring binder, will be provided to FPC Interior Designer by the A/E. A copy of the color finish

schedule compiled after the colors are approved must be provided to the ODR.

2. The Contractor must insure that required submittals for all items requiring color selection are accomplished in a timely manner. The A/E cannot prepare the colorboard for approval by the ODR until all items requiring color selection have been submitted.
- B. The approved color schedule will then be released to the Contractor for ordering materials.
 - C. No color selection will be released until all colors are approved in the comprehensive color schedule. Any "early" selections requested, and acted upon by the Contractor, shall be at its own risk and understanding that material of color differing from the approved color schedule will be rejected.
 - D. If the Contractor is unable to submit all exterior color selections/samples within sixty (60) days or all interior color selections/samples within ninety (90) days after "Notice to Proceed", the A/E may proceed with preparation of the color schedule using the color selections of a specified product. The Contractor shall be required to match the selected colors at no additional cost to the Owner of the specified product selected by the A/E.

1.08 BRICK SELECTION

Brick selection is a very important item from the Owner's perspective and timely submittals by the Contractor are important to prevent delay.

1.09 PRECAST ARCHITECTURAL CONCRETE AND CUT STONE APPROVALS (if applicable)

Contract may require a project sample of precast architectural concrete or cut stone to be constructed. After the project sample is erected, the ODR will arrange for appropriate personnel to inspect and approve the sample.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01 42 00

REFERENCES

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Reference Requirements.
- B. Governing Regulations and Authorities.
- C. Definitions

1.02 REFERENCE REQUIREMENTS:

- A. Materials, equipment and operations specified by reference to published standards and specifications of a technical society, trade association, or other agency standard, shall comply with the requirements of the current edition of the listed document that is in effect on the issue date of the Specifications or Addendum page making reference thereto, unless otherwise specified. Make copies of referenced documents available at site, as the ODR or A/E may request.
- B. No provision of a reference standard, specification, manual, or code shall change the duties and responsibilities of the Owner, the Contractor, the A/E and their consultants, their agents and employees from those duties and responsibilities set forth in the Contract Documents.
- C. Acronyms for names of technical societies, associations, and agencies referenced in the Contract Documents shall be interpreted as follows:

AA Aluminum Association
900 19th St., NW, Suite 300; Washington, DC 20006;
202-862-5100
www.aluminum.org

AABC Associated Air Balance Council
1518 K Street, NW, Suite 503; Washington, DC 20005
202-737-0202
www.aabchq.com

AAMA American Architectural Manufacturers Association
1827 Walden Office Square, Ste 550; Schaumburg, IL 60173-4268
847-303-5664
www.aamanet.org

ANLA American Nursery & Landscape Association

1000 Vermont Ave., NW, Ste 300; Washington, DC 20005-4914
202-789-2900
www.anla.org

- ACI American Concrete Institute
38800 Country Club Drive; Farmington Hills, MI, 48331;
248-848-3700
www.concrete.org
- ACIL American Council of Independent Laboratories
1629 K Street, NW, Suite 400; Washington, DC 20006-1633
202-887-5872
www.acil.org
- ADC Air Diffusion Council
1000 E. Woodfield Road, Suite 102; Schaumburg, IL 60173-5921
847-706-6750
www.flexibleduct.org
- AGC Associated General Contractors of America
333 John Carlyle Street, Suite 200; Alexandria, VA 22314
703-548-3118
www.agc.org
- AIA America Institute of Architects
1735 New York Avenue, NW; Washington DC 20006
202-626-7300
www.aia.org
- AIC American Institute of Constructors
466 94th Avenue North; St. Petersburg, FL 33702
727-578-0317
www.aicnet.org
- AISC American Institute of Steel Construction, Inc.
One East Wacker Drive, Suite 3100; Chicago, IL 60601-2001
312-670-2400
www.aisc.org
- AISI American Iron and Steel Institute
1140 Connecticut Avenue, Suite 705; Washington, DC 20036
202-452-7100
www.steel.org
- AMCA Air Movement and Control Association
30 West University Drive; Arlington Heights, IL 60004-1893

847-394-0150
www.amca.org

ANSI American National Standards Institute
1819 L. Street, NW, 6th Floor; Washington, DC 20036
202-293-8020
www.ansi.org

APA American Plywood Association
P.O. Box 11700; Tacoma, WA 98411-0700
253-565-6600
www.apawood.org

ARI Air Conditioning and Refrigeration Institute
4100 North Fairfax Drive, Suite 200; Arlington, VA 22203
703-524-8800
www.ari.org

ASHRAE American Society of Heating, Refrigerating &
Air Conditioning Engineers, Inc.
1791 Tullie Circle, NE; Atlanta, GA 30329
404-636-8400
www.ashrae.org

ASME American Society of Mechanical Engineers
3 Park Avenue; New York, NY 10016
212-591-7000
www.asme.org

ASTM American Society for Testing and Materials
100 Barr Harbor Drive; West Conshohocken, PA 19428-2959
610-832-9500
www.astm.org

AWI Architectural Woodwork Institute
1952 Isaac Newton Square West; Reston, VA 20190
703-733-0600
www.awinet.org

AWPA American Wood Preservers' Association
P.O. Box 388; Selma, Alabama 36702-0388
www.awpa.com

AWS American Welding Society, Inc.
550 Le Jeune Road, NW; Miami, FL 33126
305-443-9353

www.aws.org

AWWA American Water Works Association
6666 West Quincy Avenue; Denver, CO 80235
303-794-7711
www.awwa.org

BHMA Builders' Hardware Manufacturers Association
355 Lexington Ave., 17th Floor; New York, NY 10017
212-297-2122
www.buildershardware.com

BIA Brick Institute of America
11490 Commerce Park Drive, Suite 300; Reston, VA 20191
703-620-0010
www.bia.org

BICSI Building Industry Consulting Services International
8610 Hidden River Parkway; Tampa, FL 33637
800-242-7405
www.bicsi.org

CPA Composite Panel Association
18922 Premiere Court; Gaithersburg, MD 20879
301-670-0604
www.pbmdf.com

CPSC Consumer Product Safety Commission
National Injury Information Clearinghouse
4330 East-West Hwy.; Bethesda, MD 20814-4408
301-504-6816
www.cpsc.gov

CRSI Concrete Reinforcing Steel Institute
933 Plum Grove Road; Schaumburg, IL 60173-4758
847-517-1200
www.crsi.org

DHI Door and Hardware Institute
14150 Newbrook Drive, Suite 200; Chantilly, VA 20151-2223
703-222-2010
www.dhi.org

FM Factory Mutual Engineering and Research Organization
1151 Boston-Providence Turnpike; Norwood, MA 02062-5001
781-762-4300

FS Federal Specification (General Services Administration) Specifications Unit (WFSIS)

GA Gypsum Association
810 First Street, NE, Suite 510; Washington, DC 20002
202-289-5440
www.gypsum.org

IEEE Institute of Electrical and Electronics Engineers
445 Hoes Lane; Piscataway, NJ 08854
732-981-0660
www.ieee.org

IESNA Illuminating Engineering Society of North America
120 Wall Street, Floor 17; New York, NY 10005
212-248-5000
www.iesna.org

IGCC Insulating Glass Certification Council
c/o ETL Testing Labs, P.O. Box 9, Henderson Harbor, NY 13651
315-646-2234
www.igcc.org

ILI Indiana Limestone Institute of America
400 Stone City Bank Building, Bedford, IN 47421
812-275-4426
www.iliai.com

LPI Lightning Protection Institute
3335 N. Arlington Hts. Road, Suite E; Arlington Hts., IL 60004
847-577-7200
www.lightning.org

MIL Military Standardization Documents (U.S. Dept. of Defense)

MSS Manufacturers Standardization Society of the Valve and Fittings Industry
127 Park Street, NE; Vienna, VA 22180-4602
703-281-6613
www.mss-hq.com

NAAMM National Association of Architectural Metal Manufacturers
8 South Michigan Avenue, Suite 1000; Chicago, IL 60603
312-332-0405
www.naamm.org

NCMA National Concrete Masonry Association
13750 Sunrise Valley Drive; Herndon, VA 20171-4662
703-713-1900
www.ncma.org

NEC National Electric Code (by NFPA)

NEI National Elevator Industry, Inc.
1677 County Route 64, P.O. Box 838; Salem, NY 12865-0838
518-854-3100
www.neii.org

NEMA National Electrical Manufacturers Association
1300 North 17th Street; Rosslyn, VA 22209
703-841-3200
www.nema.org

NFPA National Fire Protection Association
One Batterymarch Park; Quincy, MA 02269-9101
617-770-3000
www.nfpa.org

NIST National Institute of Standards and Technology
(formerly National Bureau of Standards; U.S. Dept. of Commerce)
Gaithersburg, MD 20899-3460
301-975-6478
www.nist.gov

NPCA National Paint and Coatings Association
1500 Rhode Island Ave., NW; Washington, DC 20005
202-462-6272
www.paint.org

NRCA National Roofing Contractors Association
10255 W. Higgins Road, Suite 600; Rosemont, IL 60018-5607
847-299-9070
www.nrca.net

NSF National Sanitation Foundation
P.O. Box 130140, 789 N. Dixboro Rd; Ann Arbor, MI 48113-0140
734-769-8010
www.nsf.org

NTMA The National Terrazzo and Mosaic Association, Inc.
201 N. Maple Avenue, Suite 208; Purcellville, VA 20132

800-323-9736
www.ntma.com

NWWDA National Wood Window and Door Association (formerly NWMA)
1400 E. Touhy Avenue #G54; Des Plaines, IL 60018
708-299-1286
www.nwwda.org

OSHA Occupational Safety & Health Administration
200 Constitution Avenue, NW; Washington, DC 20210
www.osha.gov

PCA Portland Cement Association
5420 Old Orchard Road; Skokie, IL 60077
847-966-6200
www.portcement.org

PCI Precast/Prestressed Concrete Institute
209 W. Jackson Blvd, Suite 500.; Chicago, IL 60606-6938
312-786-0300
www.pci.org

PS Product Standard of NBS (U.S. Department of Commerce)

RFCI Resilient Floor Covering Institute
401 E. Jefferson Street, Suite 102; Rockville, MD 20850
301-340-8580
www.rfci.com

RIS Redwood Inspection Service (Grading Rules)
405 Enfrente Drive, Suite 200; Novato, CA 94949
415-382-0662

SDI Steel Deck Institute
P.O. Box 25; Fox River Grove, IL 60021
847-458-4647
www.sdi.org

SDI Steel Door Institute
30200 Detroit Road; Cleveland, OH 44145-1967
440-899-0010
www.steeldoor.org

SIGMA Sealed Insulating Glass Manufacturers Association
401 N. Michigan Avenue, Suite 2400; Chicago, IL 60611
312-644-6610

SMACNA	Sheet Metal & Air Conditioning Contractors National Association, Inc. 4201 Lafayette Center Drive; Chantilly, VA 20151-1209 703-803-2980 www.smacna.org
SPIB	Southern Pine Inspection Bureau (Grading Rules) 4709 Scenic Highway, Pensacola, FL 32504-9094 850-434-2611 www.spib.org
SSPC	The Society for Protective Coatings 40 24 th Street, 6 th Floor; Pittsburgh, PA 15222-4656 877-281-7772 www.sspc.org
TCA	Tile Council of America, Inc. 100 Clemson Research Blvd.; Anderson, SC 29625 864-646-8453 www.tileusa.com
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance 2500 Wilson Blvd., Suite 300; Arlington, VA 22201 703-907-7700 www.tiaonline.org
UL	Underwriter's Laboratories 333 Pfingsten Road; Northbrook, IL 60062 847-272-8800 www.ul.com
WWPA	Western Wood Products Association 522 SW 5 th Avenue, Suite 500; Portland, OR 97204-2122 503-224-3930 www.wwpa.org

1.03 GOVERNING REGULATIONS/AUTHORITIES:

- A. The A/E has contacted the appropriate authorities having jurisdiction for the listed regulations and codes to obtain information for preparation of the Contract Documents. The Contractor may contact authorities having jurisdiction directly for information and decisions having bearing on the Work.

1. Life Safety Code, NFPA 101, edition approved by State Fire Marshall, and all referenced codes.
2. International Building Code, edition matching Life Safety Code, International Code Council, Inc., (for all items not covered by Life Safety Code).
3. Other applicable National Fire Codes, NFPA.
4. State Energy Conservation Design Standard (ASHRAE 90.1), edition approved by State Energy Conservation Office (SECO).
5. State Energy Conservation Office (SECO) Suggested Water Efficiency Guidelines for Buildings and Equipment at Texas State Facilities.
6. Other applicable ASHRAE Standards
7. International Plumbing Code and International Mechanical Code, edition matching building code, International Code Council, Inc.
8. Building Service Piping, ASME/ANSI B31.9.
9. Applicable ANSI, ASTM and ASME codes and standards
10. Applicable OSHA, EPA and Texas Commission on Environmental Quality (TCEQ) regulations
11. Texas Accessibility Standards (TAS), Texas Department of Licensing and Regulations, Architectural Barriers Act, Ch. 469, Government Code.
12. Americans with Disabilities Act, Public Law 101-336, July 26, 1990
13. Safety Code for Elevators and Escalators, ASME A17.1 & A17.3.
14. TIA/EIA Standards.
15. FM Global Standards for Roof Systems and Fire Protection Systems

1.04 DEFINITIONS:

- A. Require and Similar Words: As needed to complete the Work and as directed by A/E, unless stated otherwise.
- B. Perform: Contractor, at its expense, shall perform operations necessary to complete the Work, including furnishing of necessary labor, tools and equipment, and further including furnishing and installing of materials indicated, specified or required to complete such performance.
- C. Provide: Contractor, at its expense, shall furnish and install the Work complete in place and ready for use, including furnishing of necessary labor, materials, tools, equipment and transportation. Definitions apply same to future, present and past tenses, except word "provide" may mean "contingent upon" where such is context.
- D. Other Acceptable Manufacture, Equal, Or Equal, Equivalent and Words of Similar Import: It shall be understood such words are followed by expression "in opinion of A/E" unless stated otherwise.

- E. Acceptable, Acceptance or Words of Similar Import: Acceptance or similar import of A/E is intended unless stated otherwise.
- F. At No Extra Cost to Owner, With No Extra Compensation to Contractor, at Contractor's Expense or Terms of Similar Import: Such terms shall be understood to mean that Contractor shall perform or provide specified products, materials or operations of the Work at no increase to Contract Sum stated in executed Contract.
- G. NIC: Work which is not being performed or provided as part of Contract; term shall mean "Not In This Contract" or "Not a Part of the Work to be Performed or Provided by Contractor." "NIC" work is indicated as an aid to Contractor in scheduling the amount of time and materials necessary for completion of Contract.
- H. Indicated: The term "indicated" is a cross-reference to graphics, notes or schedules on Drawings, to other paragraphs or schedules in the Specifications, and to similar means of recording requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated," it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
- I. Directed, Requested or Similar Words: Where not otherwise explained, terms such as "directed," "requested," "authorized," "selected," "approved," "required," "accepted," and "permitted" mean "directed by the ODR, A/E," "requested by the ODR, A/E," and similar directions by the ODR and A/E. However, no such implied meaning will be interpreted to extend Owner's and A/E's responsibility into Contractor's area of construction supervision.
- J. Approve: Where used in conjunction with Owner's and A/E's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of the term "approved" will be held to limitations of Owner's and A/E's responsibilities and duties specified in General Conditions. In no case will "approval" by Owner and/or A/E be interpreted as a release of Contractor from responsibilities to fulfill requirements of Contract Documents.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01 43 00

QUALITY ASSURANCE

PART I - GENERAL

1.01 SECTION INCLUDES:

- A. General Requirements and Qualifications for Owner's Quality Assurance Testing.
- B. Below Grade Inspections.
- C. Concrete Inspections.
- D. Wall Closure and Above Ceiling Inspections.
- E. Pre-final Inspection.
- F. Final Inspection
- G. Final Acceptance
- H. One Year Inspection.

1.02 RELATED SECTIONS:

- A. Section 01 33 00 - Submittal Procedures

1.03 GENERAL REQUIREMENTS FOR OWNERS QUALITY ASSURANCE TESTING (UGSC 8.2.2):

- A. The Owner will employ a testing laboratory and/or geotechnical engineering service to perform quality assurance tests and to transmit copies of test reports to Contractor. Sampling and testing that the Owner may require is specified in this section and in the various technical sections requiring quality assurance testing. Cooperate with Owner's testing laboratory personnel, provide access to the Work, to manufacturer's and fabricator's operations, furnish incidental labor and facilities, and samples for test and inspections, as specified.
 - 1. Employment of testing laboratory to perform quality assurance tests is for benefit of Owner in confirming that performance and quality of the Work is in conformance with the Contract Documents.
 - 2. Employment of a testing laboratory by Owner in no way relieves Contractor's obligation to perform the Work in accordance with Contract Documents.
 - 3. Owner's testing laboratory shall not be the same as Contractor's testing laboratory used for design and certification testing unless otherwise acceptable to the A/E and Owner.
 - 4. Where the terms "Inspector" and "Laboratory" are used, they mean and refer to an officially designated and accredited inspector of the testing laboratory engaged by the Owner.
 - 5. The testing firm shall make all inspections and perform all tests in

accordance with the rules and regulations of the building code, local authorities, the Specifications of the ASTM and these Contract Documents.

6. Commercial Testing Laboratories: In general, all Contracts awarded by The Texas A&M University System will require that testing not performed by the Contractor (i.e., hydrostatic testing of piping) or by the A/E (i.e., spot checking of air flow by the Engineer) will be performed by a commercial testing laboratory selected by the Owner. The cost of such commercial testing will be paid directly by The Texas A&M University System through the Area Manager, FPC. Retesting will also be paid by the Owner, but will be reinvoiced at cost to the Contractor. All test reports shall be uploaded to e-Builder. Employment of the testing laboratory is for the benefit of the Owner for confirming that performance and quality of the Work is in conformance with the Contract Documents.
7. The engagement of a testing laboratory by the Owner in no way relieves the Contractor of its responsibility, for full compliance of the Contract. The Contractor remains liable for the quality of the materials, products/equipment installed, and satisfactory work performance.

B. Owner's quality assurance testing and sampling may include the following testing and other services to ensure Contract performance.

1. Compacted Fill and Backfill: Perform field density tests.
2. Footing Subgrades: Perform tests and visual comparisons of footing subgrades to verify design bearing capacities.

C. Limits of Testing Laboratory Authority: Laboratory is not authorized to:

1. Approve or reject any portion of the Work.
2. Perform any duties of the Contractor and Subcontractors.
3. Revoke, alter, relax, expand, or release any requirement of the Contract Documents or to approve or accept any portion of the Work, except where such approval is specifically called for in the Specifications.
4. Laboratory technicians do not act as foremen, or perform other duties for Contractor. Work will be checked as it progresses, but failure to detect any defective work or materials shall not, in any way, prevent later rejection when such defect(s) are discovered.

1.04 QUALIFICATIONS:

A. Laboratory Qualifications and Procedures:

1. Meet "Recommended Requirements for Independent Laboratory Qualification," latest edition published by American Council of Independent Laboratories. Testing firms shall meet the requirements of ASTM E 329, "Recommended Practice for Inspection and Testing Agencies

for Concrete, Steel and Bituminous Materials as Used in Construction" and ASTM E 543, "Determining the Qualification of Nondestructive Testing Agencies."

2. Testing firms shall each be insured against errors and omissions by a professional liability insurance policy having a limit of liability not less than \$500,000.00.
3. The inspection and testing services of the testing firm shall be under the direction of a Registered Engineer licensed in the State of Texas and having at least five years engineering experience in inspection and testing of construction materials.
4. Inspecting personnel monitoring concrete work shall be ACI certified inspectors.
5. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during most recent tour of inspection. Include memorandum of remedies of deficiencies reported by this inspection.
6. Testing Equipment: Calibrated at reasonable intervals by devices of accuracy traceable to National Bureau of Standards.
7. Tests and inspections shall be conducted in accordance with specified requirements and if not specified, in accordance with applicable standards of the American Society for Testing and Materials and other recognized authorities, as approved.
8. Primary inspectors performing structural steel inspection shall be currently certified AWS Certified Welding Inspectors (CWI), in accordance with the provisions of AWS QCI, "Standard and Guide for Qualification and Certification of Welding Inspectors." The inspector may be supported by assistant inspectors who may perform specific inspection functions under the supervision of the inspector. Assistant inspectors shall be currently certified ASW Certified Associate Welding Inspectors (CAWI). The work of assistant inspectors shall be regularly monitored by the inspector.

B. Contractor's Quality Assurance

1. Prior to any inspection by the Owner, the Contractor shall utilize BIM360 checklists for their inspections of the work.

1.05 BELOW GRADE INSPECTIONS (UGSC 8.2.7)

- A. Before the covering or backfilling of any improvement below grade, cover up inspections will be conducted to see that all items meet the plans and specs. Only after all the deficiencies have been corrected will the Contractor be allowed to install any backfill.

1.06 CONCRETE INSPECTIONS

- A. Before the placing of any cast-in-place concrete structure, an inspection will be conducted to see that all items meet the intent of the plans or specs. Only after all

the deficiencies have been corrected will the Contractor be allowed to proceed.

1.07 WALL CLOSURE/ABOVE-CEILING INSPECTIONS (UGSC 8.2.7)

- A. Before the installation of any ceiling or the closing of walls and chases, the Contractor's QA personnel will perform an inspection to verify that all items fully meet the plans and specs. The Contractor shall utilize BIM360 Build checklists for their inspection. Following the verification inspection, a request for a TAMUS inspection shall be requested before being covered. Only after all the deficiencies have been corrected will the Contractor be allowed to install the ceiling or close-up the wall.
- B. As a minimum, the following should be in place before an above-ceiling inspection is scheduled:
 - 1. All light fixtures installed and working;
 - 2. All plumbing installed and insulation complete;
 - 3. All rigid and flexible ducts installed;
 - 4. All required valve identification tags installed;
 - 5. All air devices installed and connected;
 - 6. All controlled air tubing installed; and
 - 7. The ceiling support structure installed.
- C. Walls and chases will be inspected to verify the presence of blocking and bridging, and to verify all MEP systems are installed per Codes and Contract Documents..
- D. Those in attendance at these inspections shall include the A/E, selected personnel from the FPC, the General Contractor, plumbing, electrical and mechanical subcontractors and representatives from campus facilities department or Using Agency.
- E. A minimum of fourteen (14) days notice shall be given to the ODR prior to these inspections.

1.08 A/E AND PROJECT INSPECTOR'S SUBSTANTIAL COMPLETION INSPECTION (UGSC 12.1.1)

- A. When the Contractor feels that the Work is complete and ready for the Owner's use, it will notify the A/E and the ODR in writing fourteen (14) days prior to the date that the Work is anticipated to be complete and ready for a Substantial Completion Inspection. The A/E, along with representatives of FPC, User Coordinator, and members of the campus facilities department will make a detailed inspection of all Work included in the Contract and the A/E will furnish to the Contractor a list of incomplete items. When all these items have been completed by the Contractor, the A/E and the ODR will be notified that all items of the Substantial Completion Inspection have been completed.

1.09 FINAL INSPECTION AND ACCEPTANCE (UGSC 12.1.2)

- A. Upon verification by the A/E and the ODR that the deficiencies found during the Substantial Completion Inspection have been corrected, and the Work is ready for Final Inspection and Acceptance, the ODR will, within ten (10) calendar days after receiving written verification by the A/E, make a Final Inspection. When the Work

is found acceptable under the Contract Documents without any exceptions and the Contract is fully performed, then final payment will be made to the Contractor. Those in attendance at the Final Inspection will include the A/E, representatives of FPC, campus facilities department and User Coordinator.

1.10 FINAL ACCEPTANCE (12.3)

- A. When the Work is fully complete, FPC will issue a Report of Final Acceptance.

1.11 ONE YEAR INSPECTION

- A. All Contracts awarded by The Texas A&M University System contain a one (1) year workmanship and material guarantee as stated in Uniform General and Supplementary Conditions, Articles 13.2 and 13.5. Campus facilities department is responsible for administering any warranty issues. Prior to the expiration of the one year warranty FPC will establish a date for a warranty inspection to be attended by A/E, representatives of FPC, campus facilities department and User Coordinator.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.01 PIER DRILLING OPERATION

- A. Provide services herein specified.
- B. A representative of the soils testing laboratory shall make continuous inspections to determine that proper bearing stratum is obtained and utilized for bearing and that shafts as are properly clean and dry before pouring concrete.
- C. Soils testing laboratory shall furnish complete pier log showing the diameter, top and bottom elevations of each pier, casing required or not required, bell size, actual penetration into bearing stratum, elevation of top of bearing stratum, and volume of concrete used.
- D. Request probe holes when deemed necessary to confirm safe bearing capacity.

3.02 REINFORCING STEEL MECHANICAL SPLICES

- A. Visually inspect and report on the completed condition of each mechanical splice of reinforcing steel.
- B. Each mechanical splice shall be visually inspected to ensure compliance with

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building code and the manufacturer's published criteria for acceptable completed splices.

- C. Special emphasis shall be placed on inspection of the end preparation of each bar to be spliced, as required by the building code.
- D. Submit copies of manufacturer's published criteria for acceptable completed splices prior to observing mechanical splices.
- E. Reports on each mechanical splice shall indicate location of the splice, size of bars spliced, and acceptability or rejection of splice. Reasons for rejection shall be shown on each report.

3.03 CONCRETE REINFORCING STEEL AND EMBEDDED METAL ASSEMBLIES

- A. Inspect all concrete reinforcing steel prior to placing of concrete for compliance with Contract Documents and approved shop drawings. All instances of noncompliance with Contract Documents and approved shop drawings shall be immediately brought to the attention of the Contractor for correction and then, if uncorrected, reported to the A/E.
- B. Observe and Report on the Following:
 - 1. Number and size of bars.
 - 2. Bending and lengths of bars.
 - 3. Splicing.
 - 4. Clearance to forms including chair heights.
 - 5. Clearance between bars or spacing.
 - 6. Rust, form oil, and other contamination.
 - 7. Grade of steel.
 - 8. Securing, tying, and chairing of bars.
 - 9. Excessive congestion or reinforcing steel.
 - 10. Installation of anchor bolts and placement of concrete around such bolts.
 - 11. Fabrication of embedded metal assemblies, including visual inspection of all welds.
 - 12. Visually inspect studs and deformed bar anchors on embedded assemblies for compliance with Contract Documents. Check number, spacing and weld quality. If, after welding, visual inspection reveals that a sound weld or a full 360 degree fillet has not been obtained for a particular stud or bar, such stud or bar shall be struck with a hammer and bent 15 degrees off perpendicular and then bent back into position. Anchors failing this test shall be replaced.

3.04 CONCRETE INSPECTION AND TESTING

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- A. Receive and evaluate all proposed concrete mix designs submitted by the Contractor. If the mix designs comply with the Drawings and Specifications, the laboratory shall submit a letter to the A/E certifying compliance. Mix designs not complying with the Drawings and Specifications shall be returned by the laboratory as unacceptable.
- B. Secure composite samples of concrete at the jobsite in accordance with ASTM C 172.
- C. Mold and cure three specimens from each sample in accordance with ASTM C 31. Supervise the curing and protection provided (by others) for test specimens in the field, and the transportation from the field to the laboratory. The test cylinders shall be stored in the field 24 hours and then be carefully transported to the laboratory and cured in accordance with ASTM C 31.
- D. Test specimens in accordance with ASTM C 39. Two specimens shall be tested at 28 days for acceptance and one shall be tested at seven days for information.
- E. Make one strength test (three cylinders) for each 100 cubic yards or fraction thereof, of each mix design of concrete placed in any one day.
- F. Make one slump test for each set of cylinders following the procedural requirements of ASTM C 243 and ASTM C 172. Make additional slump tests whenever the consistency of concrete appears to vary. Do not permit placement of concrete having a measured slump outside the limits given on the Drawings, except when approved by the A/E. Slump tests corresponding to samples from which strength tests are made shall be reported with the strength test results. Other slump tests need not be reported.
- G. Determine total air content of air entrained normal-weight concrete sample for each strength test in accordance with ASTM C 231.
- H. Determine temperature of concrete sample for each strength test.
- I. The testing agency shall furnish and maintain a competent inspector at the mixing plant at the start of each day's mixing. The inspector shall examine concrete materials for compliance with Specifications and approved mix design, weighing and measuring devices, proportioning and mixing of materials, the water and cement content of each batch, the general operation of the plant and the transportation of concrete to the jobsite. The inspector shall verify that the amount of free surface moisture contained in the fine and coarse aggregate has been properly accounted for in the concrete mixing to achieve the required consistency and water cement ratio.
- J. The testing laboratory shall monitor the addition of water to the concrete at the

jobsite and the length of time the concrete is allowed to remain in the truck before placement. The personnel shall compare the mixture with the criteria on the approved mix design and report any significant deviation to the A/E, ODR, Contractor and concrete supplier. Do not permit the addition of water which will exceed the maximum water/cement ratio for the mix as given on the approved mix design.

- K. Observe the placing of all concrete, except non-structural slabs-on-grade and sitework. Observe and report on placing method, consolidation, cold joints, length of drop, and displacement of reinforcement. Report deficiencies to the Contractor immediately for corrective action. Inspections may be reduced to a periodic basis when all procedures have been deemed satisfactory by the laboratory.
- L. The testing laboratory shall certify each delivery ticket indicating class of concrete delivered (or poured), amount of water added and the time at which the cement and aggregate was dispensed into the truck, and the time at which the concrete was discharged from the truck.
- M. Evaluation and Acceptance:
 - 1. If the measured slump, or air content of air entrained concrete, falls outside the specified limits, a check test shall be made immediately on another portion of the same sample. In the event of a second failure, the concrete shall be considered to have failed to meet the requirements of the specifications, and shall not be used in the structure.
 - 2. The strength level of the concrete will be considered satisfactory if the averages of all sets of three consecutive strength test results are equal to, or exceed specified strength and no individual test result (average of two cylinders) is below specified strength by more than 500 psi.
 - 3. Completed concrete work will be accepted when the requirements of "Specifications for Structural Concrete for Buildings," ACI 301, Chapter 18, have been met.
- N. Concrete Test Reports:
 - 1. Reports shall be made and uploaded immediately after the respective tests or inspections are made.
 - 2. Where reports indicate deviations from the Contract Documents, they shall also include a determination of the probable cause of the deviation and, where applicable, a recommendation for corrective action.
 - 3. Whenever the testing laboratory recognizes a trend of decreasing quality in the concrete due to changing seasons, conditions of curing, or other cause; this shall be brought to the attention of the A/E and the ODR, along with a recommendation for corrective action to be taken before the materials fall below the requirements of these Specifications.

- O. Comply with ACI 311, "ACI Manual of Concrete Inspection".
- P. Inspect the application of curing compound and monitor all curing conditions to assure compliance with specification requirements. Report curing deficiencies to the Contractor immediately and submit a written report to the A/E and the ODR.

3.05 POST-TENSIONING OF CONCRETE

- A. Verify certification of calibration of jacking equipment used in post-tensioning operations.
- B. Observe and report on placement and anchorage of tendons immediately prior to concreting.
- C. Provide a Registered Professional Engineer experienced in post-tension operations to observe and report on the placement, post-tensioning and elongation measurement of each tendon.
- D. The Contractor shall log and submit detailed reports of the stressing and elongation of each tendon. The laboratory representative shall observe the recording of information by the Contractor and make such spot checks as are necessary to verify the accuracy of the post-tensioning reports.
- E. Receive and review final stressing and elongation reports prepared by the Contractor. Compare the actual and required elongation of each tendon and the actual and required load on each tendon. Grant permission to cut the tails of tendons which are within specified tolerance, unless otherwise noted on the Drawings, and submit reports of those which are not within specified tolerance along with recommended corrective action, to the Architect for further evaluation. Forward a copy of all stressing reports to the Architect for record.
- F. Observe and report on grouting of tendons noted to be bonded.

3.06 MASONRY

- A. Inspection:
 - 1. Provide a qualified inspector to inspect all structural masonry work on a periodic basis. Masonry requiring inspection includes load bearing walls and other grouted and reinforced masonry shown on the Drawings. Inspect the Work in progress at least once for each 5000 square feet of wall laid, but not less than once each day, to check compliance with the Contract Documents and applicable building code.
 - 2. Inspect the following:

- a. Preparation of masonry prisms for testing.
 - b. Placement of reinforcing
 - c. Grout spaces (prior to grouting and prior to closing cleanouts, if any).
 - d. Mortar mixing operations.
 - e. Bedding of mortar for each type of unit and placing of units.
 - f. Grouting operations.
 - g. Condition of units before laying for excessive absorption.
3. Provide a report of each inspection.

B. Field Compressive Test for Mortar:

1. Secure composite samples of mortar at the jobsite in accordance with ASTM C 780.
2. Mold and cure three cube specimens in accordance with ASTM C 109 and ASTM C 780. Supervise the curing protection provided (by others) for test specimens in the field and the transportation from the field to the laboratory. The specimens shall be stored in the field 24 hours and then be carefully transported to the laboratory and cured in accordance with ASTM C 780.
3. Test specimens in accordance with ASTM C 780. Two specimens shall be tested in 28 days for acceptance and one shall be tested at 7 days for information.
4. Make one strength test (three cubes) for each 5000 square feet of wall area.

C. Field Compressive Tests for Grout:

1. Secure composite samples of grout at the jobsite in accordance with ASTM C 172.
2. Mold and cure three, 3" x 6", cylindrical specimens from each sample in accordance with ASTM C 31. Supervise the curing protection provided (by others) for test specimens in the field and the transportation from the field to the laboratory. The test cylinders shall be stored in the field 24 hours and then be carefully transported to the laboratory and cured in accordance with ASTM C 31.
3. Test specimens in accordance with ASTM C 39. Two specimens shall be tested at 28 days for acceptance and one specimen shall be tested at 7 days for information.
4. Make one strength test (three cylinders) for each 10 cubic yards of grout poured but not less than one strength test for each 5000 square feet of wall area.

D. Prism Tests:

1. Prism tests are required for load bearing brick masonry only.

2. Make prism tests in advance of operations using materials under same conditions, and with same bonding arrangement, as for structure. In building prisms, moisture content of unit at time of laying, consistency of mortar and width and thickness of mortar joints shall be same as used in the structure.
3. Cure and test prisms in accordance with applicable provisions of ASTM E 447. Test five specimens of each type of masonry unit before delivering material to jobsite and submit results for approval. During construction, test three specimens of each type of masonry unit for each 5000 square feet of wall placed.
4. The standard age of test specimens is 28 days, but 7 day tests may be used, provided relation between 7 day and 28 day strengths is established by test for materials used.
5. Build brick prisms one brick width and length in plan and five bricks high, using full bed joints as specified. Compute ultimate compressive strength by dividing ultimate load by gross area of masonry units.
6. Build prisms on job using same materials and methods as for wall construction. Store prisms in a place where they will be undisturbed for 2 days and have approximately same curing conditions as wall construction. After 2 days, transport to laboratory in a manner which will not disturb mortar bond and then cure and test as set forth under ASTM E 447.
7. When the average strength of a set of prisms falls below the specified compressive strength, the masonry corresponding to the test shall be deemed unacceptable. In such case, notify the Architect and Contractor immediately.

E. Absorption Tests:

1. Perform a field test of water absorption on three representative clay units, at least once for each 5000 square feet of wall, before laying.
2. The field test shall consist of drawing a 1 inch diameter circle with a wax pencil (the diameter of a quarter). Place 20 drops of water from a medicine dropper in rapid succession within the circle. If all of the water is absorbed into the brick in less than 90 seconds, the units are too dry and should be prewetted.

3.07 STRUCTURAL STEEL

- A. Inspect all structural steel during fabrication and during and after erection for conformance with Contract Documents and Shop Drawings. Any cases of insufficient bracing or guying, or other unsafe conditions shall be immediately called to attention of the Contractor and reported to A/E and the ODR.
- B. Shop Inspection:

1. Examination of all steel for straightness and alignment.
2. Examination of all fabricated pieces and checking of same with erection plans and detail drawings.
3. Visual examination of welding.
4. Ultrasonic testing of all full penetration welds.
5. Examination of galvanizing.
6. Examination of installation of shop welded shear studs.
7. Examination of shop painting.

C. Field Inspection:

1. Proper erection of all pieces.
2. Proper installation of all bolts.
3. Plumbness of structure and proper bracing.
4. Proper field painting.
5. Visual examination of all field welding.
6. Inspect all shop fabricated members, upon their arrival at the jobsite, for defects incurred during transit and handling.

D. Qualifications of Welders: Fabricator and erector shall provide the testing laboratory with names of welders to be employed to work, together with certification that each of these welders has passed qualification tests within the last year using procedures covered in the American Welding Society "Structural Welding Code - Steel," latest edition. Verify all welder qualifications.

E. Inspections of shop and field welding shall be "verification inspection," in accordance with the AWS Structural Welding Code and as follows:

1. Visually inspect the welding of all shop fabricated members and note the location of all cover plates, connectors, bearing stiffeners, splices, and fillet welds for proper return around ends and check for seams, folds and delaminations.
2. Warped or out-of-plumb connectors shall be reported prior to any further welding.
3. Ultrasonically test all penetration welds in accordance with ASTM # 164.
4. Surfaces to be welded and all filler metal shall be carefully inspected. Surface preparations, fit-up and cleanliness of surface shall be noted. Electrodes shall be checked for size, type and condition.
5. Welds shall be sound, clean metal, free of slag inclusions and porosity. Filler metal shall be completely fused with base metal and shall completely penetrate the joint. Root passes shall be checked for penetration from the back side of joint. Welds showing inclusions, porosity, lack of fusion, incomplete penetration or uneven contour (sagging or overlaps) shall be ordered gouged out and rewelded. Welds showing any undercut shall have a small stringer bead ordered to be run in along the toe of undercut using a

smaller diameter electrode than that which made the original weld. No craters shall be left in welds. Any welding defects, including porosity, fusion and undercuts in excess of that allowed, shall be cause for rejection. Where craters occur, the inspector shall order them to be filled out with weld metal.

6. The inspector shall check that all welds have been marked with the welder's symbol. The inspector shall mark the welds requiring repairs and shall make a reinspection. The inspector shall maintain a written record of all welds. Work completed and inspected shall receive an identification mark by the inspector. Unacceptable material and work shall be identified by the word "reject" or "repair" marked directly on the material.
7. The testing agency shall advise the ODR and the A/E of any shop and/or field conditions which, in its opinion, may require further tests and examination by means other than those specified. Such further tests and examinations shall be performed as authorized by the ODR and the A/E.
8. The Owner reserves the right to use ultrasonic or radiographic inspection to verify the adequacy of all welds. Testing procedures and acceptance criteria shall be as specified in AWS D1.1.

F. Inspection of bolted construction shall be in accordance with AISC Specification for Structural Steel Buildings and as follows:

1. All bolts shall be visually inspected to ensure that the plies have been brought into snug contact.

G. Inspection of stud field welding shall be in accordance with the AWS Structural Welding Code, latest edition and as follows:

1. A minimum of two shear studs shall be welded at the start of each production period in order to determine proper generator, control unit, and stud welder setting. These studs shall be capable of being bent 45 degrees from vertical without weld failure.
2. Visually inspect studs for compliance with contract documents. Check number, spacing, and weld quality. If, after welding, visual inspection reveals that a sound weld or a full 360 degree fillet has not been obtained for a particular stud, such stud shall be struck with a hammer and bent 15 degrees off perpendicular to the nearest end of the beam. Studs failing under this test shall be replaced.

3.08 EXPANSION BOLT INSTALLATION

- A. Inspect the drilling of each hole and installation of each expansion bolt for compliance with the Contract Documents and shop drawings.
- B. Verify the installation torque for each expansion bolt for compliance with

manufacturer's installation instructions.

3.09 METAL FLOOR DECK

- A. Field inspection shall consist of the following:
1. Checking types, gauges and finishes for conformance with Contract Documents and Shops Drawings.
 2. Examination for proper erection of all metal deck, fastenings, reinforcing of holes, deck reinforcing, miscellaneous deck supports, hanger tabs, shear studs, deck closures, painting or other coating.
 3. Certification of welders.
 4. Field welded shear studs used to fasten metal floor decking to supporting steel shall be inspected and tested as described in the paragraph addressing structural steel.

3.10 METAL ROOF DECK

- A. Field inspection shall consist of the following:
1. Checking types, gauges, and finishes for conformance with Contract Documents and Shop Drawings.
 2. Examination for proper erection of all metal deck, including fastenings at supports and side laps, reinforcing of holes, and miscellaneous deck supports.
 3. Certification of welders.
 4. Visual inspection of at least 25 percent of all welds.

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. General Requirements and Qualifications for Contractor's Testing Laboratory Services.
- B. Submittals.
- C. Reference Standards.

1.02 RELATED SECTIONS:

- A. Section 01 33 00 - Submittal Procedures

1.03 GENERAL REQUIREMENTS FOR CONTRACTOR'S LABORATORY SERVICES (UGSC 8.2):

- A. Contractor's Design and Certification Testing: Provide services of an independent testing laboratory or facility acceptable to the A/E and the ODR to perform design and certification testing services.
 - 1. Submit written description of testing laboratory giving qualifications of personnel, laboratory facilities and equipment, and other information as may be requested by A/E and ODR.
 - 2. Contractor's testing laboratory shall not be the same as Owner's testing laboratory used for quality assurance testing unless otherwise acceptable to the A/E and ODR.
- B. Contractor's design testing and certification testing includes:
 - 1. Earthwork: Identify suitable soil material at borrow material location, sampling soil material, and testing of soil material samples.
 - 2. Performing certified welding procedure qualification and requalification testing specified.
 - 3. Testing of materials when mill certificates are unavailable.
 - 4. Additional testing when source of material is changed after initial tests have been performed.
 - 5. Other testing required by other Sections of the Specifications.

1.04 QUALIFICATIONS:

- A. Laboratory Qualifications and Procedures:

1. Meet "Recommended Requirements for Independent Laboratory Qualification," latest edition published by American Council of Independent Laboratories. Testing firms shall meet the requirements of ASTM E 329, "Recommended Practice for Inspection and Testing Agencies for Concrete, Steel and Bituminous Materials as Used in Construction" and ASTM E 543, "Determining the Qualification of Nondestructive Testing Agencies."
 2. Testing firms shall each be insured against errors and omissions by a professional liability insurance policy having a limit of liability not less than \$500,000.00.
 3. The inspection and testing services of the testing firm shall be under the direction of a Registered Engineer licensed in the State of Texas and having at least five years engineering experience in inspection and testing of construction materials.
 4. Inspecting personnel monitoring concrete work shall be ACI certified inspectors.
 5. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during most recent tour of inspection. Include memorandum of remedies of deficiencies reported by this inspection.
 6. Testing Equipment: Calibrated at reasonable intervals by devices of accuracy traceable to National Bureau of Standards.
 7. Tests and inspections shall be conducted in accordance with specified requirements and if not specified, in accordance with applicable standards of the American Society for Testing and Materials and other recognized authorities, as approved.
 8. Primary inspectors performing structural steel inspection shall be currently certified AWS Certified Welding Inspectors (CWI), in accordance with the provisions of AWS QCI, "Standard and Guide for Qualification and Certification of Welding Inspectors." The inspector may be supported by assistant inspectors who may perform specific inspection functions under the supervision of the inspector. Assistant inspectors shall be currently certified ASW Certified Associate Welding Inspectors (CAWI). The work of assistant inspectors shall be regularly monitored by the inspector.
- B. Laboratory Duties: Cooperate with A/E, ODR and Contractor. Upon notice, provide qualified personnel to perform required tests and inspections. In performing tests and inspections, Laboratory shall:
1. Comply with specified standards. Comply with building code requirements for "Special Inspection" whether or not such inspections are specified herein.
 2. Ascertain compliance of materials with requirements of Contract Documents. If the material furnished and/or work performed fails to meet requirements of Contract Documents, laboratory inspector shall promptly notify the Contractor, A/E and the ODR of such failure.

3. Promptly notify ODR, Contractor and A/E of observed irregularities or deficiencies in the Work.
4. A representative of the Owner's testing laboratory, who has reviewed and is familiar with the Project and Specifications, shall participate in all preconstruction conferences. The testing firm shall coordinate material testing and inspection requirements with the Contractor and its Subcontractors consistent with the planned construction schedule. The laboratory personnel shall attend, throughout the course of the Project, such conferences as may be required or requested to address quality control issues.
5. Laboratory personnel shall inspect and/or test materials, assemblies, specimens, and work performed, including design mixes, methods and techniques and furnish report(s) to the A/E and the ODR of the progress thereof.

C. Contractor's Responsibilities:

1. Cooperate with laboratory personnel, provide access to the Work, and to manufacturer's and fabricator's operations wherever the Work is in preparation or progress.
2. Secure and deliver to the laboratory, without cost to Owner, adequate quantities of representative samples of materials proposed to be used and which require testing.
3. Furnish Incidental Labor and Facilities:
 - a. To provide access to work to be tested.
 - b. To obtain and handle samples at the Project Site or at the source of the product to be tested.
 - c. To facilitate inspections and tests. Furnish such labor as required to assist laboratory personnel in obtaining and handling samples at the Project Site.
 - d. For safe storage and curing of concrete test cylinders at Project Site and other test samples as required for field curing by ASTM C31.
4. Costs of tests, samples, and mock-ups of substitute material, where the substitution is requested by the Contractor and the tests are necessary in the opinion of the A/E to establish equality with specified items, shall be borne by the Contractor.
5. Costs of tests, samples, and mock-ups performed solely for the benefit or convenience of the Contractor shall be borne by the Contractor.
6. Notify laboratory sufficiently in advance of construction operations to allow laboratory to make assignment of personnel and scheduling of tests to complete any required checks or tests.
7. Owner's testing laboratory will conduct additional tests at Contractor's expense when initial quality control testing indicates work is defective or does not conform to requirements. Materials and workmanship not meeting the required standards or performance obligations are to be

removed and replaced. Replacement and subsequent testing shall be at the expense of the Contractor.

8. Furnish concrete mix designs, in accordance with ACI 301, made by an independent testing laboratory or qualified concrete supplier. When mix designs by an independent testing laboratory are required, the laboratory shall be selected by the Contractor, approved by the A/E and ODR, and paid by the Contractor.
9. Obtain required inspections or approvals of the building official when required. All inspection requests and notifications required by the building code are the responsibility of the Contractor.
10. Provide current welder certifications for each welder to be employed.
11. Furnish fabrication/erection inspection and testing of all welds in accordance with AWS D1.1, Chapter 6.
12. Prequalification of all welding procedures to be used in executing the Work.

1.05 SUBMITTALS:

- A. General: Testing laboratory shall promptly submit written report of each and every test and inspection. Each report shall include:
 1. Date issued.
 2. Project title and number.
 3. Testing laboratory name, address, and telephone number.
 4. Name and signature of laboratory personnel.
 5. Date and time of sampling or inspection.
 6. Record of temperature and weather conditions.
 7. Identification of product and Specification section.
 8. Date of test.
 9. Location of sample or test in the Project.
 10. Type of inspection or test.
 11. Results of tests and observation regarding compliance with Contract Documents.
 12. Interpretation of test results, when requested by Architect.
- B. State in report all details of each inspection and test. Indicate compliance or noncompliance with requirements of the Contract Documents. Also state in report any and all unsatisfactory conditions.
- C. In addition to furnishing a written report, notify the A/E, the ODR and the Contractor verbally of any uncorrected conditions or failures to comply with the requirements of the Contract Documents.
- D. At completion of each trade or branch of the Work requiring inspecting and testing, submit a final certificate attesting to satisfactory completion of the Work and full compliance with requirements of Contract Documents.

- E. Upon completion of building, testing laboratory shall furnish, to ODR and A/E, statement that all required tests and inspections were made in accordance with requirements of Contract Documents.

1.06 REFERENCED STANDARDS

- A. The latest edition of all standards references in this section shall apply, unless noted otherwise. In case of conflict between these Contract Documents and a referenced standard, the Contract Documents shall govern. In case of conflict between these Contract Documents and the building code, the more stringent shall govern.

PART 2 – PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01 50 00 (TAMU)

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. General requirements.
- B. Temporary utilities and services
- C. Construction aids
- D. Barriers and enclosures.
- E. Security.
- F. Parking, access roads and traffic
- G. Temporary controls.
- H. Project identification and signs
- I. Field Offices

1.02 RELATED SECTIONS:

- A. Section 01 11 00 - Summary of Work.
- B. Section 01 74 00 - Cleaning.
- C. Section 01 77 00 - Closeout Procedures

1.03 GENERAL REQUIREMENTS:

- A. Contractor shall provide all construction facilities and temporary controls specified in this Section and as necessary for the proper and expeditious prosecution of the Work.
- B. Contractor shall make or have made and pay all charges for all connections to and distribution from existing services and sources of supply.
- C. Requirements of service and utility companies relating to the Work shall be ascertained by Contractor. Comply with all requirements, including those relating to continued protection and maintenance until completion of Work.
- D. Materials and construction for construction facilities and temporary controls may be new or used, must be adequate in capacity for required usage, and must not create unsafe conditions. Comply with requirements of federal, state and local authorities having jurisdiction.
- E. Construction facilities and temporary controls shall be maintained by Contractor in usable condition at all times until completion of Work or when their removal is authorized by A/E or ODR.
- F. Relocate temporary services and facilities as required by progress of construction, by storage or work requirements, to accommodate legitimate requirements of the Owner and other contractors employed at the Site, and when directed by the ODR.

- G. When any portions of permanent systems are in operating condition, that part of the system may be used for construction purposes provide that the Contractor:
 - 1. Obtains ODR's approval,
 - 2. Assumes full responsibility for the system used,
 - 3. Pays all costs for operation, maintenance, cleaning, and restoration of the system to as new condition,
 - 4. Operates the system under the supervision of the Subcontractor responsible for system installation and ultimate performance,
 - 5. Does not effect specified warranty.
- H. Completely remove temporary services and facilities when their use is no longer required and/or at completion of Project, when directed by ODR.
- I. Clean and repair damage caused by temporary services and facilities to new condition for new Work and to a condition as good as or better than existed prior to start of Work for existing construction, services, and facilities.

1.04 TEMPORARY UTILITIES AND SERVICES:

- A. General
 - 1. New temporary utility connections and metering for construction purposes
 - 2. Existing utility service connections and metering in renovation and construction
 - 3. Permanent new utility service upgrades, connections, and metering, for construction or renovation
 - 4. Utility connections, investigations and Contractor charges for construction or renovation
- B. Texas A&M University maintains and operates full service utility production and distribution assets which serve the College Station campus. Temporary and/or permanent utility services and metering required for a project may include primary and secondary type Electrical Distribution Systems, Chilled Water, Heating Hot Water, Domestic Cold Water, Domestic Hot Water, Sanitary Sewer, and Refuse Collection.
- C. Unless otherwise noted in the contract documents, the Texas A&M University, Utilities and Energy Services (TAMU UES) will investigate, approve, extend and activate all temporary and permanent utility services and metering to construction sites, campus facilities, buildings and structures. The extent of service connection responsibilities may differ considerably between projects and will be clearly denoted on the contract drawings. The guidelines and procedures for utility services including forms can be found at <https://utilities.tamu.edu/guidelines-and-procedures-for-utility-service/>
- D. The University Project Management Authority, as referenced in the above guidelines and procedures, for this project is the ODR
- E. Temporary Telephone Service: Provide and maintain telephone service with a minimum of one direct line instrument in the Contractor's field office. The Contractor shall pay for costs

of installation, maintenance and removal and service charges for local calls. Toll charges shall be paid by party who places the call, except toll calls made by Owner's and A/E's personnel related to project business shall be paid for by Contractor. Refer to 1.11 this Section for ODR requirements.

- F. Temporary Toilets and Sanitation: Provide service, clean, and maintain sanitary conveniences with proper enclosures, in conformance with requirements of local laws and ordinances governing such installations. Post notices, take such precautions as may be necessary, and do cleaning necessary to keep the building and the premises in a sanitary condition. From start of the Work, provide suitable temporary toilets and enclosures for the use of the workmen on the Project. Maintain these facilities in a sanitary condition. Use of Owner's existing toilet facilities will not be permitted.

- G. Temporary Fire Protection: Construction practices, including cutting and welding, and fire protection during construction shall be in accordance with applicable requirements of federal, state, and local authorities having jurisdiction. Provide prominently located multi-purpose portable fire extinguishers, with at least one in each wing on each floor.
 - 1. Gasoline and other flammable liquids shall be stored in Underwriter's Laboratories listed safety containers. Storage shall not be permitted within the building.
 - 2. Do not light fires of any kind in or about the premises. The use of salamanders is prohibited.
 - 3. Schedule the Work so that the permanent fire protection system is installed and made operable at the earliest possible date. At such time, the Contractor shall furnish sufficient hose to provide adequate coverage of each floor.
 - 4. All tarpaulins that may be used for any purpose during the construction of the Work shall be made of material which is resistant to fire, water, and weather.

- H. Elevators: Temporary use of elevators will be permitted only if acceptable to the ODR and elevator installer. Prior to such approved temporary use, provide the following:
 - 1. Arrange and pay for necessary approvals, elevator manufacturer's acceptance, and temporary use permits.
 - 2. Install temporary protection over hoistway entrances and doors, car doors and frames, car front returns and enclosures so that elevator work will be without damage at completion of Project. Repair or replace damaged work prior to Final Inspection.
 - 3. Provide and pay for power, operators, necessary signaling and safety devices, lights and other equipment, temporary protection and enclosures required for safe elevator operation.
 - 4. After temporary elevator use is discontinued, remove temporary protections and enclosures.
 - 5. Refer to appropriate section in Division 14 of these Specifications for additional requirements.

1.06 TEMPORARY AND PERMANENT SERVICE FOR NATURAL GAS

- A. The guidelines and procedures including forms for temporary and permanent service for natural gas can be found at <https://utilities.tamu.edu/guidelines-and-procedures-for-utility->

[service/](#)

1.07 PERMANENT UTILITY SERVICES IN CONSTRUCTION CONTRACTS

- A. The guidelines and procedures including forms for permanent utility services can be found at <https://utilities.tamu.edu/guidelines-and-procedures-for-utility-service/>

1.08 METERING FOR PERMANENT UTILITY SERVICES

- A. Most new campus facilities and major renovations of existing facilities will include work scope for establishing electronic utility metering. Metering devices will be certified “revenue-quality”, be of the type TAMU UES has standardized on, and will be connected electronically by the Owner to the campus building automation system or power monitoring system via campus Ethernet.
- B. Metering points in this project may include, but are not limited to, Electrical, Chilled Water flow and temperature difference, Heating Hot Water flow and temperature difference, Domestic Cold Water, Domestic Hot Water, and Steam. Together with the contract drawings, refer to Division 23 Mechanical, Division 26 Electrical, Division 27 Communications and other relevant divisions for meter specifications and installation instructions on all required utility metering, as well as system commissioning and project coordination.

1.09 CONSTRUCTION AIDS:

- A. Material and Personnel Hoists: The Contractor shall provide material hoists as required for normal use by all trades, without charge. The Contractor shall also provide a personnel hoist for the transportation of all workmen as required for normal use, without charge.
1. Employ qualified, skilled operators for the material and personnel hoists.
 2. Provide all necessary guards, signals, safety devices, required for safe operation, and suitable runways from hoists to each floor level and roof.
 3. The construction and operation of the hoists shall conform to all applicable requirements for the American Standard Safety Code for Building, the "Manual of Accident Prevention in Construction" of the AGC, and shall be approved by the insurance underwriters.
- B. Temporary Stairs, Ladders, Scaffolds, Runways, and Similar Facilities:
1. Provide and maintain all temporary equipment and construction such as temporary stairs, ladders, ramps, scaffolds, hoists, runways, derricks, chutes, and similar facilities as necessary for the proper execution of the Work. Derricks, cranes, and similar facilities shall comply with local airport restrictions.
 2. Provide temporary protective treads, handrails, and wall coverings at stairways.
 3. Scaffolding shall be furnished, installed, maintained, and removed as necessary for proper execution of the Work and shall be erected on the side of the wall on which facing work occurs. Scaffolding shall not be built into any finish facing material.

1.10 BARRIERS AND ENCLOSURES:

05/13

- A. General: Construct temporary barricades, warning signs, hazard and warning lights, walks, passage-ways, and similar temporary barriers and enclosures that are necessary to protect persons and property from hazards or damage due to construction operations, and required by university, city, state or federal laws, ordinances or codes.
- B. Construction Fences: Contractor shall furnish and install construction fences and gates within the "limits of construction", prior to beginning of work so as maintain area free of unauthorized personnel and which includes Project working area and storage locations allocated by the Owner to the Contractor. Keep adjacent property free from disturbance, dust, and noise as much as feasible.
- C. Non-Movable Fences: Fencing and gates shall be minimum 6'-0" high, new material, chain link fabric tightly stretched between line posts (1-5/8" O.D. galvanized iron) at not more than 10 foot centers. Tree protection posts shall be on 8 foot centers. Posts in earthen areas shall be plumbed and aligned, and firmly anchored in the ground at least 24" deep. Corner and gate posts (2-3/4" O.D. galvanized iron) shall have line posts within 6' and braced using clamps at posts. Posts that are machine pounded must be cut off flush and level at top. Gates shall be substantially constructed of materials similar to fence, equipped with hinges of adequate size and strength for operation and to maintain the gate level. Provide security chain and padlock at each gate with 2 keys furnished to ODR. In sensitive and high visibility areas, and where noted on the Drawings, install redwood slats vertically in the fence fabric to reduce public view of unsightly areas. Fence posts in permanently paved and sidewalk areas shall be set in 4" thick concrete bases, 24" square or 30" round.
- D. Movable Fences: Fences that need to be moved frequently for access to the Site or to be movable tree protection shall be 6' high posts, using 5" non-climb wire fabric, 12.5 gauge galvanized wire, 2" wide x 4" high openings, attached to posts set in concrete within an old tire to prevent post bases from marring pavements and sidewalks.
- E. Tree and Plant Protection: Provide barricades, fences, and guards as necessary to prevent damage to existing trees and shrubs indicated to remain including, but not limited to, the following construction operations:
 - 1. Compaction of root area by equipment or material storage,
 - 2. Trunk damage by moving equipment, material storage, nailing or bolting,
 - 3. Strangling by tying ropes or guy wires to trunks or large branches,
 - 4. Poisoning by pouring solvents, gas, paint and other toxic materials on or around trees and roots,
 - 5. Cutting roots by excavating, ditching and similar operations,
 - 6. Damaging branches by improper pruning; notify ODR for required pruning,
 - 7. Drought damage from failure to water or by cutting or changing normal drainage pattern past roots,
 - 8. Changes in soil pH factor by disposal of lime and other alkali based materials such as plaster, concrete, mortar and grout,
 - 9. Machine excavating within the drip line of trees; conduct all excavating within drip line by hand. Do not cut roots 1-1/2" in diameter and over.

- F. Tree Damage: When trees other than those indicated or approved for removal are destroyed, killed or badly damaged as a result of construction operations, the Contract Sum will be reduced by the amount determined from the following International Shade Tree Conference formula: $D \times D \times 0.7854 \times \28.00 , where D is the diameter of the trunk measure 12" above grade.
- G. Fence Maintenance and Removal: All fencing and gates shall be maintained deep, straight and level, having a neat and uniform appearance during the construction period and upon completion, before acceptance of the Work, shall be removed from the Site and post hole filled to original condition.
- H. Temporary Enclosures and Protection:
1. Provide temporary weather-tight enclosure at exterior walls for successive areas of the building as work progresses, as necessary to provide acceptable working conditions, provide weather protection for interior materials, allow for effective temporary heating, and to prevent entry of unauthorized persons.
 2. Temporary Partition and Ceiling Enclosures: Framing and sheet materials which comply with structural and fire rating requirements of applicable codes and standards.
 - a. Close joints between sheet materials, and seal edges and intersections with existing surfaces, to prevent penetration of dust or moisture.
 - b. Provide temporary doors with self-closing hardware and padlocks as required for security.
 - c. Provide removable portions of enclosures as necessary for work and for handling of materials.
 3. Protection of Installed Work: Provide protection for installed Work so that it will be without damage at time of acceptance by ODR. Control traffic to minimize damage. Provide protective coverings at walls, projections, jambs, sills and soffits of openings. Protect finish floors and stairs from traffic, movement of heavy objects, storage and similar construction operations. Prohibit traffic and storage on waterproofed and roofed surfaces, on lawn and landscaped areas.
 - a. Concrete, cement, mortar, grout, sludge, plaster and similar materials shall not be placed in or washed down storm and sanitary sewers, plumbing lines or fixtures.
 4. Protect improvements on Owner's and adjoining properties.
- I. Site: Unless otherwise specified or directed, carefully protect existing walks, lawns, other buildings, and other work on Site, whether specifically indicated on the Drawings or not. Damaged areas of curbs, walks and paving will not be permitted to be patched; remove entire section between expansion joints in which the damage occurs and replace with construction to match existing adjacent work.
- J. The Contractor is responsible for damage to the Work and injury to persons due to failure of barriers and enclosure of work to adequately protect it; and wherever evidence is found of such damage, the Owner may order the Work so damaged to be immediately removed and replaced by the Contractor. All costs and expenses for such occurrences shall be the responsibility of the Contractor at no additional expense to Owner. The Contractor's responsibility for maintenance of barriers and enclosure work, shall not cease until the Project

has been completed and is accepted by the Owner.

1.11 SECURITY:

- A. The Contractor shall provide a security program and facilities to protect the Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, and theft. Coordinate with Owner's security program. Project security within "limits of construction" is Contractor's responsibility.

1.12 PARKING, ACCESS ROADS AND TRAFFIC:

- A. Parking: Parking for workmen employed on the Site may be provided within construction limits or at a remote location, if needed, to the extent that space for that purpose may be available without interference with the activities related to performance of the Work. On campus parking, other than within construction limits, shall only be as approved by ODR. Contractor shall pay all associated parking fees.
 - 1. Reserved Parking: Allocate four (4) spaces convenient to the Project offices for use of the Owner and A/E.
- B. Provide temporary roads as required to bring vehicles onto the Site. Restore new paving used for construction operations to new condition prior to acceptance of Work by Owner.
 - 1. Restrict vehicles from doing unnecessary damage to the Site and any existing paving.
 - 2. Restore all new or existing improvements damaged by this Work to original condition, as acceptable to Owner or other parties having jurisdiction.
- C. Traffic Control: Prior to start of Work, examine construction vehicle routing, and establish safeguards and procedures necessary to carry out the Work. In addition, be responsible for and observe the following:
 - 1. Be responsible for controlling construction traffic within and adjacent to the Site.
 - 2. Provide all entrances, lifts and safeguards required or necessary to the progress of the Work, and effectively control such traffic to provide minimum hazard to the Work and all persons.
 - 3. Route all construction equipment, trucks, and similar vehicles on existing public streets to and from the Site as approved by the ODR or as indicated on the Drawings.
 - 4. Construct and maintain temporary walks for pedestrians. Keep streets adjacent to the Site open to vehicular and pedestrian traffic.
 - 5. Maintain constant access for police, fire and ambulance service.
 - 6. Provide and maintain for proper control of traffic and safety:
 - a. All necessary barricades, suitable and sufficient lights, reflectors, and danger signals,
 - b. Warning and closure signs, directional, and detour signs,
 - c. All traffic control devices furnished and installed in compliance with the Texas Manual on Uniform Traffic Control Devices as prepared by the State Department of Highways and Public Transportation.
 - 7. The Contractor shall provide on a 24 hour basis for all restricted and dangerous

conditions existing on or adjacent to the Site:

- a. For nighttime safety illuminate barricades, danger signals, warning signs and obstructions,
- b. Keep warning lights burning from sunset until sunrise.

1.13 TEMPORARY CONTROLS:

- A. **Cleaning During Construction:** Contractor at all times shall keep the premises free from accumulation of waste materials and rubbish caused by operations for the Work. Provide a collection can at each area used for eating. Pick up garbage daily. Keep Project Site free of garbage, trash, vermin and rodent infestation. Contractor, by agreement, shall require each Subcontractor to collect and deposit waste and rubbish caused by Subcontractor operations at pre-designated location. Clean interior areas prior to start of finish Work. Maintain areas free of dust and other contaminants during finishing operations.
- B. **Noise Control:** In and around occupied areas, minimize use of noise producing equipment. Work with noise-producing is subject, at all times, to ODR's approval of entire procedure. Use only on a scheduled basis as agreed with ODR prior to start of Construction operations.
- C. **Water Control:** Provide methods to control surface water to prevent damage to Project, site of adjoining properties. Control fill, grade and ditch to direct surface drainage away from excavations, pits, tunnels and other construction areas. Direct drainage to proper runoff.
 1. Provide, operate and maintain hydraulic equipment of adequate capacity to control surface and water.
 2. Dispose of drainage water in a manner to prevent flooding, erosion or other damage to any portion of site or to adjoining areas.
 3. Refer to the appropriate section in Division 2 of these Specifications for TPDES requirements.
- D. **Pollution Control:**
 1. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by discharge of noxious or hazardous substances from construction operations.
 2. Provide equipment, personnel and perform emergency measures required to contain any spillages, and to remove contaminated soil or liquids. Excavate and dispose of contaminated earth off site and replace with suitable compacted fill and topsoil.
 3. Take special measures to prevent harmful substances from entering public waters. Prevent disposal of wastes, effluents, chemicals or other such substances adjacent to streams or in sanitary or storm sewers.
 4. Provide systems for control of atmospheric pollutants. Prevent toxic concentrations of chemicals. Prevent harmful dispersal of pollutants into atmosphere.
- E. **Erosion Control:**
 1. Plan and execute construction and earthwork by methods sufficient to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent

erosion and sedimentation.

- a. Hold areas of bare soil exposed at one time to minimum.
 - b. Provide temporary control measures such as berms, dikes, and drains.
2. Construct fills and waste areas by selective placement to eliminate surface silts or clays which will erode.
 3. Periodically inspect earthwork to detect any evidence of start of erosion, apply corrective measures as required to control erosion.
- F. Dust Control: Provide positive methods and apply dust control materials to minimize raising dust from construction operations and provide positive means to prevent air-borne dust from dispersing into atmosphere.

1.14 PROJECT IDENTIFICATION AND SIGNS:

- A. Provide one construction sign shown on Contract Drawings and as specified below. No other signs may be installed anywhere on the Site (except delivery route signs deemed necessary by ODR), including signs advertising the sale of salvage.
1. Face Size: 4'-0" wide x 8'-0" high x 3/4" thick, located approximately 3'-0" above grade.
 2. Sign Faces: New 3/4" exterior grade medium density overlay plywood.
 3. Location of Sign, and Layout: By the A/E.
 4. Sign faces shall be painted a white background color. All lettering shall be accomplished by a professional sign painter and shall be in Helvetica Medium style, upper and lower case, in black color and shall include, but not be limited to the following information:
 - (1) Project Name.
 - (2) Architect's Name.
 - (3) General Contractor's Name.

1.15 FIELD OFFICES AND SHEDS:

- A. The Contractor shall provide its own field office and storage sheds on the Site and shall maintain until removal upon completion of the Work.
1. Provide weathertight construction office for Contractor with sufficient light, heating, air conditioning, ventilation, and insulated roof. General arrangement, construction, and equipment for office shall be reviewed with A/E and approved by ODR prior to starting construction. Provide adequate tables, plan racks, desk chairs, file cabinets of sufficient capacity to accommodate a copy of submittals and correspondence concerning the Project, and non-pay telephone.
 2. ODR Office: In a separate field office, provide a minimum of 672 sq. ft. with a minimum dimension of 12 feet for the exclusive use of the ODR and A/E. Minimum interior finish shall be 1/4" gum on fir plywood, good on one side for walls and ceiling, with vinyl composition tile floor. Walls, floor and ceiling shall be insulated with full thickness batt insulation. Exterior doors shall have locks with one key for each occupant. All exterior doors and windows shall also be secured with approved burglar type bars. General arrangement, construction and equipping of office must

- meet with the approval of the ODR. The office shall be equipped with the following:
- a. Separate Direct Line Telephone: Contractor shall pay for installation, maintenance, removal and all charges for use of one (1) telephone line including project related long distance calls. Coordinate with the ODR for the number and locations of phone jacks. Provide a minimum of three (3) phone jacks with at least one (1) in each office. The telephone lines shall remain until the full completion of the Work and shall be removed when directed by ODR. Contractor shall provide at least two (2) phones with speaker phone capabilities. Voice over IP (VOIP) phone system is acceptable if available.
 - b. Separate High Speed Internet: Contractor shall arrange for and pay for an internet provider service for the exclusive use of the owner, at a minimum, DSL high speed internet service. Coordinate with the ODR for the number and locations of data jacks. Provide a minimum of four (4) data jacks with at least one (1) in each office. Also provide a with dual-band wireless N router with four ports.
 - c. Heating, Ventilating and Cooling shall be accomplished through a central type unit that shall maintain 70 degrees F while heating and 75 degrees F while cooling. Maintenance and filter changes shall be by the Contractor.
 - d. Contractor shall provide a networkable LaserJet combination printer/scanner with wireless capabilities for the exclusive use of the ODR including service and printer cartridges.
 - e. Three (3) each office desks: 30" x 60" minimum size with swivel chairs.
 - f. Layout Counter/Plan Table: 30" x 60" minimum size with adjustable drafting stool.
 - g. Filing Cabinet: Two (2) four drawer legal size with lock.
 - h. Plan Rack: One plan rack to hold minimum of (12) 30" x 42" sets of drawings. Rack shall be equal to a Safco Mobile Stand SAF 5026 with plan clamps.
 - i. Lighting shall be of sufficient quantity to provide for proper office atmosphere.
 - j. Convenience Outlets: A minimum of two duplex convenience outlets per office.
 - k. Window: Operable windows minimum equal in size to 10% of the floor area, located to provide view to construction area.
 - l. Waste Baskets: Four (4).
 - m. Shelving: Six feet of 12" deep shelving.
 - n. Maintenance: Keep office weather-tight, warm, cool, comfortable, and swept clean and remove refuse twice weekly. Provide soap, paper towels, toilet paper.
 - o. Provide within Owner's Field Office, a toilet room with lockable door and one (1) lavatory equipped with hot water and one (1) water closet.
 - p. Provide electric water cooler additional hot water dispensing and with bottled water and appropriate service.
 - q. Provide two (2) each 30 inch by 72 inch folding tables with ten (10) each folding chairs or other seating as required by ODR.
 - r. Provide a minimum 8' x 8' covered landing with steps and handrails at one or both doors of the trailer as required by ODR.
3. Provide and maintain suitable, substantial, weather-tight storage facilities of acceptable appearance in which to store materials which would be damaged by the

weather. Storage space shall be of sufficient size to hold all such materials required on Site at one time, and if the storage space is outside the building, it shall have floors raised at least 6" above the ground on heavy joists or sleepers. Provide fenced areas for storage of materials and workmen's parking of the sizes and of locations designated on the drawings. Should the Contractor require additional storage area beyond that indicated on the Site, contractor shall arrange for such storage facilities off-campus, at no additional cost to the Owner. Contractor may use areas within the immediate construction area for storage only with the approval of the ODR. However, such approval will not be given if such storage encumbers the working space, loads the structure prematurely, or exceeds the design live load for the specified area of the structure.

4. Building materials, Contractor's equipment and similar items necessary for prosecution of the Work may be stored on the premises, the placing and handling of same shall be such that they can be inspected at all times.
5. When any area in the building is used for a storeroom, shop or similar use, the Contractor shall be responsible for repairs, patching, and cleaning arising from such use. All such replacement costs and expenses shall be borne by contractor at no additional expense to Owner.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. General Requirements.
- B. Manufacturer's Instructions
- C. Transportation and Handling.
- D. Storage and Protection.

1.02 RELATED SECTIONS:

- A. Section 01 11 00 - Summary of Work.
- B. Section 01 25 00 - Substitution Procedures.
- C. Section 01 31 00 - Project Management and Coordination.
- D. Section 01 33 00 - Submittal Procedures: List of Materials.
- E. Section 01 50 00 - Temporary Facilities and Controls: Material Storage Facilities.
- F. Section 01 77 00 - Closeout Procedures.

1.03 GENERAL REQUIREMENTS:

- A. In addition to Uniform General and Supplementary Conditions, Article 8 (UGSC 8.1), Contractor shall use materials and equipment that are:
 - 1. New, unless otherwise specified, and that are of good quality, free from faults and defects, and in conformance with the requirements of the Contract Documents.
 - 2. Suitable for use and function intended.
 - 3. Corresponding in quality to related materials in the absence of a complete specification.
 - 4. Of quality appearance where exposed to view.
 - 5. Of one manufacturer or source for the same specific purpose, with uniform appearance and physical properties.
 - 6. Interchangeable and be the same, when required to be supplied in quantity.
 - 7. Free of name, trade mark, or other insignia which is intended to identify the manufacturer, vendor, or other source(s) which is surface applied or affixed to any manufactured articles, materials, and items of equipment in any public area or similar locations within the Project. Any manufactured articles, materials, and items of equipment which bears evidence that an insignia, name, or trade mark has been removed shall not be used. Code required labels, such as Underwriters Laboratory labels, and other identification required by the Contract Documents are accepted.

- B. Product Color, Texture, or Pattern Selection: No work requiring the A/E's review for color, texture and pattern selection shall be fabricated, delivered or installed prior to review and selection by the A/E.
1. Contractor shall select products of a named manufacturer that complies with the specified requirements and submit the full range of available colors, textures, patterns, including custom colors, textures and patterns for the A/E's selection. All subsequently approved products of other manufacturers are approved contingent upon availability of equivalent colors, textures, and patterns available to the A/E for selection.
 2. When "match existing color" is indicated or specified, Contractor shall, in addition to material and construction requirements specified elsewhere, match existing color, texture, and pattern in every respect, as approved by the A/E.
 3. When materials have a natural range of color, texture, and pattern such as natural stone, brick, tile, anodized aluminum finish and other exposed materials and finishes, the Contractor shall submit required number of sets of ranges of color, texture, and pattern, including representative naturally occurring defects as appropriate, for the A/E's review. All work fabricated and installed shall be within range of samples approved by the A/E. In addition, Contractor shall refer selection of raw materials containing defects within limits of the A/E's approved range of samples, to the A/E to provide distribution of such throughout required work so as to avoid patterns and concentrations of such defects.
- C. Source Limitations: To the fullest extent possible, provide products of the same generic kind, from a single source, for each item of the Work.
1. When specified products are available from only sources that do not or cannot produce an adequate quantity to complete Project requirements in a timely manner, consult with the A/E for a determination of what product qualities are most important before proceeding. The A/E will designate those qualities, such as visual, structural, durability, or compatibility, that are most important. When Architect's determination has been made, select products from those sources that produce products that possess the most important qualities, to fullest extent possible.
- D. Compatibility of Options: Where product options are permitted, select products that are compatible with other products to be incorporated into the Work, including products previously selected.

1.04 MANUFACTURER'S INSTRUCTIONS:

- A. Install products in accordance with manufacturer's printed instructions. Obtain and distribute copies of such instructions to installer, including one copy to the A/E and one to the ODR. Maintain one set of complete instructions at the Site

during installation and until completion.

- B. Manufactured articles, materials, and items of equipment shall be handled, stored, applied, installed, connected, erected, used, cleaned, adjusted, conditioned, and protected in accordance with manufacturer's printed instructions and specifications for the Project conditions indicated, within manufacturer's published limitations, and requirements specified.
- C. Should any manufactured articles, materials, and items of equipment be found to be damaged, deteriorated, or otherwise contrary to the requirements of the Contract Documents, remove and replace such damaged or deteriorated articles, materials, and items of equipment, no matter in what stage of completion and replace with new materials.
- D. Should Project conditions or specified requirements be in conflict with manufacturer's instructions, request written clarification from the A/E before proceeding. Do not proceed with work without clear instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.
- E. Keep a copy of material safety data sheets for all products used in the Work, at Contractor's field office.

1.05 TRANSPORTATION AND HANDLING (UGSC 3.3.4):

- A. Arrange deliveries of materials and products in accordance with Construction Progress Schedule.
- B. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
- C. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- D. Promptly inspect shipments to ensure that products comply with requirements of the Contract Documents and approved submittals, that quantities are correct, and products are undamaged.

1.06 STORAGE AND PROTECTION:

- A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products, including factory-finished items and similar work, in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions. Comply with applicable laws, ordinances and regulations for protective storage of potentially dangerous materials.

- B. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
- C. Store loose granular materials on solid surfaces in a well-drained area and prevent mixing with foreign matter.
- D. Arrange storage to provide access for inspection at all times. Periodically inspect to assure products are free from damage or deterioration, and are maintained under required conditions.
- E. At end of each day's work, cover new work likely to be damaged. Provide substantial coverings necessary to protect installed products from damage, traffic, and subsequent construction operations. Refer to Section 01 50 00 for additional requirements, including removal of temporary protections.
- F. Contractor shall provide inspection of Subcontractor's material for compliance with submittals on proper storage.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 01 72 50

FIELD ENGINEERING
(UGSC 6.1.5)

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Performance requirements.

1.02 RELATED SECTIONS:

- A. Section 01 11 00 - Summary of Work.
- B. Section 01 78 00 - Closeout Submittals.

1.03 PERFORMANCE REQUIREMENTS:

- A. General: Provide and pay for field engineering services including survey, layout, civil, structural or other licensed professional engineering services specified, or required to execute the Work.

PART 2 – PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Verify locations of survey control points prior to starting Work.
- B. Verify all dimensions and compare to existing conditions prior to laying out the Work. Promptly notify the A/E of discrepancies discovered. Extra compensation will not be allowed because of differences between actual measurements and indicated dimensions.

3.02 SURVEY AND LAYOUT REQUIREMENTS:

- A. Establish a minimum of two (2) permanent bench marks on the Site, referenced to data established by survey control points. Record locations, with horizontal and vertical data, on Project record documents. Data to be verified by licensed surveyor.
- B. Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction.
 - 1. Make no changes or relocations without prior written notice by ODR.

2. Report to A/E and ODR when any reference point is lost or approval destroyed, or requires relocation because of necessary changes in grades or locations.
 3. Require surveyor to replace Project control points which may be lost or destroyed. Establish replacements based on original survey control.
 4. Maintain a complete, accurate log of all control and survey Work as it progresses.
- C. Establish adequate and clearly defined reference lines and levels required for execution of Work; locate and lay out, by instrumentation and similar appropriate means, controlling lines and levels required for the various trades.
- D. From time to time verify layouts by the same methods.
- E. Underground Obstructions:
1. Pipelines, existing underground installations and underground structures in vicinity of Work are diagrammatically shown on Drawings according to best information available. Accuracy of information is not warranted.
 2. Verify location of underground pipe lines, conduits and structures with Owner and by prospecting in advance of excavation.
 3. Repair damage to existing utilities made during construction process as part of Work to satisfaction of Owner.

3.03 SURVEY:

- A. On completion of foundation walls and major site improvements, prepare survey by licensed surveyor showing dimensions, locations, angles, and elevations of construction.

END OF SECTION

SECTION 01 73 50

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Submittals required.
- B. Materials required.
- C. Procedures for cutting and patching.

1.02 RELATED SECTIONS:

- A. Section 01 11 00 - Summary of Work.
- B. Section 01 25 00 - Substitutions Procedures.
- C. Section 01 31 00 - Project Management and Coordination.
- D. Section 01 60 00 - Product Requirements.
- E. Other Technical Sections:
 - 1. Cutting and patching required being performed incidental to Work of the Section.
 - 2. Advance notification to trades responsible for Work of other Sections
 - 3. Coordination of trades responsible for Work of other Sections.

1.03 SUBMITTALS:

- A. Submit written request sufficiently in advance to allow ODR and A/E time to adequately review and make a determination of approval of cutting, drilling, or alteration which affects:
 - 1. Work of Owner or any separate Contractor.
 - 2. Structural value or integrity of any element of Project.
 - 3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
 - 4. Efficiency, operational life, maintenance, or safety of Project equipment elements.
 - 5. Visual qualities of sight-exposed elements.
 - 6. Damage to existing Work or utilities.
- B. Include in request:
 - 1. Identification of Project.
 - 2. Location and description of affected Work.
 - 3. Necessity for cutting, drilling, alteration, or excavation.
 - 4. Effect on Work of Owner or any separate Contractor, or on structural or

- weatherproof integrity of Project.
5. Description of proposed Work:
 - a. Scope of cutting, patching, alteration or excavation.
 - b. Trades who will perform the Work.
 - c. Products proposed to be used.
 - d. Extent of refinishing to be done.
 6. Alternative to cutting, drilling, patching, and excavation.
 7. Written permission of separate contractors who's work is affected.
 8. Date and time Work will be performed.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Provide materials and procedures required for original installation.
- B. For any change in materials, submit request for substitution under provision of Section 01 25 00 - Substitution Procedures.

PART 3 - EXECUTION

3.01 GENERAL:

- A. Field Conditions: Check and verify Contract Documents and field conditions before proceeding with Work. If there are any questions regarding these or other coordination questions, the Contractor is responsible for obtaining clarification from the A/E before proceeding with Work or related Work in question.
- B. Execute cutting, drilling, and patching, including excavation and fill as required to complete the Work, and to:
 1. Fit the several parts together, to integrate with other Work.
 2. Uncover Work to install ill-timed Work.
 3. Remove and replace defective and non-conforming Work.
 4. Remove samples of installed Work for testing.
 5. Provide openings in elements of Work for penetrations of mechanical and electrical work.
 6. Uncover Work to allow for A/E's and ODR's observation of Work which has been covered prior to observation by A/E and ODR.

3.02 INSPECTION:

- A. Inspection: Carefully examine the premises to determine the extent of Work and the condition under which it must be done, including elements subject to movement or damage during cutting, patching, excavating and backfilling. No extra payments will be allowed for claims for additional work that could have

been determined or anticipated by such inspection. After uncovering Work, inspect conditions affecting installation of new products.

- B. Beginning of cutting, drilling, or patching means acceptance of existing conditions.

3.03 PREPARATION:

- A. Preparation Prior to Cutting: Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of Work. Provide protection from elements for that portion of the Project which may be exposed by cutting and patching work, and maintain excavations free from water.
- B. Protection: Provide barricades, coverings, fences, supports, and similar temporary protections necessary to protect persons and property from injury or damage as a result of Work of this Section. Confine operations to required limits and take reasonable precautions to protect remainder of property from damage.
- C. Dust Control: Control dust resulting from cutting and patching to prevent the spread of dust to adjacent occupied areas and to avoid creation of a nuisance in the adjacent surrounding area. Use of water will be permitted as indicated. Provide drop cloths or other suitable barriers to prevent dust from traveling to adjacent areas. Seal off return air registers or other mechanical systems to prevent dust from entering such systems.

3.04 PERFORMANCE:

- A. Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- B. Employ original installer to perform cutting and patching for weather-exposed, moisture-resistant elements, sight-exposed surfaces, and to preserve Owner's warranties and bonds for Work of this Contract and related work of other contracts.
- C. Cut rigid materials using masonry saw or core drill. Pneumatic tools are not allowed without prior written approval by the ODR.
- D. Restore Work which has been cut or removed using new products in accordance with requirements of Contract Documents.
- E. Fit and seal interior Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Fit and seal for watertightness all penetrations through exterior envelope and through slabs.
- F. At penetrations of fire-rated wall, ceiling, or floor construction, completely seal

all voids with fire stopping and sealant material, full thickness of the construction element to provide a smoke seal and penetration rating equivalent to adjacent rated construction. Refer to appropriate sections of Division 7 in these Specifications for requirements.

- G. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit as follows:
 - 1. Walls: From floor to ceiling and between the nearest corner. New gypsum board construction meeting existing construction in same plane shall be flush with no visible joint showing,
 - 2. Ceiling: The complete surface,
 - 3. Floor: The complete surface unless otherwise shown or unless a matching patch in applied finishes can be made acceptable to A/E and ODR,
 - 4. Openings: The entire unit including frame,
 - 5. Painted Cabinets: The entire painted surface,
 - 6. Transparent Finish Cabinets: Finish new surfaces to match existing,
 - 7. Base: Between the nearest corners.

- H. Excavation: Refer to appropriate sections of these Specifications.

- I. Damage: Restore accidental or careless damage to Work to a condition as good as or better than existed before Work was commenced and at no additional cost to the Owner.

END OF SECTION

SECTION 01 74 00

CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. General requirements for cleaning.
- B. Materials for cleaning.
- C. Procedures for cleaning.

1.02 RELATED SECTIONS:

- A. Section 01 11 00 - Summary of Work.
- B. Section 01 33 00 - Submittal Procedures.
- C. Section 01 50 00 - Temporary Facilities and Controls.
- D. Section 01 77 00 - Closeout Procedures.

1.03 GENERAL REQUIREMENTS:

- A. General: In addition to Uniform General and Supplementary Conditions, Article 3 (UGSC 3.3.8), provide progress and final cleaning as specified in this section.
- B. Progress Cleaning: Keep premises and public properties free from accumulations of waste, debris and rubbish, caused by operations. Maintain Project in accord with State and local safety, health, and insurance standards.
- C. Final Cleaning: At completion of Work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all exposed surfaces of building and Project Site, including crawl spaces; leave Project clean and ready for occupancy.
- D. Final Inspection: Prior to final inspection, clean all surfaces and remove all debris from project.

PART 2 - PRODUCTS

2.01 CLEANING MATERIALS:

- A. Use materials which will not create hazards to health or property, and which will not damage surfaces.
- B. Use only materials and methods recommended by manufacturer of material being cleaned.

PART 3 - EXECUTION

3.01 CLEANING:

- A. In addition to removal of debris and cleaning specified in other sections, clean interior and exterior exposed-to-view surfaces affected by Work of this Contract.
- B. Hazards Control: Store volatile waste in covered metal containers and remove from premises daily. Prevent accumulation of wastes which create hazardous conditions. Provide adequate ventilation during use of volatile or noxious substances.
- C. Clean permanent filters of ventilating equipment and replace disposable filters when units have been operated during construction; in addition, clean ducts, blowers, and coils when units have been operated without filters during construction.
- D. Remove waste, debris, and surplus materials from site. Clean paving areas, walks, drives and streets in the vicinity of the building; remove mud, rubbish, waste, stains, spills, and foreign substances from paved areas and sweep clean. Immediately clean any mud tracked out of the construction area to adjacent drives and streets by vehicles and equipment.
- E. Keep the entire construction area clean and at least weekly conduct a general clean-up operation.
- F. Keep grass/weeds cut at all times within the limits of construction; maximum time interval in growing season is two weeks.
- G. Periodically inspect, tighten and realign construction/tree protection fencing.
- H. Do not burn or bury rubbish and waste materials on the Project site.
- I. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm, sanitary drains or into the soil.
- J. Do not dispose of rubbish and wastes into streams or waterways.
- K. Do not dispose of excess concrete on the Project Site or campus.
- L. Wet down rubbish and waste to subdue dust and prevent it from blowing.
- M. Provide on Site containers for collection of waste, debris and rubbish. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights. Do not fence, block, cover, and otherwise make inaccessible, for Owner's use, any waste containers located inside or outside

construction limits.

- N. Remove temporary protection and labels not required to remain.
- O. Just prior to painting and similar finishing operations, clean interior areas ready to receive finish, and continue cleaning as needed, until building is ready for Substantial Completion.
- P. Disposal: Remove waste materials, debris and rubbish from the Project Site and provide for legal disposal at a Texas Department of Health (TDH) permitted solid waste facility. In hauling material from the Project Site, Contractor shall prevent debris from dropping from vehicles and littering the campus or area streets and roads. Contractor shall promptly remove any debris which falls from vehicles.

3.02 FINAL CLEANING

- A. Employ experienced workmen or professional cleaners and perform cleaning in accordance with manufacturer's written recommendations, using products approved by the manufacturer for material being cleaned.
- B. Prior to final inspection and the Owner's acceptance of the Work, perform final cleaning of all areas of the building and Project Site, performing all operations specified in the various Sections of Project Specifications. Final cleaning operations include, but are not limited to:
 - 1. Remove waste, debris, and surplus materials of any nature from Site. Clean paving areas in the vicinity of the building; remove stains, spills, and foreign substances from paved areas and sweep paved areas clean and rake clean other surfaces of grounds,
 - 2. Broom cleaning of all exposed concrete floors,
 - 3. Cleaning all stonework,
 - 4. Cleaning all exposed painted and unpainted metals,
 - 5. Cleaning all architectural woodwork,
 - 6. Cleaning all doors and polish hardware; removing excess paint and stains,
 - 7. Cleaning all glass areas, exterior and interior,
 - 8. Cleaning all storefront framing and doors, and glazed wall system members, exterior and interior,
 - 9. Cleaning all walls and floors,
 - 10. Cleaning of resilient flooring, ready for waxing by campus personnel,
 - 11. Vacuum all carpeted floors,
 - 12. Cleaning all toilet partitions, fixtures, and accessories,
 - 13. Cleaning all exposed surfaces of light fixtures, including removal of construction dust, paint overspray, finger prints, and similar soiling from light fixture bodies, reflectors, and both sides of light fixture lenses,
 - 14. Removing and disposing of all temporary protections,
 - 15. Repair, patch and touch-up marred surfaces to match adjacent surfaces,

16. Prior to Final Completion, inspect exposed interior and exterior surfaces and work areas to verify that entire work is clean.
- C. Clean finishes free of dust, stains, films, and other foreign substances.
- D. Clean transparent and glossy materials to a polished condition; remove foreign substances. Polish reflective surfaces to a clear shine.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES
(UGSC 12.3)

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Instruction of using personnel.
- B. Submittals.

1.02 RELATED SECTIONS:

- A. Section 01 11 00 - Summary of Work.
- B. Section 01 32 00 - Construction Progress Documentation.
- C. Section 01 33 00 - Submittal Procedures.
- D. Section 01 50 00 - Temporary Facilities and Controls.
- E. Section 01 74 00 - Cleaning.
- F. Section 01 78 00 - Closeout Submittals

1.03 INSTRUCTION OF USING PERSONNEL:

- A. The Contractor will provide demonstrations; conduct training and familiarization sessions for physical plant/User personnel on the mechanical and electrical systems in the facility prior to Substantial Completion inspection. Arrangements for these instruction periods shall be made by the ODR. Operation and maintenance manuals must be available and used during this training period. Refer to Section 01 78 00 for requirements of operating and maintenance manuals.

1.04 SUBMITTALS:

- A. Refer to Section 01 29 00 - Payment Procedures for required administrative action and submittals which must precede or coincide with Contractor's final payment application. Contractor shall deliver these submittals to A/E for transmittal to Owner, properly executed, in one package, prior to the request for final payment.
- B. Final Completion (UGSC 12.1.5.3): Submit written request for Final Completion inspection and the following:
 - 1. Certification that Work is complete and Owner has full access and use of completed work, Contract Documents have been reviewed, and systems and equipment have been tested, are operational and User personnel have received proper instruction and training on equipment and systems.
 - 2. Copy of list of items to be completed or corrected from Substantial

- Completion Inspection, with each item initialed and showing date completed.
3. Evidence of compliance with requirements of governing authorities:
 - a. Certificates of occupancy.
 - b. Certificates of final inspection for elevator, plumbing, mechanical, fire protection, electrical, and other systems required by governing authorities.
 4. List of all Subcontractors and material suppliers and product description. Provide name, address, and complete phone number:
 - a. Product manufacturer.
 - b. Installer (Subcontractor).
 - c. Local representative.
 - d. Local source of supply for parts and replacement.
 5. Submit test/adjust/balance records; start-up performance reports, and other information relevant to Owner's occupancy.
 6. Clean-up: Refer to Section 01 74 00 for requirements.
 7. Deliver all special tools and keys in relation to project equipment and devices to ODR.
 8. Instruction Logs for Instruction of Owner's Operating Personnel: Refer to Section 01 78 00 for requirements.
 9. Warranties: Refer to Section 01 78 00 for requirements.
 10. Keys, Keying Schedule, and Changeover of Locks: Refer to appropriate section in Division 8 of these Specifications for requirements.
 11. Spare Parts and Maintenance Material: Refer to appropriate Sections in this Specification for requirements.
 12. List of Contractor's incomplete work, recognized as exceptions to Owner's Certificate of Final Acceptance.
 13. Certificate of Insurance for Products and Completed Operations.
 14. Final Application for Payment.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01 78 00

CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Operating and maintenance manuals
- B. Maintenance instruction.
- C. Maintenance materials.
- D. Warranties.
- E. Project record documents.

1.02 RELATED SECTIONS:

- A. Uniform General and Supplementary Conditions, Article 13 - Warranty & Guarantee.
- B. Section 01 33 00 - Submittal Procedures.
- C. Section 01 77 00 - Closeout Procedures.
- D. Individual Specification Sections: Special Project Warranties

1.03 OPERATING AND MAINTENANCE MANUALS (UGSC 12.3.2):

A. FORMAT:

1. Prepare prior to final inspections five (5) sets of operating and maintenance data in a USB flash drive., ~~each containing data bound in commercial quality 3 ring binders with plastic covers. Minimum binder size 2".~~ Also, ~~provide two (2) digital copies on cd rom of~~ Provide all operating and maintenance manuals in Adobe Acrobat format which are indexed and searchable.

2. ~~Cover: Identify each volume, front cover and spine, with type or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS", name of Project, Project No., location, Contractor, date of Substantial Completion and Volume Number.~~

3. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Specification. Include Bookmark Tab for each section number, systems and equipment number.

4. The work covered by these manuals will not be accepted nor will the Final Inspection and Acceptance be conducted until the ODR has received the manuals. The A/E will check for compliance with the specifications and furnish the approved copies to the ODR, who will make distribution. ***Payment will be withheld unless O&M Manuals submitted are in accordance with this specification.***

B. CONTENTS, EACH VOLUME:

1. Arrange typewritten table of contents for each volume, in systematic order:
2. A list of each product required to be included with name, address and telephone number of:
 - a. Subcontractor or installer.
 - b. Maintenance contractor, as appropriate.
 - c. Local source of supply for parts and replacement.
3. Identifying each product by product name and other identifying symbols.
4. Product Data:
 - a. Include only those sheets which are pertinent to specific product with product clearly identified.
 - b. Delete references to inapplicable information.
5. Drawings:
 - a. Supplement product data with drawings as necessary to clearly illustrate relations of component parts of equipment and systems and control and flow diagrams.
 - b. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.
6. Written Text: As required to supplement product data for particular installation to provide logical sequence of instructions for each procedure.
7. Miscellaneous Data:
 - a. Furnish copy of each warranty, bond and service contract issued.
 - b. Furnish proper procedures in event of failure and instances which might affect validity of warranties or bonds.

C. MANUAL FOR MATERIALS AND FINISHES:

1. Architectural Products, Applied Materials, and Finishes:
 - a. Provide manufacturer's data giving full information on product:
 - (1). Catalog number, size and composition.
 - (2). Color and texture designations.
 - (3). Information required for re-ordering special manufactured products.
 - b. Provide instructions for care and maintenance including:
 - (1). Manufacturer's recommendation for types of cleaning agents and methods.
 - (2). Cautions against cleaning agents and methods which are detrimental to product.
 - (3). Recommended schedule for cleaning and maintenance.
 - c. Provide a summary listing of all exterior and interior colors.
2. Additional Requirements: Refer to respective Specification Sections.

~~**D. MANUAL FOR EQUIPMENT AND SYSTEMS:**~~

1. ~~Each Type of Equipment and System:~~

- ~~a. Provide description of unit and component parts including:
 - ~~(1). Function, normal operating characteristics and limiting conditions.~~
 - ~~(2). Performance curves, engineering data and tests.~~
 - ~~(3). Complete nomenclature and catalog number of replaceable parts.~~
 - ~~(4). Dimensional drawing.~~~~
- ~~b. Operating Procedures: Include the following.
 - ~~(1). Start up, break in, routine and normal operating instructions.~~
 - ~~(2). Regulation, control, stopping, shut down and emergency instructions.~~
 - ~~(3). Summer and winter operating instructions.~~
 - ~~(4). Special operating instructions.~~~~
- ~~c. Maintenance Procedures: Include routine procedures and guide for trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing and checking instructions.~~
- ~~d. Provide servicing and lubrication schedule including list of lubricants required.~~
- ~~e. Include manufacturer's printed operating and maintenance instructions.~~
- ~~f. Describe sequence of operation by control manufacturer.~~
- ~~g. Include original manufacturer's parts list, price lists, illustrations, assembly drawings and diagrams required for maintenance, predicted life of parts subject to wear and items recommended to be stocked as spare parts.~~
- ~~h. Include control diagrams by controls manufacturer.~~
- ~~i. Coordinate drawings and color coded piping diagrams.~~
- ~~j. Schedule valve tag numbers with location and function of each valve.~~
- ~~k. Include water treatment procedures and tests.~~
- ~~l. Include final balancing reports for mechanical systems.~~

2. ~~Each Electric and Electronic System:~~

- ~~a. Provide description of system and component parts including:
 - ~~(1). Function, normal operating characteristics and limiting conditions.~~
 - ~~(2). Performance curves, engineering data and tests.~~
 - ~~(3). Complete nomenclature and catalog number of replaceable parts.~~~~
- ~~b. Panelboard Circuit Directories: Provide electrical service characteristics, controls and communications.~~
- ~~c. Include color coded wiring diagrams.~~
- ~~d. Operating Procedures: Include start up, break in, and routine and~~

~~normal operating instructions and sequences. Include regulation, control, stopping, shut down, and emergency instructions. Include summer, winter, and any special operating instructions.~~

~~e. Maintenance Procedures: Include routine procedures and guide for trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.~~

~~f. Include manufacturer's printed operating and maintenance instructions.~~

~~g. Provide list of original manufacturer's spare parts, manufacturer's current prices and recommended quantities to be maintained in storage.~~

~~h. Electrical coordination study.~~

~~i. Special systems wiring diagrams.~~

~~3. Include warning of detrimental maintenance practices.~~

~~4. Prepare and include additional data when need for such data becomes apparent during instruction of Owner's personnel or as required under pertinent Specification Sections.~~

E. SUBMITTALS:

1. Submit completed manuals to A/E for review and transmittal to ODR thirty plus (30+) days prior to Substantial Completion Inspection.
2. Submittal of operating and maintenance manuals shall be prior to instruction of Owner's operating and maintenance personnel.

1.04 MAINTENANCE INSTRUCTION:

A. SUBMITTALS:

1. Submit preliminary copy of "Instruction of Owner's Operating and Maintenance Personnel" report for each system or item requiring instruction, on photocopy of form provided herein, at least 60 days prior to instruction date.
2. Submit fully completed forms upon completion of all instruction.

B. QUALITY ASSURANCE:

1. Instruction shall be done by personnel trained and experienced in maintenance of described products and operation of described equipment and systems, and familiar with requirements of this Section.

C. SCHEDULING:

1. Do not perform instruction until systems and equipment have been inspected and approved.
2. Complete all instruction prior to Substantial Completion.

D. INSTRUCTION OF OWNER'S PERSONNEL:

1. Instruct Owner's designated personnel in operation and maintenance of systems and equipment. Use Operating and Maintenance Data specified in this section as basis for instruction.
2. Furnish specialized tools required to operate and maintain systems and equipment for Owner's use.
3. Provide level of instruction commensurate with system or item requiring instruction. Some items may require multiple training sessions at different times due to Owner's 24 hours per day operation.
4. Explain contents and use of Operation and Maintenance Data.
5. Explain operating sequences as follows:
 - a. Show location and operation of switches, valves and other such devices used to start, stop and adjust systems.
 - b. Explain use of flow diagrams, operating sequence diagrams and other such devices.
 - c. Demonstrate operation through complete cycles and full range of operation through all modes, including testing and adjusting relevant to operation.
6. Explain use of control equipment, including temperature settings, switch modes, available adjustments, reading of gauges, and functions that must be serviced by factory-authorized representatives.
7. Explain trouble-shooting procedures; demonstrate problems which commonly occur, and their resolution, and note procedures which must be performed by factory authorized personnel.
8. Explain maintenance procedures and requirements, including items requiring periodic maintenance. Demonstrate preventive maintenance procedures and recommended maintenance intervals. Demonstrate other maintenance procedures not part of periodic maintenance program. Identify maintenance materials to be used.

1.05 MAINTENANCE MATERIALS

A. GENERAL:

1. Assemble spare parts and maintenance materials as required in individual Specification Sections. Deliver in clean packaging identified with manufacturer's name, trade name, stock number, size, color, and other similar information identifying products. Identify building and location in building where item is used or with what it is used. Include name, address and telephone number of local supplier.
2. Deliver to ODR, prior to Final Inspection, at a location within three (3) miles of Project Site as directed by ODR. Include a letter of transmittal with delivery with a copy to A/E listing materials provided.

1.06 WARRANTIES

A. WARRANTY SUBMITTAL (UGSC 13.1 & 13.5):

1. Warranty Format: Assemble warranties executed by respective manufacturers, suppliers, subcontractors and Contractor as follows:
 - a. Size: 8-1/2" x 11". Punch sheets for 3-ring binder; fold larger sheets to fit into durable binders.
 - b. Cover: Identify each packet with type or printed title "WARRANTIES". List title of Project and name of Contractor.
 - c. Table of Contents: Neatly typed, using table of contents of Project Specification as format.
 - d. Procedures to be followed in case of failure.
 - e. Quantity: Provide two (2) sets.
2. Warranty Forms: Except as otherwise specified, Contractor shall execute in duplicate on Contractor's letterhead, the Project Warranty for General Construction and special Warranties required by various Specification Sections, on the warranty forms which follow at end of this Section.
3. Warranty Effective Date:
 - a. For portions of Work accepted by Owner prior to Final Completion: Date of Substantial Completion and Early Occupancy.
 - b. For portions of Work accepted by Owner at Final Completion: Date of Substantial Completion or Final Completion whichever occurs sooner.

B. PREPARATION:

1. Obtain warranties and guarantees, executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten (10) days after completion of the applicable item or work. Except for items put into service with Owner's permission, warranty begins with date of Substantial Completion in accordance with Uniform General and Supplementary Conditions, Article 13.
2. Verify that documents comply with requirements of Contract Documents, are in form approved by Owner, contain full information. As a minimum, each warranty shall contain:
 - a. Name and location of Project.
 - b. Name and address of Contractor.
 - c. Product or work item.
 - d. Scope of warranty.
 - e. Date of beginning and duration of correction period for warranty.
3. Retain warranties until time specified for submittal.

C. TIME OF SUBMITTALS:

1. For equipment or component parts of equipment put into service with Owner's permission, submit documents within ten (10) days after acceptance.
2. Make other submittals within ten (10) days after Date of Substantial

Completion, prior to Final Application for Payment.

D. SCHEDULE OF SUBMITTALS:

1. Refer to Sections 01 33 00 and 01 34 00 for Schedule of Submittals.

E. WARRANTY ADMINISTRATION

1. A representative of the User (usually the Physical Plant Director) will be the Owner's point of contact for all warranty work. When disagreements develop between the Warranty Administrator and the Warrantor, the Director, Office of Facilities Planning and Construction will act for the User.

1.07 PROJECT RECORD DOCUMENTS (UGSC 6.2)

A. GENERAL:

1. Maintain at the Site for the Owner one record copy of:
 - a. Drawings,
 - b. Specifications,
 - c. Addenda,
 - d. Change Orders and other modifications to the Contract,
 - e. A/E's field orders and other written instruction,
 - f. Approved shop drawings, product data, and samples,
 - g. Field test records,
 - h. Other records required throughout construction by ODR.
2. Maintenance of Record Documents and Samples:
 - a. Store documents and samples in Contractor's field office apart from documents used for construction. Provide files and racks for storage of documents. Provide locked cabinet or secure storage space for samples.
 - b. File documents and samples in accordance with Drawing Index and Specification Table of Contents.
 - c. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
 - d. Make documents and samples available at all times for inspection by A/E and ODR.
 - e. Record Prints will be reviewed monthly by the ODR and A/E. This will be a requirement for issuance of a Certificate for Payment.

B. RECORDING:

1. Label each document and each sheet of the record drawing set as constructed, "As Constructed" in stamped or printed letters (per UGSC 6.2.2).
2. Record information concurrently with construction progress. Make entries within 24 hours after receipt of information. Do not cover-up items required to be

shown on Project Record Documents until recorded.

3. Utilize skilled draftspersons to make neat legible notations on record documents to record actual construction as follows:

a. Location of underground utilities and appurtenances covered by construction, referenced by an elevation and dimension to visible and accessible features of structure.

b. Location of internal utilities and appurtenances covered by construction, referenced by elevation and dimension to visible and accessible features of structure.

c. Indicate field changes of dimension and detail, changes made by field order or Change Order, and details not on Contract Drawings.

d. Record actual CFM rating in each space on Mechanical Drawings.

e. In Specifications and Addenda, record manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed, changes made by Change Order, approved substitution, or other modification, and other matters not originally specified.

4. Entries: Clearly describe change by note and by graphic line, as required. Date all entries. Call attention to entry by "cloud" around area or areas affected. In event of overlapping changes, use different color for each change.

5. ODR and A/E will review Record Set monthly. If documents are not being maintained concurrently with construction progress, Owner may withhold progress payments until documents are made current.

C. SUBMITTAL:

1. Prior to Final inspection and as a prerequisite to Final Payment, submit Record Document drawings, including mechanical, electrical and plumbing installations, and other installations as specified in Contract Specifications, to A/E for permanent Project File.

2. Documents shall be submitted at one time with transmittal letter containing date, Project title, Contractor's name and address, itemized list of documents, and signature of Contractor. The Contractor's signature acknowledges that the documents have been reviewed and that they represent a true and accurate record of the work installed.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

INSTRUCTION OF OWNER'S OPERATING PERSONNEL

PROJECT: _____

Project No. _____

Contract No. _____

SYSTEM OR EQUIPMENT: _____

PRELIMINARY INFORMATION:

A. To be completed by Contractor:

1. Proposed dates of instruction: _____ to _____

2. Representative performing instruction: _____

3. Number of hours required: _____

B. To be completed by Owner:

1. Owner's personnel to be instructed:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

INSTRUCTION LOG:

Date	No. of Hours	Materials Covered	Instructor's Initials	Owner's Rep. Initials	Comments
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Total Hours: _____ Date Instruction Completed: _____

Owner's Representative: _____

Instructor: _____

PROJECT WARRANTY FOR GENERAL CONSTRUCTION

WHEREAS, _____(Contractor),

Address _____

Telephone () _____ has performed general construction work on the following project:

Contract No. _____ Project No. _____

For _____(Owner),

Address _____, and,

WHEREAS, Contractor has agreed to warrant said Work to be new, unless otherwise specified in the Contract Documents, and that all Work is of good quality, free from faults and defects, and in accordance with the Contract Documents.

NOW THEREFORE, Contractor hereby warrants said Work in accordance with terms hereof, complying with terms of Contract with Owner dated _____, 20_____, that:

Contractor agrees to repair or replace to the satisfaction of the Owner all Work that may prove defective in workmanship or materials together with all other Work which may be damaged or displaced in so doing, except for abuse, modifications not executed by Contractor, insufficient maintenance, improper operation, or normal wear and tear under normal usage.

All repairs or replacements shall have a correction period for such Work equal to the original correction period as herein stated, dated from the final acceptance of repairs or replacement.

CORRECTION PERIOD FOR THE WORK: STARTING _____, TERMINATING _____.

In the event of our failure to comply with the above mentioned conditions within a reasonable time after being notified in writing, we hereby authorize the Owner to proceed to have defects repaired and made good at our expense, and we will pay the costs and charges therefore immediately upon demand.

IN WITNESS THEREOF, this instrument has been duly executed this __ day of _____, 20_____, for Contractor by _____

(Signature)

_____ as its _____.
(Typed Name) (Title)

SPECIAL WARRANTY FOR _____

WHEREAS, _____(Contractor),

Address _____

Telephone () _____ has performed _____

work on the following project: _____

Contract No. _____ Project No. _____

For _____(Owner),

Address _____, and,

WHEREAS, Contractor has agreed to warrant said Work to be new, unless otherwise specified in the Contract Documents, and that all Work is of good quality, free from faults and defects, and in accordance with the Contract Documents.

NOW THEREFORE, Contractor hereby warrants said Work in accordance with terms hereof, complying with terms of Contract with Owner dated _____, 20____, that:

Contractor agrees to repair or replace to the satisfaction of the Owner all Work that may prove defective in workmanship or materials together with all other Work which may be damaged or displaced in so doing, except for abuse, modifications not executed by Contractor, insufficient maintenance, improper operation, or normal wear and tear under normal usage.

All repairs or replacements shall have a correction period for such Work equal to the original correction period as herein stated, dated from the final acceptance of repairs or replacement.

CORRECTION PERIOD FOR THE WORK: STARTING _____, TERMINATING _____.

In the event of our failure to comply with the above mentioned conditions within a reasonable time after being notified in writing, we agree to hereby authorize the Owner to proceed to have defects repaired and made good at our expense, and we will pay costs and charges therefore immediately upon demand.

IN WITNESS THEREOF, this instrument has been duly executed this ___ day of _____, 20__

for Contractor by _____
(Signature)

_____ as its _____
_____.
(Typed Name) (Title)

And has been countersigned in accordance with terms and conditions, for

Installer by: _____
(Signature) (Typed Name)

as its _____.
(Title)

Name of Firm _____

Address _____

SECTION 02 41 13.13

REMOVAL OF EXISTING CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This item shall consist of breaking up, removing and satisfactorily disposing of existing pavement within the project limits or at locations shown on the Plans.

PART 2 – PRODUCTS

N/A

PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

- A. Existing pavement (with or without bituminous top), sidewalk, driveway, curb, or combined curb and gutter shall be broken up into pieces not greater than eighteen (18) inches in any dimension by air-driven machinery or other suitable means. The use of explosives will not be permitted.
- B. Where only a portion of the existing concrete is to be removed, special care shall be exercised to avoid damage to that portion of the concrete to remain in place. The existing concrete shall be cut to the neat lines shown on the Plans or established by the Engineer. Any existing concrete beyond the neat lines so established which is damaged or destroyed by these operations shall be replaced at the Contractor's expense.
- C. Existing pavement, which is to be removed, shall be loaded, hauled and neatly stored at designated sites, or otherwise disposed of as directed by the Engineer. Work performed under this item shall be inaugurated at such times and prosecuted in such manner as to cause minimum inconvenience to traffic or to the owners of adjacent property.

END OF SECTION

SECTION 03 30 00

CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This specification shall govern for Portland cement concrete to be used in concrete pavement, concrete structures and other concrete construction. All concrete shall be from a NRMCA certified plant.

1.2 SUBMITTALS

- List of Admixtures proposed
Concrete Mix Designs and three sets of tests on the mix designs submitted.
Certification for cement conformance to specification
Test reports for all required concrete tests
Mill report/Certifications for all Reinforcing Bar.
Material Data on Control, Expansion and Contraction Joint materials and sealants.
Provide a current NRMCA plant certification

PART 2 – PRODUCTS

2.1 MATERIALS

A. PORTLAND CEMENT:

Cement shall be Type I, II or III Portland Cement conforming to ASTM C150, or Type IA, IIA or IIIA, conforming to ASTM C175 except as noted below.

1. Different types of cement, as prescribed above may be used in the same structure, but all cement used in any one monolithic placement shall be of the same type and brand.
2. Type III cement shall not be used when the anticipated air temperature for the succeeding 12 hours will exceed 60° F.

B. FLY ASH:

Fly Ash shall be Type C or F Fly Ash in accordance with ASTM C618. When fly ash is used, "cement" shall be defined as "cement plus fly ash". "Cement plus fly ash" shall be composed of Type I, II or III Portland cement up to 25 percent fly ash by weight of cementitious materials.

C. AGGREGATE:

1. Concrete aggregate shall conform to all requirements of Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (2004) Section 421.2 E 1, 2 and 3, and ASTM C33.
2. The maximum size of aggregate shall not be larger than one-fifth of the narrowest dimension between forms of the member for which concrete is to be used nor larger than three-fourths of the minimum clear spacing between reinforcing bars.

D. WATER:

Water for use in concrete and for curing shall be from municipal supplies approved by the Texas Commission on Environmental Quality and Texas Department of Health or shall have a maximum concentration of 50,000 ppm of total suspended solids according to AASHTO T26 for quality of water and conform to ASTM 1602 - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.

E. REINFORCING STEEL:

1. The reinforcing steel shall be Grade 60.
2. Steel reinforcing bars as required, shall be of the type and size as shown on Plans and shall be open hearth new billet steel of structural, intermediate, or hard grade, or shall be rail steel concrete reinforcement bars. All steel shall be bent cold.
3. New billet steel shall conform to the requirements of the Standard Specifications for Billet-Steel Concrete Reinforcement Bars, ASTM Designation A-15.
4. When fabricated steel bar or rod mats are specified, the mats shall meet the current requirements of specifications for Fabricated Steel Bar or Rod Mats for Concrete Reinforcement ASTM Designation A-184.
5. In the event reinforcing bars manufactured outside of the Continental United States or its territories are used, two sets of tests from an independent testing laboratory acceptable to the Engineer shall be submitted showing that the steel meets the ASTM Standards for tensile strength, phosphorus content, bend, deformations and such other requirements outlined in the ASTM Standards for the grade used. These tests shall be made by and independent testing laboratory at the Contractor's expense and shall be submitted for each 25 tons of steel supplied from each individual mill.
6. At the time of placement in the concrete, reinforcing steel shall be free of dirt, loose rust, mill scale, paint, grease, oil or other deleterious materials that would impair the bonding of the concrete to the steel.
7. Reinforcement shall be accurately positioned and, unless otherwise shown or specified, shall be secured against displacement by using at intersection, annealed iron wire of not less than No. 18 gauge or suitable metal clips. It shall be supported by plastic or metal chairs or spacers. In general, reinforcement shall be placed, spliced, lapped, located, etc., in accordance with the recommendations of the Concrete Reinforcement Steel Institute or Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (2004) Section 440.
8. Under no circumstances shall reinforcing steel or dowel bars be "stabbed" into fresh concrete. When reinforcing steel or dowel bars are required to extend beyond the slipformed surface, holes shall be drilled and the steel shall be epoxyed into place using a preapproved epoxy.

F. STORAGE OF MATERIALS:

1. All cement, fly ash and mineral filler shall be stored in well-ventilated weatherproof buildings or pre-approved bins, which will protect them from dampness or absorption of moisture.

2. The method of handling and storing concrete aggregates shall prevent contamination with foreign materials. To assure uniform concrete, aggregate stockpiles shall be maintained at reasonably uniform moisture content.

2.2 TESTING REQUIREMENTS

A. CONCRETE QUALITY AND ALLOWABLE STRESSES

1. Concrete Quality:

Concrete mixes will be designed and made in sufficient number to represent the required water-cement ratios. These mixes shall comply with the requirements prescribed for strength and consistency as shown below. The Contractor shall furnish the results on trial mixes from a testing laboratory pre-approved by the Engineer.

Minimum Compressive Strength, psi at 28 days	Minimum Cement Content Sack/cubic yard	Maximum Water Content Gal/sack of cement	General Usage
1,500	3.0	11.0	Riprap
3,000	4.5	6.0	Drilled <u>Pier</u> , Inlets; Manholes; Headwalls; Sidewalks; Driveways;
3,500	5.0	6.0	Concrete Pavement; curb and gutters
4,000	5.5	5.0	Bridge slab; Culverts

The slump of concrete mixtures shall be within the following limits when measured according to "Test for Slump of Portland Cement Concrete" (ASTM C142). When admixtures are used to increase the workability, the mix design shall indicate the slump before and after its introduction into the mix.

TYPE OF CONSTRUCTION	COMPRESSIVE STRENGTH OF CONCRETE, psi	MAXIMUM SLUMP (before admixtures)
Concrete Pavement	3,500	3"
Curb and Gutter	3,500	3"
Sidewalk	3,000	5"
Drilled <u>Piers</u>	3,000	7"
Thin Walled Sections (9" or less)	3,000	5"
Thick Walls	By Special Design	

B. TESTS ON CONCRETE

1. During the progress of the work, compression test specimens shall be made and cured in accordance with "Standard Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Field" (ASTM C31). Not less than three specimens shall be made for each test, nor less than one test for each 50 cubic yards or fraction thereof of concrete placed or for each day's pour. These tests shall be made by an independent testing laboratory at the Owner's expense.
2. Specimens shall be tested in accordance with "Standard Method of Test for Compressive Strength of Molded Concrete Cylinders" (ASTM C39).
3. The standard age of test shall be 7 days and 28 days.
4. If the average strength of the control cylinders for any portion of the structure falls below the specified compressive strength, the Engineer shall have the right to order changes in the proportions or the cement content for the remaining portion of the structure. If the concrete minimum 28 day strength is not achieved the Engineer shall have the right to order its removal.
5. An air-entraining admixture may be used with Type I, II, or III Portland Cement in lieu of an Air-Entraining Portland Cement. The admixture shall meet the requirements of "Specifications for Air-Entraining Admixtures for Concrete" (ASTM C260). Concrete produced from either Type IA, IIA, or IIIA cement or the use of air-entraining admixtures shall have an air content from 3 to 5 percent when determined by means of the test for aircontent, ASTM C231.

C. TEST CYLINDERS

Preparation of test cylinders and tests on concrete cylinders shall be made at the expense of the Owner. The cost of all failed tests shall be charged to the Contractor.

PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

A. PREPARATION OF EQUIPMENT AND PLACE OF DEPOSIT:

1. Before placing concrete, all equipment for mixing and transporting the concrete shall be cleaned. All debris shall be removed from the place to be occupied by the concrete.
2. Water shall be removed from place of deposit before concrete is placed unless otherwise permitted by the Engineer.

B. MIXING OF CONCRETE

1. The concrete shall be mixed until there is a uniform distribution of materials and shall be discharged completely, before the mixer is recharged.
2. For job-mixed concrete, the mixer shall be rotated at a speed recommended by the manufacturer. Mixing shall be continued at least one (1) minute after all materials are in the mixer. Job-mixed concrete shall be rejected and disposed of as directed if not placed as prescribed within thirty (30) minutes after beginning of mixing. Job-mixed

concrete is only allowed with written approval from the Engineer 72-hours prior to the pour.

3. Ready-mixed concrete shall be measured, mixed and delivered in accordance with the requirements set forth in "Standard Specifications for Ready-Mixed Concrete" (ASTM C94).

C. CONVEYING

1. Concrete shall be conveyed from the mixer to the place of final deposit by methods which will prevent the separation or loss of the materials.
2. Equipment for chuting, pumping, and pneumatically conveying concrete shall be of a size and design to insure a continuous flow of the concrete at the delivery point, without separation of the materials.

D. TRANSPORTATION EQUIPMENT

Transportation of concrete mixed completely in a stationary mixer, from the mixer to the point of placement, shall be by truck agitator, or in a truck mixer operating at agitator speed, or in non-agitating equipment conforming to ASTM Standard C-94 except as modified herein. Truck agitators, truck mixers, and non-agitating equipment shall be capable of delivering concrete without segregation in transit. Slump tests of individual samples taken at approximately the one-quarter and three-quarter points of the load during discharge shall not vary by more than 1 inch. Vehicles transporting concrete mixed partially or completely in stationary mixers shall be equipped with discharge chutes or other devices when operating outside of the prepared subgrade, or shall be supplemented by additional transfer equipment capable of discharging or transferring the concrete from the transporting vehicle to its final position in the form without segregation.

E. FACILITIES FOR SAMPLING

Suitable facilities shall be provided for readily obtaining representative samples of aggregate from each of the bins or compartments for test purposes. Suitable facilities shall be provided for obtaining representative samples of concrete for uniformity tests. All necessary platforms, tools, and equipment for obtaining samples shall be furnished by the Contractor.

F. PLACING CONCRETE

1. The Contractor shall give the Engineer a minimum 24 hours advance notice before placing concrete to permit the inspection of forms, reinforcing steel placement and other preparations.
2. Concrete placement will not be permitted when impending weather conditions would impair the quality of the finished work.
3. Transporting Time: The maximum time interval between the addition of cement to the batch and the placing of concrete in the forms shall conform to the requirements below:

Concrete Temp (at point of placement)	Max Time (No Retarding Agent Minutes)	Max Time (with Retarding Agent) Minutes
Non-Agitated Concrete		
Above 80 F	15	30
80 F and Below	30	45
Agitated Concrete		
Above 90 F	45	75
Above 75 F thru 90 F	60	90
75 F and Below	90	120

4. All forms, sub grade and steel shall be dampened before placement of concrete to assist with retaining moisture in the concrete.

5. Cold Weather Precautions:

Concrete shall not be placed when the ambient temperature is below 40° F and falling. Concrete may be placed when the ambient temperature is above 35° F and rising, the ambient temperature being taken in the shade and away from artificial heat. Concrete shall not be placed when the forecast predicts 72 continuous hours of temperatures less than 32° F.

The Contractor shall have available a sufficient supply of pre-approved cotton mats, polyethylene sheeting or other pre-approved covering materials to immediately protect concrete if the air temperature falls to 32° F, or below, before concrete has been in place for less than four (4) hours. Such protection shall remain in place during the period the temperature continues below 32° F, or for a period of not more than five (5) days. Neither salt nor other chemical admixtures shall be added to the concrete to prevent freezing. The Contractor shall be responsible for the quality and strength of concrete under cold weather conditions and any concrete damaged by freezing shall be removed and replaced at the Contractor's expense.

The surface of all concrete in bents, piers, culvert walls, retaining walls, bottom of slabs, and similar formed concrete shall be maintained at 40° F or above for a period of 72 hours from the time of placements. The temperature of all concrete, including the bottom slabs (footings) of culverts placed on or in the ground, shall be maintained above 32° F for a period of 72 hours from time of placement.

Protection shall consist of providing additional covering, insulated forms or other means, and if necessary, supplementing such coverings with artificial heating.

6. Warm Weather Precautions

The following precautions shall be taken in placing, curing, and protecting the concrete when local weather records show that the maximum daily temperature is likely to exceed 95° F. The forms and the subgrade, subbase or base course shall be sprinkled with water immediately before placing the concrete. The concrete shall be placed at the coolest temperature practicable, and in no case shall the temperature of the concrete exceed 95° F when deposited on the subgrade, subbase or base course. The temperature of the concrete shall not exceed 85° F for bridge slabs or in the top slab of direct-traffic culverts. The aggregates and/or mixing water will be cooled as necessary to maintain the concrete temperature within the specified maximum.

Concrete shall be placed in the forms continuously and rapidly at a rate of not less than 100 feet of paving lane per hour. The surface of the newly laid pavement shall be kept damp by means of a water fog or mist applied with pre-approved spraying equipment until the pavement is covered by the preapproved curing medium.

7. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. The deposition shall be at a rate that allows the concrete to be plastic at all times and permits flow readily into the space between the rebar. Retempered concrete shall not be used and concrete shall not have a free fall of more than five (5) feet, except in the case of thin walls such as in culverts or as specified in other items. Any hardened concrete spatter ahead of the plastic concrete shall be removed.
8. Concrete deposition shall be a continuous operation until completed at the panel or section. Cold joints in a monolithic placement shall be avoided. The sequence of successive layers or adjacent portions of concrete shall be such that they can be vibrated into a homogeneous mass with the previously placed concrete. Not more than one (1) hour shall elapse between adjacent or successive placements of concrete.
9. Concrete shall be thoroughly consolidated and vibrated in the forms with pre-approved mechanical vibrators of a type considered in the design of forms.

G. FINISHING

Unless noted otherwise, apply an ordinary surface finish as the final finish to the following exposed surfaces:

- inside and top of inlets,
- inside and top of manholes,
- inside of sewer appurtenances,
- inside of culvert barrels, bottom of bridge slabs between girders and beams, and □ vertical and bottom surfaces of interior concrete beams or girders.

An ordinary surface finish shall be as follows:

- Chip away all loose or broken material to sound concrete where porous, spalled, or honeycombed areas are visible after form removal.
- Repair spalls by saw-cutting and chipping at least 1/2 in. deep, perpendicular to the surface to eliminate feather edges. Repair shallow cavities using a latex adhesive grout, cement mortar, or epoxy mortar as pre-approved. Repair large areas using concrete as directed or pre-approved.
- Clean and fill holes or spalls caused by the removal of form ties, etc., with latex grout, cement grout, or epoxy grout as pre-approved. Fill only the holes. Do not blend the patch with the surrounding concrete. On surfaces to receive a rub finish in accordance with Item 427, "Surface Finishes for Concrete," chip out exposed parts of metal chairs to a depth of 1/2 in. and repair the surface.
- Remove all fins, runs, drips, or mortar from surfaces that will be exposed. Smooth all form marks and chamfer edges by grinding or dry-rubbing.
- Ensure that all repairs are dense, well bonded, and properly cured. Finish exposed large repairs to blend with the surrounding concrete where a higher class of finish is not specified.

Finish of Bridge Slabs and related features shall be in compliance with TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (2004) Section 420.4.

H. CURING

The concrete shall be kept wet by spraying with water after attaining its final set and before removing the forms. Bottom forms supporting floor or roof slabs shall remain in place for not less than seven (7) days. The concrete shall have attained a compressive strength of not less than 2,000 psi prior to removal of bottom forms. All other forms may be removed twenty-four hours after completion of concrete placement, providing the weather has allowed the concrete to attain its final set in less than five (5) hours. The forms shall be left on for forty-eight (48) hours whenever the temperature of the air in the shade during pouring is 90° F or over. Curing shall be continued for five days after placement of concrete. This may be done with wet mats, with two applications of Type I (White in color) Liquid-Membrane-Forming Compound meeting requirements of ASTM C309, or with waterproof curing paper meeting the requirements of ASTM C171.

I. CONSTRUCTION JOINTS

Construction joints will be made only at locations shown on the Plans unless written permission is granted by the Engineer to make additional joints. Unless otherwise required, make construction joints square and normal to the forms. Use bulkheads in the forms for all vertical joints. Thoroughly roughen the top surface of a concrete placement terminating at a horizontal construction joint as soon as practical after initial set is attained. Thoroughly clean the hardened concrete surface of all loose material, laitance, dirt, and foreign matter. The surface is to be dampened just prior to casting of concrete against the joint.

END OF SECTION

SECTION 31 23 00

EXCAVATION AND EMBANKMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This Section includes providing all labor, materials, tools, and equipment necessary for excavation and embankment construction to the lines, grades and cross sections indicated in the Drawings or as directed by the ENGINEER.

1.2 SUBMITTALS

- A. All material to be imported to the site shall be sampled at its original location and tested for acceptability. This testing shall be provided by the contractor at no expense to the owner.
- B. A list of all compaction equipment to be utilized shall be submitted for approval prior to equipment arriving on site.

PART 2 – PRODUCTS

2.1 MATERIALS

A. EXCAVATION

1. All excavation shall be unclassified excavation, and shall consist of excavation and disposal of all materials, of whatever character, encountered in the WORK.

B. EMBANKMENT

1. Material shall consist of soil native to the work site, with or without stone or conglomerate, of a suitable quality to secure a well bonded course. Imported material shall consist of soil hauled to the work site for use in embankment operations.
2. Material for embankment shall be free of vegetation, wood, organic material, trash, bricks, broken concrete, piping, rubble, or other objectionable material. Material sources shall be selected to eliminate the introduction of hazardous materials into the work site.

C. SELECT MATERIAL

1. Material shall have a Plasticity Index between 4 and 20 and meet all other requirements of this specification.

2.2 TESTING REQUIREMENTS

- A. All embankment material placed shall be tested. Unless otherwise shown on the plans, material placed for the benefit of roadway construction shall be compacted as follows:
- B. Structural areas (roadways, slabs, sidewalks, detention pond berms, and all areas within 5 feet of any of these) shall be compacted to 95% of the maximum dry density as determined by the Standard Proctor Density Test (ASTM D698) at a moisture content between optimum and +4% wet of optimum moisture content.

- C. Non-structural areas (as shown on plans) shall be compacted to 90% of the maximum dry density as computed by the Standard Proctor Density Test (ASTM D698) at a moisture content between optimum and +4% wet of optimum moisture content.
- D. Tests shall be taken at a minimum of one test per every 4000 square feet of embankment per every 12" of depth. Additional tests shall be conducted at the engineer's request. All tests meeting these requirements shall be paid for by the owner. The cost of all tests failing these requirements shall be deducted from payment for this item.

PART 3 – EXECUTION

3.1 EXCAVATION

- A. All project excavation shall conform to the requirements of this specification. The completed roadway shall conform to the established alignment, grades and cross sections.
- B. Clearing and grubbing in excavation areas must be completed prior to beginning excavation operations.
- C. Topsoil shall be removed and stockpiled for reuse on the proposed surface. Topsoil in excess of what may be used on the finished surface shall be removed from the site by the contractor at no additional charge. Topsoil shall be assumed to be 6" deep, but shall be excavated deep enough to remove all roots and other organic material. Contractor shall first check with Owner to determine if the Owner would like to stockpile the topsoil.
- D. All suitable excavated materials shall be utilized, insofar as practicable, in constructing the required roadway sections or in uniformly widening embankments, flattening slopes, etc., as directed by the Engineer. Unsuitable roadway excavation and excavation in excess of that needed for construction shall be known as "Waste" and shall become the property of the Contractor to be disposed of at a location approved by the Engineer.
- E. If "Waste" material is to be placed on property owned by a third party, the Owner will need a letter from the third party stating acceptance of such fill. Fill will not be allowed in 100year floodplain without approved permits.
- F. Waste areas shall be uniformly graded to drain, with the outer limits feathered to blend with the existing ground. Waste areas shall be seeded, capped with suitable material, or otherwise protected from long-term erosion.
- G. During construction, the roadbed and ditches shall be maintained in a condition to insure proper drainage at all times. Ditches and channels shall be constructed and maintained to avoid damage to the roadway section.
- H. Gravel or base material on all existing streets shall be salvaged and used to tie-in new construction with existing unpaved streets and gravel and flexible pavement driveways. Driveways will be adjusted to provide smooth connections to new construction and shall be restored to a condition equal to or better than that existing before work began. All salvageable asphalt, gravel or rock base material not used in the work shall remain the property of the Owner. Such unused materials, as designated by the Engineer, shall be hauled to the Owner stockpile or to other stockpile locations designated by the Engineer and closer to the project than the site above.

3.2 EMBANKMENT

- A. Prior to placing any embankment, all Clearing and Grubbing operations shall have been completed on the excavation sources and areas over which embankment is to be placed.
- B. Stump holes or other small excavations in the limits of the embankments shall be backfilled with suitable material and thoroughly compacted by approved methods before commencing embankment construction. The surface of the ground, including plowed loosened ground, or surface roughened by erosion or otherwise, shall be restored to approximately its original grade by blading or other methods. Where indicated on Plans or required by the Engineer, the ground surface thus prepared shall be compacted by sprinkling and rolling.
- C. Unless otherwise indicated on the Plans the surface of all unpaved areas, other than rock, which are to receive embankment shall be loosened by scarifying or plowing to a depth of not less than four (4) inches. The loosened material shall be re-compacted with the new embankment as hereinafter specified.
- D. Where indicated on Plans or directed by the Engineer, the surface of hillsides to receive embankment shall be loosened by scarifying or plowing to a depth of not less than four (4) inches, or cut into steps before embankment materials are placed. The embankment shall then be placed in layers, as hereinafter specified, beginning at the low side in part width layers and increasing the widths as the embankment is raised. The material which has been loosened shall be re-compacted simultaneously with the embankment material placed at the same elevation.
- E. Layers of embankment may be formed by utilizing equipment which will spread the material as it is dumped, or they may be formed by being spread by blading from piles or windrows dumped from excavating or hauling equipment in such amounts that material is evenly distributed.
- F. No material placed in the embankment by dumping in a pile or windrow shall be incorporated in a layer in that position. All such piles or windrows shall be moved by blading or similar methods. Clods or lumps of material shall be broken and the embankment material mixed by blading, harrowing, disking, or similar methods.
- G. Water required for sprinkling to bring the material to the moisture content necessary for maximum compaction shall be evenly applied. It shall be the responsibility of the Contractor to secure uniform moisture content throughout the layer by such methods as may be necessary. When water is required to achieve the required moisture content, the water must be from a source which does not contain any hazardous materials. Water removed from natural sources (ponds, lakes, rivers...) shall not impact any endangered species. Potable water sources shall be metered and paid by the contractor.
- H. Where embankments are to be placed adjacent to or over existing roadbeds, the roadbed slopes shall be plowed or scarified to a depth of not less than six (6) inches and the embankment built up in successive layers, as hereinafter specified, to the level of the old roadbed before its height is increased. Then, if directed, the top of the old roadbed shall be scarified and re-compacted with the next layers of the new embankment. The total depth of the scarified and added material shall not exceed the permissible depth of layer.
- I. Trees, stumps, roots, vegetation, or other unsuitable materials shall not be placed in embankment.
- J. Except as otherwise required by the Plans, all embankment shall be constructed in layers approximately parallel to the finished grade of the roadbed, unless otherwise specified, each layer shall be so constructed as to provide a uniform slope of 1/4 inch per foot from the center line of the roadbed to the outside. Super elevated curves will require that each layer shall be constructed to conform to the super elevation required by the governing standard.
- K. Embankments shall be constructed to the grade established by the Engineer and completed embankments shall correspond to the general shape of the typical sections shown on the

Plans. Each section of the embankment shall correspond to the detailed section or slopes established by the Engineer. After completion of the roadway, it shall be continuously maintained to its finished section and grade until the project is accepted.

3.3 EARTH EMBANKMENTS

- A. Earth embankments shall be defined as those composed principally of material other than rock, and shall be constructed of accepted material from approved sources.
- B. Except as otherwise specified, earth embankments shall be constructed in successive layers for the full width of the individual roadway cross section and in such lengths as are best suited to the sprinkling and compaction methods utilized.
- C. Layers of embankment may be formed by utilizing equipment which will spread the material as it is dumped, or they may be formed by being spread by blading from piles or windrows dumped from excavating or hauling equipment in such amounts that material is evenly distributed.
- D. No material placed in the embankment by dumping in a pile or windrow shall be incorporated in a layer in that position. All such piles or windrows shall be moved by blading or similar methods. Clods or lumps of material shall be broken and the embankment material mixed by blading, harrowing, disking, or similar methods.
- E. Water required for sprinkling to bring the material to the moisture content necessary for maximum compaction shall be evenly applied. It shall be the responsibility of the Contractor to secure a uniform moisture content throughout the layer by such methods as may be necessary.
- F. All earth cuts, full or part width cuts in side hill which are not required to be excavated below sub-grade elevation for base and backfill, shall be scarified to a uniform depth of at least six (6) inches below grade. The material shall be mixed and reshaped by blading and then sprinkled and rolled in accordance with the requirements outlined above for earth embankments and to the same density as required for the adjacent embankment.

3.4 COMPACTION

- A. Each layer shall be compacted to the required density by suitable equipment.
- B. The depth of each layer, prior to compaction, shall not exceed that depth which will produce six (6) inch compacted thickness. Prior to and in connection with, the compaction operation each layer shall be brought to the moisture content necessary to obtain the required density and shall be kept leveled with suitable equipment to insure uniform compaction of the entire layer.
- C. For each layer of earth embankment and select material, it is the intent of this Specification to provide the density as required herein, unless otherwise shown on the Plans. Embankment soils shall be sprinkled as required and compacted to the extent necessary to provide not less than ninety-five (95) percent of the density as determined in accordance with Texas Highway Department Test Method Tex-113-E. Field density determinations will be made in accordance with approved methods.
- D. When the Contractor states that each layer of earth embankment or select material is complete and ready for the next layer, tests as necessary will be made by the Engineer. If the material fails to meet the density specified, the course shall be reworked as necessary to obtain the specified compaction, and the compaction method shall be altered on subsequent work to obtain specified density. Such procedure shall be determined by, and subject to, the approval of the Engineer.

- E. Should the sub-grade, due to any reason or cause, lose the required stability, density, or finish before the pavement structure is placed, it shall be re-compacted and refinished at the sole expense of the Contractor. Excessive loss of moisture in the sub-grade shall be prevented by sprinkling, sealing or covering with a subsequent layer of granular material. Excessive loss of moisture shall be construed to exist when the sub-grade soil moisture content is more than four (4) percent below the optimum for the density specified.
- F. In addition to the requirements in the Roadway Excavation item of the Specifications covering the general selection and utilization of materials to improve the roadbed, embankments shall be constructed in proper sequence to receive the select material layers shown on Plans, with such modifications as may be directed by the Engineer. The layer of embankment immediately preceding the upper layer of select material shall be constructed to the proper section and grade within a tolerance of not more than 0.10 foot from the established section and grade when properly compacted and finished to receive the select material layer.

3.5 PROOF ROLLING

- A. Prior to the placement of any material on native earth, the area shall be proof rolled. The native soil shall be rolled with sufficient intensity to bring out weak spots in the sub-grade which would otherwise fail during the construction process. The proof rolling shall be completed with equipment weighing at least 20 tons with tire pressures at least 50 and no more than 150 psi. A minimum of two coverage's of the proof roller will be required each succeeding trip of the proof roller shall be offset by not greater than one tire width. Rollers shall be operated at speed between 2 and 6 miles per hour. Areas failing this test shall be excavated to a depth not to exceed two feet and horizontally ten feet beyond the failed area in all directions. Earth removed from this area may be replaced, stabilized, or "dried out" at the discretion of the engineer. No additional payment will be made for proof rolling prior to placement of embankment.

END OF SECTION

SECTION 31 23 23
SELECTED BORROW

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This item shall consist of furnishing, hauling, spreading and compacting selected borrow on the roadway to bring the roadbed up to proper grade.

1.2 SUBMITTALS

- A. Atterberg Limits
- B. Sieve Analysis

PART 2 – PRODUCTS

2.1 MATERIALS

- A. The material shall consist of soil, with or without stone or conglomerate, and of a suitable quality to secure a well bonded course. It shall be free of vegetation or other objectionable material and shall have a maximum Plasticity Index of 20 as determined by Texas Highway Department Test Method Tex-106-E.

2.2 TESTING REQUIREMENTS

- A. When necessary or as directed by the Engineer samples of the borrow material shall be collected and tested for Atterberg Limits. In addition a Sieve Analysis shall be performed.

PART 3 – EXECUTION

3.1 GENERAL

- A. The material shall be delivered in approved vehicles of uniform capacity, and it shall be the responsibility of the Contractor to deliver the material at the proper location. The material shall be spread by the use of blades, drags, or other suitable equipment.
- B. If the material is not well mixed or contains oversized material, it shall be thoroughly mixed. After spreading, all oversized material shall be broken by raking, blading, disking, harrowing, scarifying, or other approved methods.
- C. Borrow placed in the roadbed for the purpose of bringing the roadbed to proper grade subsequent to lime stabilization, will be mixed with the existing material to form a subgrade of uniform material at proper grade.
- D. Borrow used for constructing or widening embankment will be sprinkled if necessary and compacted according to SECTION 31 23 00 – EXCAVATION AND EMBANKMENT.

END OF SECTION

SECTION 31 23 23.53

CEMENT STABILIZED SAND BACKFILL

PART 1 – GENERAL

1.1 DESCRIPTION

- A. At the discretion of the Engineer, Cement Stabilized Sand meeting the following specification may be allowed as trench backfill.

1.2 SUBMITTALS

- A. Mix Design

PART 2 – PRODUCTS

2.1 MATERIALS

- A. CEMENT - Type I Portland Cement conforming to ASTM C150.
- B. SAND - Clean durable sand meeting grading requirements for fine aggregates of ASTM C33, and the following requirements:
1. Classified as SW, SP, or SM by the United Soil Classification System of ASTM D2487.
 2. Deleterious materials:
 - a.) Clay lumps, ASTM C142; less than 0.5 percent.
 - b.) Lightweight pieces, ASTM C123; less than 5.0 percent.
 - c.) Organic impurities, ASTM C40; color no darker than standard color.
 - d.) Plasticity index of 4 or less when tested in accordance with ASTM D4318.
 3. Water: Potable water, free of oils, acids, alkalis, organic matter, or other deleterious substances, meeting requirements of ASTM C94.

2.2 TESTING REQUIREMENTS

- A. Mixing plant inspections may be performed periodically. Material samples shall be collected and tested for change in material characteristics.
- B. Random samples of delivered product will be taken in the field at point of delivery for each day of placement in the work area. Specimens will be prepared in accordance with ASTM D1632 and tested for compressive strength in accordance with ASTM D1633. C. The cement content may be tested at the discretion of the Owner.

PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

A. DESIGN REQUIREMENTS

Design sand-cement mixture to produce a minimum unconfined compressive strength of 50 pounds per square inch in 48 hours and 100 pounds per square inch in 7 days when compacted to 95% in accordance to ASTM D558 and when cured in accordance with ASTM D1632, and tested in accordance with ASTM D1633. Mix for general use shall contain a minimum of 1-½ sacks of cement per cubic yard. Mix for use as sanitary sewer embedment within 9 feet of waterlines shall contain 2 sacks of cement per cubic yard. Compact mix with moisture content between 0% to 2% above optimum.

The maximum compressive strength in 7 days shall be 400 psi. Backfill that exceeds the maximum compressive strength shall be removed by the contractor.

B. MIXING

1. Thoroughly mix sand, cement, and water in proportions specified by the Design Requirements using a pugmill-type mixer. The plant shall be equipped with automatic weight controls to ensure correct mix proportions.
2. Stamp batch ticket at plant with time of loading directly after mixing. Material not placed and compacted within 4 hours after mixing shall be rejected.

C. PLACEMENT

1. Place sand-cement mixture in 8-inch-thick lifts and compact to 95% of ASTM D558 unless other specified by the engineer. The moisture content during compaction shall be between 0% to 2% above optimum. Perform and complete compaction of sand-cement mixture within 4 hours after addition of water at plant.
2. Do not place or compact sand-cement mixture in standing or free water.

END OF SECTION

SECTION 31 23 33

EXCAVATING, TRENCHING, AND BACKFILLING

All excavation will meet the most current OSHA Regulations. See SECTION 31 50 00 – TRENCH SAFETY for trench safety requirements.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The work to be performed under this Specification shall consist of furnishing all labor, equipment and materials and performing all operations in connection with the excavating, trenching, and backfilling for pipelines as shown on the plans and as specified herein.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Materials for pipe embedment will meet TCEQ Regulations for depth of bury and class of pipe and City of Bryan/City of College Station Unified Embedment Details as shown on the Plans.
- B. Concrete (For encasement or blocking) See SECTION 03 30 00 - CONCRETE.
Material shall conform to ASTM C94. The compressive strength of the concrete shall be at least 2,000 psi and shall contain at least four (4) sacks of cement per cubic yard.
- C. Cement stabilized sand. See SECTION 31 23 23.53 – CEMENT STABILIZED SAND BACKFILL.

2.2 TESTING REQUIREMENTS

- A. Compaction tests for all backfill may be required for every 200 linear feet of trench and for each twelve-inches (12”) vertically. Density tests, shall be measured as one unit for each test. The Owner shall pay for Geotechnical tests ordered that meet the requirements of the plans and specifications. Failed tests shall be charged to the Contractor. Refer to City Standard Trench Detail for compaction effort requirements.

PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

A. CONTROL OF WATER

Provide sufficient pumping equipment, in good working order, available at all times to remove any water that accumulates in excavations. When the excavation crosses a drainage pathway, the contractor shall provide for means of alternate drainage. The discharge of dewatering equipment shall not cause damage to private or public property.

B. SHEETING, SHORING, AND BRACING

See SECTION 31 50 50 – TRENCH SAFETY.

In caving ground, or in wet, saturated, or flowing materials, the contractor shall sheet, shore, or brace the sides of the trench so as to maintain the excavation properly in place. When

excavations are made adjacent to existing building or other structures or in paved streets, particular care must be taken to adequately sheet, shore, and brace the sides of the excavation to prevent undermining of, or settlement beneath, the structures or pavement. Underpinning of adjacent structures or pavement shall be done by the Contractor at his own cost and expense, in a manner satisfactory to the Engineer and when required by the Engineer. The pavement shall be removed, the void satisfactorily refilled and compacted, and the pavement replaced by the Contractor. The entire expense of such removal and subsequent replacement thereof shall be borne by the Contractor. Sheeting, shoring, and bracing shall not be left in place, unless otherwise provided for in the contract or authorized by the Engineer. The removal of sheeting, shoring and bracing shall be done in such a manner as not to endanger or damage either new or existing structure, private or public properties, and so as to avoid cave-ins or sliding of the banks. All holes or voids left by the removal of the sheeting, shoring, or bracing shall be immediately and completely filled and compacted with suitable materials.

C. GUARANTEE

1. Guarantee the backfilling of excavation and trenches against settlement for a period of one (1) year after the final completion of the contract under which the work is performed.
2. Make all repairs or replacements made necessary by settlement, including refilling, compacting, and reseeding or resodding the upper portion of the ditch and repairing broken or settled pavements, driveways, and sidewalks within five (5) days after notice from the Engineer.

D. PREPARATION

1. Site Preparation

Prepare the construction site for construction operations by removing and disposing of all obstructions and objectionable materials in accordance with contract documents.

2. Alignment, Grade and Minimum Cover

a. General

The water and sewer mains shall be laid and maintained to lines and grades established by the plans and specifications with fittings, valves, hydrants, manholes and clean-outs at the required locations, unless otherwise pre-approved by the Engineer. Valve-operating stems shall be oriented in a manner to allow proper operation. Hydrants shall be installed plumb.

- b. Cut sheets shall be provided to the City's Inspector. The contractor shall determine the alignment and grade or elevation of the pipeline from offset stakes. Offset stakes shall be placed every 100 feet. The contractor shall also provide a continuous chalk line along the alignment of the trench for use by the operator of the excavating equipment. The contractor shall provide a laser beam and grade pole to assist in grading the ditch to the proper elevation.

- c. Should the ditch be graded below the required elevation, bring subgrade to the required elevation with cement stabilized sand or rounded pea gravel. The use of excavating materials for this application will not be allowed.

- d. Where pipe grades or elevations are not definitely fixed by contract drawings, trenches shall be excavated to a depth sufficient to provide a minimum depth of backfill cover over the pipe. Greater pipe cover depths may be necessary for

clearance beneath existing pipes, conduits, drains, drainage structures, or other obstructions encountered at normal pipe grades. Measurement of pipe cover depth shall be made vertically from the outside top of pipe to finished ground or pavement surface elevations.

3. Prior Investigation

Prior to excavation, investigation shall be made to the extent necessary to determine the location of existing underground structures and conflicts. Care should be exercised by the Contractor during excavation avoid damage to existing structures.

4. Unforeseen Obstructions

When obstructions that are not shown on the plans are encountered during the progress of work and interfere so that an alteration of the plans is required, the Engineer will alter the plans or order a deviation in line and grade or arrange for removal, relocation or reconstruction of the obstructions.

5. Clearance

When crossing existing pipelines or other structures, alignment and grade shall be adjusted as necessary, with the approval of the Engineer, to provide clearance as required by federal, state or local regulations or as deemed necessary by the Engineer to prevent future damage or contamination of either structure.

E. EXCAVATION

All excavation shall meet the most current OSHA regulations.

1. Classification

Excavation of trenches for pipelines is unclassified. Soils will be classified utilizing OSHA Standards and Regulations. The Contractor shall assume that the site contains the worse type of soils and make provisions for shoring the work area.

2. Trench Excavation

a. General

The trench shall be excavated to the required alignment, depth and width and in conformance with all federal, state and local regulations for the protection of the workmen.

b. Trench Preparation

i) Trench preparation shall proceed in advance of pipe installation for only as far as pipe will be laid that day.

ii) The contractor shall keep the trench dry from both storm water and seepage from the sides of the trench. Discharge from any trench dewatering pumps shall be conducted to natural drainage channels, storm sewers or a preapproved reservoir. Do not discharge into any municipal sewer system without municipal approval. The contractor shall be responsible for cleaning any storm drain system, which was used for dewatering discharge.

iii) Excavated material shall be placed in a manner that will not obstruct the work nor endanger the workmen, obstruct sidewalks, driveways, or other structures and shall be done in compliance with federal, state, or local regulations.

3. Pavement Removal

Removal of pavement and road surfaces shall be a part of the trench excavation, and the amount removed shall depend upon the width of trench required for installation of the pipe and the dimensions of area required for the installation of valves, hydrants, specials, manholes or other structures. The dimensions of pavement removed shall not exceed the dimensions of the opening required for installation of pipe, valves, hydrants, specials, manholes and other structures by more than twelve (12") inches in any direction, unless otherwise required or pre-approved by the Engineer.

4. Width

See City Standard Bedding and Trench Detail.

5. Bell Holes

Holes for the bells shall be provided at each joint, but shall be no larger than necessary for joint assembly and assurance that the pipe barrel will lie flat on the trench bottom. Other than noted previously, the trench bottom shall be true and even in order to provide support for the full length of the pipe barrel, except that a slight depression may be provided to allow withdrawal of pipe slings or other lifting tackle.

6. Subgrade in Earth

- a. Where a firm and stable foundation for the pipe can be obtained in the natural soil, and where special embedment is not shown on the plans, or specified herein, carefully and accurately trim the bottom of the trench to fit the lower portion of the pipe barrel. The bottom of the trench shall be firm, stable and free of standing water.
- b. If water is allowed to collect in an originally dry trench after a reasonable time has passed to complete the embedment of the pipe, as determined by the Engineer, the contractor shall place a minimum of four (4") inches of clean rounded pea gravel in the ditch and pump out all accumulated water before placing the pipe. No deleterious materials will be allowed in the gravel. No extra compensation will be allowed for this work.
- c. Where wet, soft, or spongy material is encountered in the excavation at subgrade level, the contractor shall remove such material at the direction of the Engineer and replace it with crushed stone of sufficient quantity such that when fully compacted, the subgrade is firm and stable.

7. Subgrade in Rock

- a. When excavation of rock is encountered, all rock shall be removed to provide a clearance of at least six (6") inches below and on each side of all pipe, valves and fittings for pipe sizes twenty-four (24") inches or smaller, and nine (9") inches for pipe sizes thirty (30") inches and larger. When excavation is completed, the proper embedment material shall be placed on the bottom of the trench to the previously mentioned depths, leveled and tamped.
- b. These clearances and bedding procedures shall also be observed for pieces of concrete or masonry and other debris or subterranean structures, such as masonry walls, piers or foundations that may be encountered during excavation.
- c. The installation procedures specified in this section shall be followed when gravel formations containing loose boulders greater than eight (8") inches in diameter are encountered.

- d. In all cases, the specified clearances shall be maintained between the bottom of all pipe and appurtenances and any part, projection or point of rock, boulder or stones of sufficient size and placement, which, in the opinion of the Engineer, could cause a fulcrum point.

F. CONCRETE ENCASEMENT

The Contractor shall place 2,000 psi concrete encasement under and around pipe as shown on the embedment detail, and provide necessary anchors to prevent the pipe from floating out of place. The contractor shall remove and relay any pipes that are floated out of proper position

G. BACKFILLING

1. General

- a. The Contractor shall not begin backfilling until approval has been obtained from the Inspector. Backfilling includes refilling and consolidation of the fill in trenches and excavations up to the natural ground surface or road grade.
- b. Backfill shall be accomplished in accordance with the specified laying condition as shown on the plans.

2. Backfill Material

- a. All backfill material shall meet latest edition of ASTM D2321 unless otherwise specified by the Engineer.
- b. If excavated material is indicated on the drawings or specified for backfill, and there is a deficiency due to a rejection of part thereof, the contractor shall provide the required amount of sand, gravel or other pre-approved material.

3. Do not leave trenches open overnight without backfilling to the natural ground level. Steel plates (1/2" in thickness) may be used to cover open trenches only with the approval of the Engineer.

4. Compaction

Compaction requirements are as specified on the plans.

END OF SECTION

SECTION 31 25 13

EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The work covered by this section consists of the installation and maintenance of all erosion siltation control devices, wash down areas, or seeding and sodding applications necessary to effectively prevent storm water pollution of adjoining or downstream areas that may occur as a direct or indirect result of the construction of this project. The contractor is responsible for creating and maintaining the storm water pollution prevention plan by utilizing the base sheets provided in the bid documents. The contractor is also responsible for submitting the Notice of Intent (NOI) and Notice of Termination (NOT) and conducting inspections as required by the Texas Commission on Environmental Quality (TCEQ.)

The contractor will generate, submit, and maintain the:

1. Erosion Control Plan
2. SWPPP
3. NOI (if required)
4. NOT (if required)

1.2 SUBMITTALS

- A. The contractors shall submit the initial erosion control plan along with the NOI (if required) prior to receiving a notice to proceed.
- B. If required, the Contractor is responsible for filing a "Notice of Intent" (NOI.) The contractor shall comply with all TCEQ and EPA regulations and pay the filing fees associated with the regulations. Fees associated with these regulations are subsidiary to the bid item Storm Water Prevention. The forms are available at:
<http://www.tceq.state.tx.us/assets/public/permitting/waterquality/forms/20022.pdf>
<http://www.tceq.state.tx.us/assets/public/permitting/waterquality/forms/20023.pdf>
- C. Said NOI must be postmarked two days before construction begins. NOI's and NOT's shall be submitted to the address shown on the forms. It is the Contractor's responsibility to file and provide the owner a copy of the Notice of Termination (NOT) at the completion of the project.

PART 2 – PRODUCTS

N/A

PART 3 – EXECUTION

3.1 GENERAL

- A. It is the responsibility of the Contractor to utilize whatever techniques are necessary to address erosion problems as they occur during construction.
- B. Siltation control and sediment trapping devices shall be installed prior to site clearing,

grading or utility construction operations. All devices should be positioned so as to effectively remove silt from storm water before it leaves the site. Of particular concern, are gravel or stone blankets placed at construction traffic exits and entrances. These controls should be closely monitored to see that they trap sediment before it reaches the drainage system or leaves the site.

- C. Construction activities should be phased to expose a minimum of graded area at one time. Earth exposed by the construction process shall be re-vegetated after all construction activities are completed. Contractor shall re-vegetate areas every two weeks until vegetation is established. Re-vegetation shall include seeding, hydromulching or sodding. Fresh growth of vegetation shall eliminate the need for additional re-vegetation but does not constitute stabilization.
- D. Should a construction process remove any portion of the perimeter controls, the controls should be replaced in accordance with the TCEQ guidelines. Prior to the completion of the project, all bare areas shall be re-vegetated with a cellulose fiber hydromulch seeding process or sodded.
- E. Siltation control devices placed at storm drain inlets and culverts shall be removed by the Contractor once the site has been stabilized.

3.2 MAINTENANCE AND INSPECTION

- A. The contractor shall familiarize himself with the erosion control requirements of TCEQ. The site superintendent, or his representative, shall make a visual inspection of all structural and/or natural controls and newly stabilized areas as required by TCEQ, especially after a rainfall to ensure that all controls are maintained and properly functioning. Any damaged controls shall be repaired prior to the end of the work day, including re-seeding and mulching or re-sodding if necessary. All inspections shall be documented with a written report. Reports shall include the effectiveness of erosion control measures, construction activities conducted since the last report and their location. Reports shall be maintained by the Contractor along with the Erosion Control Plan (ECP) per the TCEQ guidelines.
- B. The contractor is responsible for the ECP. The contractor shall continuously update the plan with all changes. Areas already stabilized shall be noted on the plan. All sediment trapping devices shall be installed as soon as practical after the area has been disturbed (never more than 14 days). All sediment trapping devices shall be cleaned when the sediment level reaches 25% capacity. Sediment shall be disposed of by spreading on site or hauling away if not suitable for fill.
- C. The Contractor shall be responsible for any and all materials, improvements, and maintenance activities necessary to keep dust, silt, and mud from leaving the work zone, including being tracked by vehicles traveling throughout the zone.
- D. Should, in the opinion of the Owner, the Contractor fail to prevent the escape of dust or contain silt and mud within the project, after due notification by the City Representative, Owner forces will be used to clean up those affected areas, and the cost of same will be deducted from the contract.
- E. Prior to Substantial Completion, the Contractor shall verify that no dust, silt, or mud exists within the work zone in deposits deeper than two inches (2") as a result of the contractor's containment procedures. Should the Contractor claim final completion without removing such deposits, they will be removed by Owner forces and the cost of which shall be deducted from the contract.

END OF SECTION

SECTION 31 50 00
TRENCH SAFETY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The work specified under this section requires the Contractor to provide for the safety of the workmen in strict compliance with 29 CFR Part 1926 1993 (Revised as of July 1, 1996 of latest Edition or Revision to) Excavations and Applicable Subparts. The submission of a "TRENCH SAFETY PLAN" which shall fully satisfy the requirements of this specification is required prior to a notice to proceed to start the project.

1.2 SUBMITTALS

A. CERTIFICATES

Submit manufacturer's "Certificate of Compliance," stating that the devices (trench boxes, speed shoring, etc.) to be used for trench safety comply with the requirements of this specification. The certificate should show the design assumptions and limitations of the device and should be sealed by an engineer registered and licensed to practice in the state of Texas.

B. TRENCH SAFETY PLAN

Submit a detailed TRENCH SAFETY PLAN for all work areas. Calculations shall be provided for any areas beyond the capacity of the trench box or speed shoring and sealed by an engineer registered and licensed to practice in the state of Texas. This plan shall include evacuation routes for personnel.

C. COMPETENT PERSON

Contractor shall have a "Competent Person" with regard to OSHA standards, on site at all times. Competent person is generally defined as an individual who, by training and experience, is knowledgeable of applicable standards, capable of identifying hazards, is designated by the employer and has the authority to take actions as needed. Contractor shall provide written proof showing the competent person(s) for the work being performed.

PART 2 – PRODUCTS

2.2 MATERIALS

A. MATERIALS

1. Timber

Trench sheeting materials shall be full size, a minimum of 2 inches in thickness, solid and sound, free from weakening defects such as loose knots and splits.

2. Sheet Piling

Steel sheet piling shall conform to one or more of ASTM A328/328M, ASTM A572/A572M/ ASTM A690/A690M material requirements.

3. Structural Steel

Steel for stringers (wales) and cross braces shall conform to ASTM A588.

4. Trench Boxes

Steel trench Boxes to be constructed of steel conforming to ASTM A36/A36M. Connecting bolts used to conform to ASTM A307. Welds shall conform to the requirements of AWS D1.1.

5. Miscellaneous

Miscellaneous materials to be utilized shall conform to applicable ASTM standards.

B. REFERENCED SPECIFICATIONS

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

American Society of Testing and Materials (ASTM)

ASTM A36/A36M	1997 Standard Specification for Carbon Structural Steel	ASTM
A307	1997 Revision A-Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile length	
ASTM A328/A328M	1996 (REV) Standard Specification for Steel Sheet Piling	
ASTM A572/A572M	1997 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality	
ASTM A588/A588M	1997 Standard Specification for High-Strength Low-Alloy Structural Steel With 50 ksi (345 MPa) Minimum Yield Point to 4 inch (100 mm) thick	
ASTM A690/A690M	1994 Standard Specification for High-Strength Low-Alloy Steel H-Pipes and Sheet Piling for Use in Marine Environments	

American Welding Society, Inc. (AWS)

AWS D1.1	1998 Structural Welding Code-Steel	
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Occupation Safety And Health Administration (OSHA)

29 CFR Part 1926	1993 (Revised as of July 1, 1996 of latest Edition or Revision to) Excavations and Applicable Subparts	
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PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

A. GENERAL:

The trench safety system shall be constructed, installed and maintained in accordance with the Trench Safety Plan as outlined in 131.03. Bed and backfill pipe to a point at least one (1) foot above top of pipe or other embedded items prior to removal of any portion of trench safety system. Bedding and backfill shall be in accordance to other applicable Specification Sections. Backfilling and removal of trench supports shall be in accordance with Contractor's Trench Safety Plan. Removal of trench safety system to be accomplished in such a manner to cause no damage to pipe or other embedded items. Remove no braces or trench supports until all personnel have evacuated the trench. The trench shall be backfilled to within 5 feet of natural ground prior to removal of entire trench safety system.

B. SUPERVISION:

Provide competent supervisory personnel at each trench while work is in progress to ensure Contractor's methods, procedures, equipment and materials pertaining to the safety systems in this Section are sufficient to meet requirements of OSHA Standards.

C. INSPECTION:

The CONTRACTOR shall make daily inspection of trench safety system to ensure that the system meets OSHA requirements. Daily inspection shall be made by competent personnel. If evidence of possible cave-ins or slides is apparent, all work in the trench is to cease until necessary precautions have been taken to safeguard personnel entering trench. The CONTRACTOR shall maintain permanent record of daily inspections.

D. TIMBER SHEETING

Timber sheeting and size of uprights, stringers (wales,) and cross bracing to be installed in accordance with the TRENCH SAFETY PLAN. Place cross braces in true horizontal position, spaced vertically, and secure to prevent sliding, falling or kick outs. Cross braces to be placed at each end of stringers (wales) in addition to other locations required. Cross braces and stringers (wales) to be placed at splices of uprights, in addition to other locations required.

E. STEEL SHEET PILING

Steel sheet piling of equal or greater strength may be used in lieu of timber trench shoring shown in the OSHA tables (proposed standards). Drive steel sheet piling to a least minimum depth below trench bottom as recommended by CONTRACTOR's Registered Licensed Professional Engineer providing design. Place cross braces in true horizontal position and spaced vertically. Secure to prevent sliding, falling, or kick outs. Cross braces to be placed at each end of stringers (wales), in addition to other locations required.

F. MAINTENANCE OF SAFETY SYSTEM

The safety system to be maintained in the condition as shown on the Trench Excavation and Shoring Safety Plan as designed by the CONTRACTOR's Registered Licensed Professional ENGINEER. The CONTRACTOR shall take all necessary precaution to ensure the safety systems are not damaged during their use. If at any time during its use a safety system is damaged, personnel to be immediately removed from the trench excavation area and the safety system repaired. The CONTRACTOR is to take all necessary precautions to ensure no loads, except those provided for in the plan, are imposed upon the trench safety system.

END OF SECTION

SECTION 32 01 12

PAVEMENT CLEANING AND MARKING REMOVAL

PART 1 - GENERAL

1.1 DESCRIPTION

Eliminate existing pavement markings and raised pavement markers (RPMs).

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Use approved patching materials for repairing damaged surfaces.
- B. Use a commercial abrasive blasting medium capable of producing the specified surface cleanliness. Use potable water when water is required.
- C. Furnish and maintain equipment in good working condition. Use moisture and oil traps in air compression equipment to remove all contaminants from the blasting air and prevent the deposition of moisture, oil, or other contaminants on the roadway surface.

PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

Eliminate existing pavement markings and markers on both concrete and asphaltic surfaces in such a manner that color and texture contrast of the pavement surface will be held to a minimum. Remove all markings and markers with minimal damage to the roadway to the satisfaction of the Engineer. Repair damage to asphaltic surfaces, such as spalling, shelling, etc., greater than 1/4 in. deep resulting from the removal of pavement markings and markers. Dispose of markers in accordance with federal, state, and local regulations. Use any of the following methods unless otherwise shown on the plans:

A. BURN METHOD:

Use an approved burning method. For thermoplastic pavement markings or prefabricated pavement markings, heat may be applied to remove the bulk of the marking material before blast cleaning. When using heat, avoid spalling pavement surfaces. Sweeping or light blast cleaning may be used to remove minor residue.

C. BLASTING METHOD:

Use a blasting method such as water blasting, abrasive blasting, water abrasive blasting, shot blasting, slurry blasting, water-injected abrasive blasting, or brush blasting as approved. Remove pavement markings on concrete surfaces by a blasting method.

D. MECHANICAL METHOD:

Use any mechanical method except grinding. Flail milling is acceptable in the removal of markings on asphalt and concrete surfaces.

END OF SECTION

SECTION 32 01 16.71

COLD MILLING ASPHALT PAVEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

Plane, or plane and texture, existing asphalt concrete pavement, or concrete pavement.

PART 2 – PRODUCTS

2.1 MATERIALS

The Engineer may require demonstration of the equipment's capabilities.

A. PLANING MACHINE:

Use planing machines that:

1. Have a minimum 6-ft. cutting width except for work areas less than 6 ft. wide
2. Are self-propelled with enough power, traction, and stability to maintain an accurate depth of cut and slope
3. Can cut in one continuous operation: 4 in. of asphalt concrete pavement, 1 in. of concrete pavement, or a combination of 2 in. of asphalt concrete pavement and 1/2 in. of concrete pavement
4. Use dual longitudinal controls capable of operating on both sides automatically from any longitudinal grade reference, which includes string line, ski, mobile string line, or matching shoe
5. Use transverse controls with an automatic system to control cross slope at a given rate
6. Use integral loading and reclaiming devices to allow cutting, removal, and discharge of the material into a truck in one operation
7. Include devices to control dust created by the cutting action.

B. MANUAL SYSTEM:

Use a manual system that can achieve a uniform depth of cut, flush to all inlets, valve covers, manholes, and other appurtenances within the paved area. Use of a manual system is allowed for areas restricted to self-propelled access and for detail pavement removal.

C. SWEEPER:

Use a street sweeper to remove cuttings and debris from the planed or textured pavement unless otherwise approved. Equip the sweeper with a water tank, dust control spray assembly, both a pick-up and a gutter broom, and a debris hopper.

PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

A. GRADE REFERENCE:

Place grade reference points at maximum intervals of 50 ft. in accordance with Item 5, "Control of the Work," when required. Use the control points to set the grade reference. Support the grade reference so the maximum deflection does not exceed 1/16 in. between supports.

B. PLANING AND TEXTURIZING:

1. Vary the speed of the machine to leave a grid or other pattern type with discontinuous longitudinal reach. Remove the pavement surface for the length, depth, and width shown on the typical section and to the established line and grades. Remove pavement to vertical lines adjacent to curbs, gutters, inlets, manholes, or other obstructions. Do not damage appurtenances or underlying pavement. Provide a planed surface that has a uniform textured appearance and riding surface. Surface should be free from gouges, continuous longitudinal grooves, ridges, oil film, and other imperfections of workmanship. Leave a uniform surface of concrete pavement free of asphalt materials when removing an asphalt concrete pavement overlay.
2. Plane no more than 3/16 in. into the original concrete surface. Never damage joints, sealed expansion joints, and other appurtenances.
3. Provide a pavement surface that, after planing, has a smooth riding quality and is true to the established line, grade, and cross-section. Provide a pavement surface that does not vary more than 1/8 in. in 10 ft. Evaluate this criterion with a 10 ft. straightedge placed parallel to the centerline of the roadway. Deviations will be measured from the top of the texture. Correct any point in the surface not meeting this requirement.
4. Sweep pavement. Leave pavement clean.

C. SALVAGED MATERIALS

The Contractor will retain ownership of planed materials unless otherwise shown on the plans. All material will be removed from the job site. Dispose of unsalvageable material in accordance with applicable federal, state, and local regulations.

END OF SECTION

SECTION 32 01 19.61

Paving Joint Sealants

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Clean and seal joints and cracks in concrete pavement.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Furnish sealant, boards, and backer rods in accordance with [DMS-6310](#), “Joint Sealants and Fillers.” The sealant must be type 4, 5, 7, or 8 unless otherwise shown on the plans and specifications. Furnish primer when required by the sealant manufacturer.

PART 3 – EQUIPMENT

3.1 EQUIPMENT

- A. Use equipment that meets the sealant manufacturer’s recommendations. Furnish equipment capable of placing the sealant, backer rods, and boards as detailed on the plans. Furnish equipment capable of removing all foreign material from the concrete joint or the grooved crack. The following equipment is recommended to meet cleaning and sealing requirements:
- Power Concrete Saw,
 - Sandblasting Equipment,
 - Power Router,
 - High Pressure Air, and
 - Sealant Dispenser.

PART 4 – EXECUTION

4.1 CONSTRUCTION METHODS

- A. Use dimensions shown for joint details in standard drawing *Concrete Paving Details, Joint Seals*, unless other dimensions are shown on the plans. Make a groove, follow the cracks to be sealed, and rout the groove approximately 1/2 in. deep minimum but not less than the width of the crack x 3/8 in. wide minimum, unless otherwise directed or shown on the plans. The Engineer will select joints and cracks to be cleaned and sealed.

Remove all foreign material from the joint or groove reservoir. Clean the joint by sandblasting or other approved methods. If directed, saw joint sides to remove embedded foreign material in the concrete that sandblasting will not remove. Do not place sealant when the concrete pavement is below 55°F or above 90°F. Do not place sealant in a wet or damp joint or groove. Use approved drying method if joints or grooves are sealed within 24 hours of rain. Apply primer when required by the sealant manufacturer. Blow out joint or groove with high pressure air or other approved methods before placing sealant. Remove and replace sealant when placed flush with or above the pavement surface. The different types of joints and cracks are described in Table 1.

Table 1
Types of Joints and Cracks Requirements

Joint or Crack Type	Requirement
Transverse Contraction Joints	Backer rods and sealants
Longitudinal Contraction Joint	Sealant
Longitudinal Construction Joint	Sealant
Expansion Joints	Backer rods, and sealant
Cracks in Jointed Concrete Pavement	Sealant and Backer rods if over 1/4"

END OF SECTION

SECTION 32 01 19.62

Patching of Rigid Pavement

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Repair concrete pavement to half-depth or full-depth in accordance with the details shown on the plans and the requirements of this Item.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Furnish materials in accordance with the following:
- 03 30 00, "Concrete"
 - 32 13 13, "Concrete Pavement"
 - TxDOT [DMS-6100](#), "Epoxies and Adhesives," and
 - TxDOT [DMS-4655](#), "Concrete Repair Materials."

1. FULL-DEPTH REPAIR:

Obtain approval for the repair material mix design. The selection of repair material should be based on the time for opening to traffic and temperature range during the repair.

a. Hydraulic Cement Concrete for Pavement:

Provide HES concrete designed to attain a minimum average flexural strength of 255 psi or a minimum average compressive strength of 1,800 psi within the designated timeframe if the timeframe designated for opening to traffic is less than 72 hr. after concrete placement. Otherwise, provide concrete designed to attain a minimum average compressive strength of 3,500 psi within 28 days.

b. Base Material:

Furnish clean graded sand as required to match adjacent base material and grade. The Engineer may waive quality control (QC) tests for base material.

PART 3 – EQUIPMENT

3.1 EQUIPMENT

- A. Provide tools and equipment necessary for proper execution of the work that meet the pertinent requirements of the following:
- 32 13 13, "Concrete Pavement"

- **Concrete Demolition Equipment.** Provide chipping hammers or hydro-demolition equipment for the bulk removal of concrete.
- **Concrete Lift-Out Equipment.** Provide steel chains, lift pins, and a crane or front-end loader capable of lifting the concrete and loading it onto a flatbed or dump truck.
- **Drill.** Use a maximum 40-lb. drill with tungsten carbide bits.
- **Air Compressor.** Provide compressor equipped with filters designed to remove oil from the air and capable of delivering air to remove dust and debris.

PART 4 – EXECUTION

4.1 CONSTRUCTION METHODS

- A. Submit for approval all materials and methods of application at least 2 weeks before beginning any repair work. Repair locations will be as indicated on the plans or as directed. Repair areas may be adjusted after removing distressed concrete. Switch the half-depth repair to the full-repair if exposed existing longitudinal bars are deficient, as approved. Compensation will be made for unexpected volumes of repair areas or changes in scope of work.

1. FULL-DEPTH REPAIR:

Repair areas identified by the Engineer. Make repair areas rectangular, at least 6 ft. long and at least 1/2 a full panel in width unless otherwise shown on the plans. Accept ownership of all removed material, and dispose of it in accordance with federal, state, and local regulations unless otherwise shown on the plans.

Saw-cut the full depth through the concrete around the perimeter of the repair area before removal. Schedule work so that concrete placement follows full-depth saw-cutting by no more than 7 days unless otherwise shown on the plans or approved.

Remove the slab by lifting the slab with a minimum disturbance to the base materials and surrounding concrete. Do not spall or fracture concrete adjacent to the repair area. Saw-cut and remove additional concrete as directed, after slab removal, if distresses are found in the surrounding concrete pavement. Repair damages to concrete pavement caused by the Contractor's operation without additional compensation. Perform repairs as directed.

Remove loose or damaged base material completely, leaving no loose base material.

Recompact base materials to the satisfaction of the Engineer. Level the base layer with compacted sand to the original bottom line and grade of the concrete slab before repair concrete is placed when shown on the plans. Place concrete directly onto the compacted base layer unless otherwise directed.

Use tie bars to restore the continuity of the concrete pavement. If required by the Owner, demonstrate, through simulated job conditions, that the bond strength of the epoxy-grouted tie bars meets a pullout strength of at least 3/4 of the yield strength of the tie bar when tested in accordance with ASTM E488 within the epoxy manufacturer's recommended curing time.

Increase embedment depth and retest when necessary to meet testing requirements.
Perform tie bar testing before starting repair work.

Place tie bars as shown on the plans. Drill holes into the existing concrete at least 10 in. deep unless otherwise directed. Use a drill bit with a diameter that is 1/8 in. greater than that of tie bars. Clean the holes with a wire brush and compressed air to remove all the dust and moisture. Follow the epoxy manufacturer's instructions to apply the epoxy. Insert the tip of the epoxy cartridge or the tip of the machine applicator to the end of the tie bar hole, and inject Type III, Class C epoxy to fill the entire hole. Insert tie bars.

Place new deformed reinforcing steel bars of the same size and spacing as shown on the plans. Lap all longitudinal reinforcing steel at least 25 in. Provide and place approved supports to firmly hold the new reinforcing steel in place when needed.

Place dowel bars if repair is adjacent to a slab replacement. Provide and place approved supports to firmly hold the dowel bars in place.

Mix, place, cure, and test concrete to the requirements of Section 32 13 13, "Concrete Pavement," and Section 03 30 00, "Concrete." Broom-finish the concrete surface unless otherwise shown on the plans.

Match the grade and alignment of existing concrete pavement.

Remove repair area debris from the work area each day. Concrete pavement may be opened to passenger vehicle traffic after 7 days or 24 hours for HES when specified strength is achieved. Pavement shall be protected from construction equipment and trucks until the specified strength is achieved.

END OF SECTION

SECTION 32 01 26.72

GRINDING OF CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

Diamond grind existing pavement surfaces and remove resulting residue at locations shown on the plans or as directed.

PART 2 – PRODUCTS

2.1 MATERIALS

Provide machinery, tools, and equipment necessary for proper execution of the work. Do not use flailing devices. Use machines that:

- A. Have a self-propelled machine built for grinding and/or grooving pavements
- B. Provide enough power, traction, and stability to maintain specified depth of cut and cross slope
- C. Are able to achieve a uniform depth of cut, flush to all inlets, manholes, bridge joints, and other appurtenances within the paved area.

In addition, for continuous operations, use machines that:

- A. Have 50 to 60 diamond blades per foot, mounted on a multi-blade arbor
- B. Have dual longitudinal controls capable of operating on both sides automatically from any longitudinal grade reference, which includes string line, ski, mobile string line, or matching shoe
- C. Have transverse controls to control cross slope at a given rate

PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

Demonstrate grinding and/or grooving work to receive approval of the operation procedure and the use of grinding and/or grooving and residue removing equipment.

A. GRINDING:

- 1. Perform grinding in a longitudinal direction beginning and ending at lines perpendicular to the pavement lane lines. Start grinding at the outside edge of the pavement, and continue across the lane surface to the opposite outer edge of the traffic lane or pavement. Grind surfaces on both sides of transverse joints or cracks, and finish the surfaces in essentially the same plane.

2. The finished slope shall mirror the pre-grind slope and shall have no depressions or misalignment of slope greater than 1/4 inch in 12 feet when measured with a 12-foot straightedge placed parallel to the centerline. The straightedge shall also be used perpendicular to the centerline to ensure the contractor is not grinding a "V" into the surface. Areas of deviation shall be reground. Straightedge requirements will not apply outside the ground area.
3. Produce a uniform surface with a longitudinal corduroy-type texture that eliminates joint and crack faults. Provide positive lateral surface drainage by maintaining a constant cross-slope across each lane.

B. REPAIRS:

As directed, perform repairs in accordance with Section 32 01 26.72, "Repair of Spalling in Concrete Pavement," if spalls are 0.25–3 in. in depth.

C. RIDE QUALITY:

Use diamond grinding or other approved work methods to correct surface areas that have more than 1/8-in. variation between any 2 contacts on a 10-ft. straightedge.

D. REMOVAL OF RESIDUE:

Immediately and continuously, remove the slurry or residue resulting from the grinding operation. Keep pavement in a washed clean condition, free of slipperiness from the slurry, etc. Do not permit the residue to flow across lanes occupied by traffic or into drainage facilities.

END OF SECTION

SECTION 32 01 29.61

Repair of Spalling in Concrete Pavement

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Repair spalling and partial-depth failures in concrete pavement.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Furnish either rapid-set concrete or polymeric patching material unless otherwise shown on the plans.

1. RAPID-SET CONCRETE:

Provide concrete that meets [DMS-4655](#), “Concrete Repair Materials,” Type “B.”

Use a packaged blend of hydraulic cement, sand, and gravel (maximum size 3/8 in.) which requires the addition of water and has a maximum shrinkage of 0.15% in accordance with ASTM C928.

Do not use chlorides, magnesium or gypsum to accelerate setting time.

Demonstrate that mixture achieves flexural strength of at least 425 psi in 5 hr., a minimum compressive strength of 5,100 psi in 7 days, and 6,300 psi in 28 days before spall repair operations. Test in accordance with [Tex-418-A](#) and [Tex-448-A](#).

2. POLYMERIC PATCHING MATERIAL:

Provide polymeric patching material that meets [DMS-6170](#), “Polymeric Materials for Patching Spalls in Concrete Pavement,” and matches the color of the pavement.

PART 3 – EQUIPMENT

3.1 EQUIPMENT

- A. Furnish equipment in accordance with Item 429, “Concrete Structure Repair,” or as approved.

PART 4 – EXECUTION

4.1 CONSTRUCTION METHODS

- A. Repair areas as shown on the plans or as directed. Dispose of debris off the right of way in accordance with federal, state, and local regulations.

1. HYDRAULIC CEMENT CONCRETE MATERIAL:

Saw at least 1-1/2 in. deep around repair area before concrete removal, unless otherwise directed, providing a vertical face around the perimeter of the repair area. Protect and reuse existing reinforcing if encountered, unless otherwise directed. Provide a uniform rough surface free of loose particles and suitable for bonding. Remove concrete to a depth of 1-1/2 in. or the depth of deteriorated concrete, whichever is greater. Use chipping hammers not heavier than the nominal 15-lb. class or hydrodemolition equipment for the removal of concrete below 1-1/2 in. depth. Mix, place, and cure in accordance with manufacturer's recommendations. Place concrete if the air temperature is 40°F or above. Screed concrete to conform to roadway surface. Provide a rough broom finish.

2. POLYMERIC PATCHING MATERIAL:

Submit for approval a statement from the manufacturer identifying the recommended equipment and installation procedures. Remove the deteriorated concrete to the dimensions shown on the plans or as directed. Dry and abrasive blast the repair area to ensure it is free from moisture, dirt, grease, oil, or other foreign material that may reduce the bond. Remove dust from the abrasive blasting operation. Apply primer to the repair area in accordance with manufacturer's recommendations. Reapply primer if conditions change before placing patching material. Mix, place, and cure in accordance with manufacturer's recommendations. Begin placement of material at the lower end of sloped areas. Screed polymeric patching material to conform to the roadway surface. Provide a non-skid finish with a notched trowel.

END OF SECTION

SECTION 32 11 16

SUBGRADE PREPARATION AND COMPACTION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This item shall consist of scarifying, blading and rolling the sub-grade to obtain a uniform texture and a uniform density throughout the required depth as shown on the Plans.

PART 2 – PRODUCTS

N/A

PART 3 – EXECUTION

3.1 GENERAL

- A. The roadbed shall be excavated and shaped in conformity with the typical sections shown on the Plans and to the lines and grades established by the Engineer. The entire roadway crosssection including an area two (2) feet back of the proposed curb line shall be bladed clear of vegetation and scarified as directed by the Engineer. All unstable or otherwise objectionable material shall be removed or broken off to a depth of not less than six (6) inches below the surface of the sub-grade. Holes or depressions resulting from the removal of such material shall be backfilled with suitable material compacted in layers not to exceed six (6) inches. All soft and unstable material and other portions of the sub-grade which will not compact readily or serve the intended purpose shall be removed as directed. No direct payment will be made for such removal, except where each separate spot or area requiring removal exceeds ten (10) cubic yards, in which case measurement and payment will be made as provided in the SECTION 31 23 00 – EXCAVATION AND EMBANKMENT.
- B. The sub-grade shall be scarified to the depth shown on the Plans and bladed and compacted in the manner directed in the section on "Finishing and Compaction". The surface of the sub-grade shall be finished to line and grade as established, and be in conformity with the typical sections shown on the Plans. Any deviation in excess of one-half (1/2) inch in crosssection and in a length of sixteen (16) feet measured longitudinally shall be corrected by loosening, adding or removing material, reshaping or compacting by sprinkling and rolling. Material excavated in the preparation of the sub-grade shall be disposed of as directed by the Engineer.

3.2 FINISHING AND COMPACTION

- A. The sub-grade course, including an area two (2) feet back of the proposed curb line, shall be sprinkled as required and rolled as directed until a uniform compaction and required density is obtained. Compaction of the sub-grade may be done using any of the rolling equipment outlined in SECTION 31 11 29.02 - ROLLING. However, required densities must be met. Should the Engineer feel that too much time is being required to obtain those densities he can require that a heavy pneumatic roller be applied. Rolling shall continue until the sub-grade has been compacted to ninety-eight (98) percent of the Standard Density (A.S.T.M. Method D-698). The allowable deviation from optimum moisture content is 0 to +4%.

- B. Rolling shall progress gradually from the sides to the center of the lane under construction, by lapping uniformly each proceeding track by at least twelve (12) inches.
- C. After rolling and watering, the sub-grade shall be checked by the use of string line or instrument. All portions that do not conform to the lines and grades as shown on the Plans, shall be scarified for at least six (6) inches and re-compacted to correct elevation.
- D. Until the base course or pavement is placed, the sub-grade shall be maintained free from ruts and depressions, in a smooth and compacted condition true to lines and grade and to the density requirements contained herein. All of the Contractor's hauling and other equipment used in such a way as to cause rutting and raveling of the sub-grade shall either be removed from the work or suitable runways or other equivalent means shall be provided to prevent rutting.
- E. The Contractor shall be responsible for maintaining and protecting the roadbed for the entire length of the project.
- F. During construction, grading of the sub-grade shall be conducted so that the berm of earth or other material does not prevent immediate drainage of water to the side. Ditches and drains along the sub-grade shall be maintained so as to drain effectively.

END OF SECTION

SECTION 32 11 29
LIME STABILIZATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This item shall consist of admixing commercial lime and/or lime slurry with the existing material, and mixing and compacting the mixed material to the required density. All work performed in this item shall be constructed as specified herein and in conformity with the typical cross-sections, lines and grades as shown on the Plans and as directed by the Engineer.

1.2 MEASUREMENT AND PAYMENT

- A. Lime stabilized material as described in this section will be paid for at the unit price bid in the Proposal for the lime stabilized treatment, which price shall be full compensation for scarifying, preparation below secondary grade, furnishing, distributing, and mixing the lime and for all labor, supplies, water, fuel, tools, equipment and incidentals necessary to mix and compact the stabilized soil to the density specified in these Specifications. Payment will not be made for unauthorized work.

1.3 SUBMITTALS

- Lime series Atterburg Limits
Lime series pH test (ASTM C977-83a-Annex Test Method)
Lime type
% Lime

PART 2 – PRODUCTS

2.1 MATERIALS

- A. The lime to be used for stabilization shall meet with requirements of TX DOT DMS-6350: Lime and Lime Slurry” and DMS-6330, “Lime Sources Prequalification of Hydrated Lime and Quicklime”. Use hydrated lime, commercial lime slurry, or pebble grade quicklime.
- B. The amount of lime required for stabilization will be the percent by weight shown on the Plans, stated in the Special Provisions, or that amount which produces a pH not less than 12.4 and provides for a Plasticity Index less than 18.

2.2 TESTING REQUIREMENTS

- A. After final mixing, a pH test, Atterberg Limit test and sieve analysis shall be performed in accordance with Tex-101-E, Part III.

- B. Moisture and Density tests shall be taken at each construction station to ensure a density of at least 98% of maximum dry density at a moisture content between optimum and 4% wet of optimum in accordance with Standard Proctor (ASTM D698). All tests meeting these requirements shall be paid by the owner. The City will not pay for failing tests.
- C. When requested by the Engineers Inspector, the contractor will proof roll areas in question with a 25 ton pneumatic tired roller or approved equal after lime stabilization is complete.

PART 3 – EXECUTION

3.1. GENERAL:

- A. It is the primary requirement of this specification to produce a completed course of treated material containing a uniform line mixture, free from loose or segregated areas, of uniform density and moisture content, well bound for its full depth as shown on the detail sheet or specified in the Special Provisions and with a smooth surface suitable for placing subsequent courses. It shall be the responsibility of the Contractor to regulate the sequence of his work, to use the proper amount of lime, maintain the work and rework the courses as necessary to meet the above requirements.
- B. The Contractor is required to ensure the existing sub-grade or embankment beneath the course to be lime stabilized is of proper density, uniformity and quality. The Contractor may elect to proof roll, replace and/or compact, areas that exhibit instability. If necessary, the Contractor may need to scarify, dry and compact the existing sub-grade prior to addition of lime. All work for the preparation of the existing sub-grade will not be paid directly, but will be considered a part of "Lime Stabilization".

3.2. APPLICATION:

- A. Lime shall be spread only on that area where the first mixing operations can be completed during the same working day.
- B. The lime shall be spread by a pre-approved screw type spreader box, bag distribution, or a pre-approved truck spreader, in the manner and at the rates directed by the Engineer. The lime shall be distributed at a uniform rate and in such a manner as to reduce the scattering of the lime by wind to a minimum. Lime shall not be applied when wind conditions, in the opinion of the Engineer, are such that blowing lime becomes objectionable. A motor grader shall not be used to spread the lime.
- C. When pebble grade quicklime is placed dry, mix the material and lime thoroughly at the time of lime application.

3.3. MIXING:

- A. The material shall be dried or wetted as directed by the Engineer, until the proper moisture content has been secured. All lime shall be mixed with the material to be treated immediately after application of lime. During the interval of time between application and mixing, hydrated lime that has been exposed to the open air for a period of six (6) hours or more or had excessive loss due to washing or blowing will not be accepted until totally reprocessed, refinished and retested. This will be done at the sole expense of the Contractor.
- B. The soil-lime mixture shall be sprinkled during the mixing process as directed by the Engineer, to provide optimum moisture plus four (4) percent in the mixing immediately prior to starting the compaction operation.
- C. The stabilized soil shall then be lightly sealed to allow for the mixture to mellow for 1 to 4 days. When pebble grade quicklime is used, allow the mixture to mellow for 2 to 4 days. The mixed material shall be kept moist during this period and traffic shall not be allowed on the treated portion. The moisture content of the mixture should be within, optimum and four percent of optimum for the compactive effort specified.
- D. After mellowing, resume mixing until a homogeneous friable mixture of material and lime is obtained, such that when all nonslaking aggregates retained on the 3/4" sieve are removed, the remainder of the material shall meet the following requirements when tested from the roadway in the roadway conditions by standard laboratory sieves:

<u>Sieve</u>	<u>Percent Passing</u>
1-3/4"	100%
3/4"	85%
#4	60%

After final mixing, the stabilized soil shall be bladed and compacted as specified below.

3.4. COMPACTION:

- A. Compaction of the mixture shall begin immediately after final mixing. The material shall be aerated or sprinkled as necessary to provide the proper moisture. Compaction shall begin at the bottom and shall continue until the entire depth of mixture is uniformly compacted.
- B. The course shall be sprinkled as required and compacted to the extent necessary to provide no less than ninety-eight (98) percent of the density measured by ASTM D698 at a moisture content between optimum and +4% wet of optimum moisture content. Grades shall be "blue-topped" during the compaction effort and the lime soil mixture shall be compacted to within 0.1 ft in cross-section and 0.1 ft in 16 ft measured longitudinally. In addition to the requirements specified for density, the full depth of the material shown on the plans shall be compacted to the extent

necessary to remain firm and stable under construction equipment. Depth tests shall occur every 200 lf and shall be performed after compliance with density requirements.

- C. If the material fails to meet the density requirements, it shall be reworked as necessary to meet these requirements. Throughout this entire operation the shape of the course shall be maintained by blading, and the surface upon completion shall be smooth and in conformity with the typical section shown on the plans and to the established lines and grades. Should the material due to any reason or cause, lose the required stability, density and finish it shall be re-compacted, refinished and retested at the sole expense of the Contractor.

3.5 EQUIPMENT

- A. The machine, tools and equipment necessary for the proper prosecution of the work shall be on the project and pre-approved by the Engineer prior to the beginning of construction operations.
- B. All machinery, tools and equipment used shall be maintained in a satisfactory and workmanlike manner.
- C. To insure thorough mixing of the lime into the material to be stabilized, equipment shall be a pulverizer mixer equivalent to a Seaman Mixer, or soil stabilizing machine shall be used.
- D. Hydrated lime shall be stored and handled in closed weatherproof containers until immediately before distribution on the road. If storage bins are used they shall be completely enclosed. Hydrated lime in bags shall be stored in weatherproof buildings with adequate protection from ground dampness.
- E. If lime is furnished in trucks, each truck shall have the weight of lime certified on public scales or the Contractor shall place a set of standard platform truck scales or hopper scales at a location pre-approved by the Engineer. Scales shall be certified as to accuracy by an independent pre-approved testing laboratory.

3.6 FINISHING AND CURING OF LIME-STABILIZED MATERIAL:

- A. After the lime treated material has been compacted and brought to the required lines and grades in accordance with the typical sections, the completed section shall then be finished by rolling as directed with a pneumatic or other suitable roller sufficiently light to prevent hair cracking. The completed section shall be moist-cured for a minimum of five (5) days before further courses are added or any traffic is permitted, unless otherwise directed by the Engineer. If the sub-grade sets up sufficiently to prevent objectionable damage from traffic, the layer may be opened to traffic the day following compaction, unless otherwise directed by the Engineer.
- B. Apply seals or additional courses within fourteen (14) calendar days after final compaction, unless otherwise directed by the Engineer.

END OF SECTION

SECTION 32 13 13

CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

This item shall consist of a pavement of Portland cement concrete as herein specified on the prepared base, subbase or subgrade course in conformity with the thickness, typical cross-sections, and to the lines and grades shown on the Plans by the Engineer.

1.2 SUBMITTALS

See SECTION 03 30 00 - CONCRETE

Paving Plan

Joint Sealing Compound

Expansion Joint Material

PART 2 – PRODUCTS

2.1 MATERIALS

See SECTION 03 30 00 - CONCRETE

2.2 TESTING REQUIREMENTS

See SECTION 03 30 00 - CONCRETE

PART 3 – EXECUTION

3.1 GRADE CONTROL

The lines and grades shown on the contract drawings for each pavement category of the contract shall be established and maintained by means of line and grade stakes. The finished pavement grade lines and elevations shown on the contract drawings shall be established and controlled at the site of the work by the Contractor in accordance with benchmark elevations furnished by the Owner. The pavements shall be constructed to the indicated thicknesses and elevations. The tolerances permitted in thickness, smoothness, and grades are the normal deviations that may occur in pavement construction under good supervision. However, construction of pavement or any part thereof with intent to use maximum tolerances will not be permitted.

3.2 SUBGRADE, SUBBASE, BASE AND FORMS

A. EQUIPMENT:

1. Subgrade Planer: Subgrade planer mounted on visible rollers riding on the forms or edges or previously constructed slabs shall be provided for shaping the final surface of the subgrade, subbase, or base course. Any power equipment used to pull the subgrade planer shall not produce ruts or indentations in the subgrade, subbase or base course. The subgrade planer shall be equipped with steel cutting edge capable

of being accurately adjusted to the required cross section. When the subgrade planer rides on the edges of the surface of previously constructed slabs, the planer shall be provided with rubber-tired rollers to prevent damage to surfaces and edges of the existing concrete.

2. Templates: The Contractor shall provide and operate a scratch template for checking the contour of the subgrade, subbase, or base course. The template or roller is to be mounted with the wheels supported on the side forms or concrete in adjacent lanes. It shall be of such strength and rigidity that under a test made by changing the support to the center the template will not show a deflection of more than 1/8 inch. The template shall be provided with adjustable rods projecting downward to the subgrade at not more than 1-foot intervals. These rods shall be adjusted to the required cross section of the bottom of the slab when the ends of the template are supported on the side forms or concrete in the adjacent lanes. The template shall be checked frequently during use to assure that the rods are in the correct position.
3. Forms: The forms shall be made of metal unless noted. Wood forms may be used on curves having a radius of 150 feet or less, as well as for fillets. Forms shall be equal in depth to the edge thickness of the slab as shown on the drawings. Forms shall be in one piece for the full depth required, except as noted. Where the drawings provide several different slab thicknesses, forms may be built up of metal or wood as provided. Forms may be increased in depth 25 percent by securely bolting or welding to the bottom a tubular metal section of the proper thickness or by securely bolting wood planks to the bottom of the steel form. The tubular metal section or wood planks shall completely cover the under side of the base of the steel form. It shall extend beyond the edge of the base a sufficient distance to provide the necessary stability against movement along the vertical face. The base width of the one-piece form, or built-up form, shall be not less than eight-tenths of the vertical height of the form.
 - a.) Metal Forms: Metal forms shall be of a cross section and shall be furnished in sections not less than 10 feet in length. Curves having a radius of 150 feet or less the length of the sections shall be 5 feet unless the sections are flexible or curved to the proper radius. Each 10-foot length of form shall be provided with at least three form braces and pin sockets. The number and spacing of the form braces and pin sockets shall be such that the form will be rigidly braced uniformly throughout its length and at the joints between form sections. Lock joints between form sections shall be free from play or movement. Metal forms shall have such strength that when tested as simple beam with a load equal to the weight of the heaviest machine to be used on the forms, the deflection will not exceed 1/8 inch in 10 feet. Forms shall be provided with adequate devices for secure setting to prevent springing, weaving, or settling from the impact and vibrations of the machine. Forms shall be free of warps, bends, or kinks. The top surface of a form shall not vary more than 1/8 inch in 10 feet from a true line. The face of the form shall not vary more than 1/4 inch in 10 feet from a true plane. Forms with battered top surfaces distorted faces or bases shall not be used. They are to be removed from the project site.
 - b.) Wood Forms: Wood forms for curves and fillets shall be made from well-seasoned, surfaced plank or plywood. The wood shall also be straight, free from warp or bend, and not less than 2 inches in nominal thickness. Wood forms shall be furnished in sections approximately 5 feet in length and shall be provided with adequate devices for secure setting to withstand springing, weaving, or settling from the impact and vibration of the placing and finishing operations.

4. Subgrade, Subbase or Base Course: The subgrade, subbase or base course shall be tested as to crown, elevation, and density in advance of setting the forms. The subgrade prior to final planing shall be completed to or above the plane of the typical sections shown on the drawings and the lines and grades established by the drawings or as directed. Any discrepancies shall be corrected in accordance with the requirements for subgrade, subbase or base course construction as specified.
5. Form Setting: After the subgrade, subbase or base course has been prepared as described above, the forms shall be set. The subgrade, subbase, or base course under the forms shall be firm and cut true to grade so that each in place form section will be firmly in contact for its entire length and base width. The form shall be staked into position. The top of the form will conform to the requirements specified for the finished surface of the concrete, and the longitudinal axis of the upstanding leg will not vary more than 1/4 inch from the straight-edge when tested by a 12-foot straight-edge. The length and number of pins in any section shall be sufficient to hold the form at the correct line and grade. Form sections shall be tightly locked together. Conformity to the alignment and grade elevations shown on the drawings shall be checked and necessary corrections made by the Contractor immediately prior to placing the concrete. Forms shall be set well in advance of concrete placement. At least 250 feet of forms and prepared subgrade, subbase or base course shall be provided before concrete placement starts. The forms shall be cleaned and oiled each time before concrete is placed.
6. Subgrade Between Forms: The subgrade, subbase, leveling course or base course shall be free of foreign matter, waste concrete, cement and debris at all times; shall be finished to the required section of the bottom of the pavement as shown on the drawings with specified equipment; shall be tested with a template operated and maintained by the Contractor; shall be maintained in a smooth, compacted condition, in conformity with the required section and established grade until the concrete is in place; shall be wetted down sufficiently in advance to insure a firm, moist, and satisfactory condition when the concrete is placed; shall, if required, be thoroughly wetted down the previous night or not less than 6 hours before placing the concrete; shall not be traversed with equipment or hauling on the prepared surface between forms; in cold weather shall be prepared and protected in a satisfactory condition and entirely free from frost when the concrete is placed; and shall not be treated with chemicals to eliminate frost.
7. Form Removal: Forms shall remain in place at least 12 hours after the concrete has been placed. Should weather conditions delay the early-strength gain of the concrete, the forms shall remain in place for a longer period. Forms shall be removed without injuring the concrete. Bars or heavy tools are not to be used against the concrete in removing the forms. Any concrete damaged in form removal will be repaired promptly by the Contractor at no cost to the Owner.

3.3 FINISHING

Finishing operations shall be started immediately after placement of the concrete. The sequence of operations shall be as follows: transverse finishing, longitudinal floating, straight-edge finishing, carpet drag finishing, and finally the edging of joints. The machine method of finishing shall be employed, except that hand methods may be permitted as approved by the engineer. Finishing equipment and tools shall be maintained clean, free from hardened concrete or grout, and in an approved condition.

A. MACHINE FINISHING:

1. Equipment: The transverse and longitudinal finishing machines shall be power driven, be of ample weight and power to produce proper finishing, and be able to withstand the roughest treatment anticipated under job conditions. The transverse-finishing machine shall be designed and operated to strike off, screed, and consolidate the concrete. It shall be equipped with two screeds readily and accurately adjustable for changes in pavement crown and compensation for wear and other causes. The longitudinal - finishing machine shall be provided with a longitudinal float not less than 10 feet in length, readily adjustable to a true plane and properly stiffened to prevent distortion during use. Screed and float adjustments of these machines shall be checked at the start of each day's paving operations and as often as required. Machines that cause frequent delays due to mechanical failure shall be replaced. Finishing machines that ride the edge of a previously constructed slab shall have rubber-tired wheels to prevent damaging the surface and edges of the concrete.
 2. Transverse finishing: Concrete, as soon as placed, shall be accurately struck off and screeded to the crown and cross section shown on the drawings. The final surface elevation or grade is to be non-porous when properly consolidated and finished. The finishing machine shall make at least two trips over each area of pavement, and may make one or two additional trips as necessary to properly compact the concrete and produce a surface of uniform texture, as well as true to grade. However, excessive manipulation that brings to the surface an excess of mortar and water will not be permitted. Any equipment that cannot produce the required compaction and surface finish with the indicated number of trips will be considered unsatisfactory. The top of the form or pavement edge upon which the finishing machine travels shall be kept clean by an effective device attached to the machine, and by necessary hand methods. This will insure that the travel of the machine will be maintained true without lift, wobble, or other variation that would affect the precision of the finish.
 3. Longitudinal Floating: After completion of finishing with the transverse-finishing machine, the longitudinal mechanical float shall be operated to smooth and finish the pavement to grade. The float shall be operated parallel to the centerline of the pavement with a short, quick motion, and shall travel slowly along the pavement, maintaining contact with the surface at all times. If contact with the surface is not made at all points, additional concrete as required shall be placed and screeded. The float is to be operated over the same area until a satisfactory surface is produced. In advancing the float, each new position shall lap the previous position by not less than one-half the float length.
 4. Other Types of Finishing Equipment: Other types of concrete finishing equipment may be used on a trial basis. Such finishing equipment shall be approved by the Engineer before being put into service. The use of equipment that fails to produce approved results when finishing concrete of the quality and consistency required by these specifications shall be discontinued. The concrete shall then be floated and finished with equipment in the manner as specified above.
- B. HAND FINISHING: This method shall be employed only under the conditions previously specified, except as otherwise permitted and authorized by the Engineer.
1. Equipment: An approved strike and tamping template and a longitudinal float shall be provided for hand finishing. The template shall be at least 1 foot longer than the pavement width, be equipped with handles, and have edges at least 4 inches wide. The longitudinal float shall be 10 to 16 feet in length, with a cross section of an inverted T made of a 2 X 6 inch or wider plank for the base and a 2 X 8 inch plank for the vertical leg. The float shall be rigid, substantially braced, be able to maintain a plane surface

on the bottom of the base, and shall have suitable handles for smooth and effective manipulation from the foot bridges. The bottom edges of the base of the float shall be rounded on a radius not exceeding 3/8 inch. Floats made of metal or a combination of wood and metal may be used provided they conform to the requirements for wood floats.

2. Finishing and Floating: Immediately after placement, concrete shall be struck off and screeded to the crown and cross section shown on the drawing. The consolidated and furnished surface elevation shall be in accordance with the drawings or as specified. The entire surface shall be tamped, and the tamping operation is to be continued until accomplishing the required compaction and reduction of internal and surface voids. Concrete that is inaccessible to the vibrating consolidating equipment shall be consolidated with the aid of hand-manipulated vibrators under provisions of the subparagraph 125.06 (C)"Vibration". Immediately following the final tamping of the surface, the pavement shall be floated longitudinally by hand from bridges resting on the side forms and spanning but not touching the concrete. If contact with the pavement is not made at all points by the float, additional concrete shall be placed as required and screeded, and the float operated until a satisfactory surface has been produced. After a section has been smoothed so that the float maintains contact with the surface of the concrete at all points, the bridges may be moved forward half the length of the float. The operation is to be repeated over the new and previously floated surfaces.

3. Straight-edge Finishing: Minor irregularities and score marks in the pavement surface shall be eliminated by means of long-handled wood floats and straight-edges after the longitudinal floating is completed, but while the concrete is still plastic. When necessary, excess water and laitance shall be removed from the surface transversely by means of a finishing straight-edge. The long-handled floats may be used to smooth and fill in open-textured areas in the pavement surfaces. The final finish shall be made with the straight-edges. The use of long-handled floats shall be held to a minimum as necessary to correct local surface unevenness not corrected by the longitudinal float.

Long-handled floats shall not be used to float the entire pavement surface. Straightedges shall be 12 feet in length and may be operated from bridges and from the side of the pavement. A straight-edge operated from the side of the pavement shall be equipped with a handle 3 feet longer than one-half the width of the pavement. The surface shall then be tested for trueness with a 12-foot straight-edge held in successive positions parallel and at right angles to the centerline of the pavement in contact with the surface. The whole area is to be covered as to detect variations. The straight-edge shall be advanced along the pavement in successive stages of not more than one-half the length of the straight-edge. Depressions shall be immediately filled with freshly mixed concrete, struck off, consolidated, and refinished. Projections above the required elevation shall also be struck off and refinished. The straight-edge testing and finishing shall continue until the entire surface of the concrete is free from observable departure from the straight-edge, conforms to the required grade and contour and when hardened, will satisfy the surface requirements specified under subparagraph 125.13(B) "Surface Smoothness".

4. Carpet Drag Finishing: Use an artificial grass-type carpet having a molded polyethylene pile face with a blade length of 5/8 inch to 1 inch, a minimum weight of 70 ounces/square yard, and a strong, durable, rot-resistant backing material bonded to the facing. The surface of the pavement shall be dragged longitudinally in the direction of the concrete placement with the carpet drag when most of the water glaze or sheen has disappeared and before the concrete becomes non-plastic. The carpet

drag should be of sufficient transverse length to span the full width of the pavement being placed and adjustable so that a sufficient longitudinal length of carpet is in contact with the concrete being placed to produce the desired texture. The leading transverse edge of the drag shall be securely fastened to a traveling bridge or a moveable support system. The carpet drag shall be cleaned and changed as required. The dragging shall be carefully done to produce a finished surface having a fine granular or sandy texture without leaving disfiguring marks. The surface of the pavement at joint edges shall be dragged as necessary with a small hand-operated drag following edge tooling. No tool marks of any kind shall be present on the finished surface.

3.4 CONSTRUCTION JOINTS

Construction joints shall be prepared for receiving the next pour by sweeping the surface of the joint clean with a stiff broom or wire brush to remove all laitance. All loose particles and debris shall be removed. The surface is to be dampened just prior to casting of concrete against the joint. Construction joints will be made only at locations shown on the Plans unless written permission is granted by the Engineer to make additional joints.

- A. LONGITUDINAL CONSTRUCTION JOINTS: Longitudinal construction joints between paving lanes shall be located as indicated on the drawings. Dowels or keys shall be installed in the longitudinal construction joints as required and in accordance with the indicated details. Metal keyway forms shall be used for forming horizontal keyways. The dimensions of the keyway forms shall not vary more than plus or minus 1/16 inch from the indicated dimensions. The keyway form shall be securely fastened to the concrete form so that it will be at the mid-depth of the pavement within a tolerance of plus or minus 1/8 inch. All longitudinal construction joints shall be edged and subsequently sawed to provide a groove at the top conforming to the indicated details and dimensions.
- B. TRANSVERSE CONSTRUCTION JOINTS: Transverse construction joints shall be installed at the end of each day's placing operations and at any other points within a paving lane when concrete placement is interrupted for 30 minutes or longer. All transverse construction joints in non-reinforced pavements shall be installed in the location of a planned transverse contraction or expansion joint. Transverse construction joints located at planned transverse joints shall be of the doweled type with one end of each dowel painted and greased to permit movement at the joint. These joints shall be edged and subsequently sawed to provide a groove at the top conforming to the indicated details and dimensions. When concrete placing is resumed, the planned joint spacing shall be used beginning with the first regularly scheduled transverse joint.

3.5 EXPANSION JOINTS

Three quarter (3/4) inch expansion joints shall be provided at forty (40) feet on center or of the type, size, and spacing shown on the Plans. The expansion joint materials shall be as shown on the plans or a recycled material, 3/4" thick as manufactured by J.D. Russel Co., or approved equal. The joint sealing compound shall be Sonneborn SL-1 or approved equal. Manufacturers' recommendations must be strictly adhered to. Devices used for installing the joints shall be adequate to hold the parts of the joint in proper position while protecting the filler from damage during concreting operation. The devices shall also be removable without permanent detriment to the pavement. Adjacent sections of filler shall be fitted tightly together and held in line to insure continuity. Concrete shall be prevented from entering the expansion space. Any concrete that has flowed into a gap between an expansion joint strip and edge forms of the pavement shall be cut out

immediately after removing the forms. Expansion joints shall be formed about structures and features that project through, into, or against the pavement. Joint filler must be of the type, thickness, and width as indicated or directed and installed to form a complete, uniform separation between the structure and pavement.

3.6 CONTRACTION JOINTS

- A. Contraction joints shall be provided at twenty (20) feet on center or of the type, size, and spacing shown on the Plans. Contraction joints may be either tooled or sawed but must provide a minimum depth of $\frac{1}{4}$ of the thickness of the concrete and sealed as shown on the plans or with Sonneborn SL-1 or approved equal. When sawed joints are used, the sawing should begin as soon as the concrete has obtained adequate strength to resist raveling of the joint edges, generally between 4 and 24 hours. The joints must be flushed or blown clean immediately after sawing to keep the residue from setting up.
- B. Transverse and longitudinal contraction joints shall be of the weakened-plane or dummy type, and shall be constructed in conformance with the indicated details and dimensions. Longitudinal contraction joints shall be constructed by sawing a groove in the hardened concrete with a power-driven saw. Tie bars in longitudinal contraction joints shall be prepared and placed across joints where indicated in the plans. They shall be correctly aligned and securely held in the proper horizontal and vertical position during the placing and finishing operations to the satisfaction of the Engineer.
1. Sawed Joints: The groove of contraction joints shall be not less than $\frac{1}{4}$ inch nor greater than $\frac{3}{8}$ inch in width for the entire depth of saw cut shown on the drawings. The upper portion of the groove is to be widened to not less than $\frac{3}{8}$ inch nor more than $\frac{5}{8}$ inch for a depth of $\frac{1}{4}$ of the pavement thickness, plus or minus $\frac{1}{8}$ inch, below the pavement surface.

The time of sawing shall be varied, depending on existing and anticipated weather conditions. Uncontrolled cracking of the pavement shall be prevented. Sawing of the joints shall commence as soon as the concrete has hardened sufficiently to permit cutting the concrete without excessive chipping, spalling, or tearing. The sawed faces of joints will be inspected for undercutting or washing of the concrete due to early sawing. If this action is sufficiently deep to cause structural weakness or excessive cleaning difficulty, as determined by the Engineer, the sawing operation shall be delayed until directed to resume. The sawing operation shall be carried on regardless of weather conditions. The joints shall be sawed at the required spacing consecutively in the sequence of the concrete placement. A chalk line or other suitable guide shall be used to mark the alignment of the joints. The saw cut shall be straight from edge to edge of the pavement and shall not vary more than $\frac{1}{2}$ inch from the true joint alignment. Before sawing a joint, the concrete shall be examined closely for cracks. The joint shall not be sawed if a crack has occurred near the location chosen for a joint. Sawing shall be discontinued when a crack develops ahead of the saw cut.

The surface of pavement cured with membrane-curing compound shall be wetted with water in the region of the intended saw cut prior to sawing to protect the curing membrane from abrasion. Workmen and inspectors shall wear clean, rubber soled footwear, and the number of persons walking on the pavement shall be limited to those actually performing the sawing operation. Immediately after each joint is sawed, the saw cut and adjacent concrete surface shall be thoroughly flushed with water until all waste from sawing is removed from the joint. Any membrane-cured surface damaged during the sawing operations shall be re-sprayed as soon as the free water disappears. The sawing equipment shall be adequate in number of units and power to complete

the sawing at the required rate. An ample supply of saw blades shall be available on the job before concrete placement is started. At least one standby sawing unit in good working order shall be available at the job site at all times during the sawing operations.

2. Dowels and Tie Bars: Dowels and tie bars shall be prepared and placed across joints where indicated. They are to be correctly aligned, and securely held in the proper horizontal and vertical position during the placing and finishing operations. Dowels shall be placed by the bonded-in-place method. The portion of the dowel inside the form shall be the bonded end. Dowels may be cut to length at the mill or shop by shearing in lieu of sawing, provided the deformation from true shape caused by shearing does not exceed the diameter of the bar by more than 0.04 inch and provided such deformation does not extend more than 0.04 inch from the end of the dowel. Dowels shall be clean, straight, and cut true to length with ends square and free from burs.

In longitudinal and transverse construction joints, threaded split dowels may be used in lieu of one-piece dowels. The assembled split dowels shall have a length and diameter at least equal to that of a one-piece dowel of the required size. The screw-threaded portions of split dowels shall have a pitch diameter at least equal to the diameter of the one-piece dowel of the required size. The sleeve connector shall be of such length that when the split dowel is assembled the entire screw-threaded portions of the dowel are encased by the sleeve with dowel ends butting each other. Dowels in longitudinal and transverse construction joints shall be held securely in place by means of devices fastened to the forms.

Dowels and tie bars installed within the paving lane shall be held securely in position by means of rigid metal frames or basket assemblies. The assemblies shall consist of a framework of metal bars or wires arranged to provide rigid support for the dowels and tie bars throughout the paving operation. The assemblies shall also have a minimum of four transverse bars or wires, one of which shall be at or near each end of the dowel or tie bars with one for each end of the dowel bar at or near the subgrade. The dowels shall be welded to the assembly or held firmly by mechanical locking arrangements that will prevent the dowels from rising, sliding out, or becoming distorted under paving operations. The wires shall not be used as locking devices. The dowel-holding devices shall be held securely in the proper location by means of suitable pins or anchors. Dowels in longitudinal and transverse construction joints shall be held securely in place parallel to the surface and within 1/2 dowel diameter of the center of the slab depth. Dowels in expansion joints and tie bars installed within the paving lane shall be held securely in place with the center of the dowel or tie bar within 1/8 inch of the center of the slab depth.

The spacing of dowels in longitudinal construction joints shall be as indicated except where the planned spacing cannot be maintained due to form length or interference with form braces. Spacing shall be closer with additional dowels. Dowels in longitudinal joints shall be omitted when the center of the dowel would be located within a horizontal distance from a transverse joint equal to 1/4 of the slab thickness. The method used in holding dowels in position shall be accurate to detect errors in alignment of any dowel from its required position after the finished pavement. There shall not be an angle greater than one whose tangent is 1/96. The Contractor shall furnish a template for checking the position of the dowels.

The portion of each dowel intended to move within the concrete or expansion cap shall be coated with a thin film of grease or other approved de-bonding material. Provide dowel caps on the lubricated end of each dowel bar used in an expansion joint. Provide

dowel caps filled with a soft compressive material with enough range to allow complete closure of the expansion joint.

3.7 LONGITUDINAL JOINTS

Longitudinal joints may be provided to assist in grade control or of the type, size, and frequency shown on the Plans. The longitudinal joint shall consist of a steel keyway or as shown on the plans. Manufacturer's recommendations must be strictly adhered to.

3.8 PAVEMENT PROTECTION:

The Contractor shall protect the paving against all damage prior to final acceptance of the work by the Owner. Traffic shall be excluded from the pavement by erecting and maintaining barricades and signs until the concrete is at least 3 days old or for a longer period if so directed. As a construction expedient in paving intermediate lanes between newly paved lanes, operation of the paving mixer and batch-hauling equipment will be permitted on the pavement after the pavement has been cured for seven days and the joints have been sealed or otherwise protected. Also, the subgrade planer, concrete finishing machines, and similar equipment may be permitted to ride upon the edges of the previously constructed slabs provided the concrete is more than 72 hours old and has attained a minimum flexural strength of 450 psi or a compressive strength of 2,800 psi. Additional protection to the slab edge may be required to prevent damage. The pavement carrying traffic or equipment shall be kept clean. All spillage of materials on concrete shall be cleaned up immediately upon occurrence, at no cost to the Owner.

3.9 PLAN GRADE AND SURFACE-SMOOTHNESS REQUIREMENTS:

The finished surfaces of all pavements shall conform to the grade line and elevations shown on the contract drawings and the surface-smoothness requirements:

- A. **PLAN GRADE:** The finished surfaces of all pavements shall conform, within the tolerances specified and to the lines, grades, and cross sections shown on the contract drawings. The finished surfaces of the pavements shall not vary more than 0.04 foot above or below the plan-grade line or elevation established and approved at the site of the work. The finished surfaces of new abutting pavements shall coincide at their juncture. An approved transition pavement strip of the type and width shown on the drawings or as directed shall be installed where a new pavement abuts an existing pavement to provide the required and satisfactory pavement surface at the juncture of the new and existing pavements. Further, the 0.04 foot deviation from the approved grade line and elevation will not be permitted in any area of these pavements where closer conformance with planned grade and elevation is required for the proper functioning of any and all applicable structures.
- B. **SURFACE SMOOTHNESS:** The finished surfaces of all pavements shall not deviate from the testing edge of an approved 12-foot straight-edge more than the tolerance shown for the respective pavement category of Table 350-1. In no instance shall the tolerance exceed more than 1/16 of an inch per foot.

TABLE 350-1		
Pavement Category	Direction of Testing	Tolerances

Pavements having cross slopes of 1% or less	Longitudinal Transverse	1/8 inch 3/16 inch
Pavements having cross slopes greater than 1%	Longitudinal Transverse	1/8 inch 1/4 inch

- C. EQUIPMENT: The Contractor shall furnish and maintain at the site one straight-edge in good condition for each longitudinal finishing machine for use by the Owner in testing the hardened portland-cement-concrete surfaces. These straight-edges shall be constructed of aluminum or other approved lightweight metal. They shall have blades with a box or box-girder cross-section with a flat bottom, adequately reinforced to insure rigidity and accuracy. Straight-edges shall be equipped with handles for operation on the pavement. The Contractor shall furnish and maintain at the site devices other than straight-edges, if approved, for surface-smoothness determinations. There shall be one such device for each longitudinal finishing machine for use by the Owner.

3.10 CURING

See SECTION 03 30 00 - CONCRETE

END OF SECTION

SECTION 32 17 23.13

PAINTED PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 DESCRIPTION

1. A. Furnish and place retroreflectorized, non-retroreflectorized (shadow) and profile pavement markings.

PART 2 – PRODUCTS

2.1 MATERIALS

1. Type I Marking Materials. Furnish in accordance with DMS-8220, “Hot Applied Thermoplastic.”

Furnish pavement marking material used for Type I profile markings and shadow markings that have been approved by the Construction Division, and in accordance with DMS-8220, “Hot Applied Thermoplastic.”

2. Type II Marking Materials. Furnish in accordance with DMS-8200, “Traffic Paint.”
3. Glass Traffic Beads. Furnish drop-on glass beads in accordance with DMS-8290, “Glass Traffic Beads” or as approved. Furnish a double-drop of Type II and Type III drop-on glass beads where each type bead is applied separately in equal portions (by weight), unless otherwise approved. Apply the Type III beads before applying the Type II beads.
4. Labeling. Use clearly marked containers that indicate color, mass, material type, manufacturer, and batch number.

2.2 EQUIPMENT

1. General Requirements. Use equipment that:
 - is maintained in satisfactory condition,
 - meets or exceeds the requirements of the National Board of Fire Underwriters and the Texas Railroad Commission for this application,
 - applies beads by an automatic bead dispenser attached to the pavement marking equipment in such a manner that the beads are dispensed uniformly and almost instantly upon the marking as the marking is being applied to the road surface. The bead dispenser must have an automatic cut-off control, synchronized with the cut-off of the pavement marking equipment,
 - has an automatic cut-off device with manual operating capabilities to provide clean, square marking ends,
 - is capable of producing the types and shapes of profiles specified, and
 - can provide continuous mixing and agitation of the pavement marking material. The use of pans, aprons, or similar appliances which the die overruns will not be permitted for longitudinal striping applications.

Provide a hand-held thermometer capable of measuring the temperature of the marking material when applying Type I material.

When pavement markings are required to meet minimum retroreflectivity requirements on the plans:

- Use a mobile retroreflectometer approved by the Construction Division and certified by the Texas A&M Transportation Institute Mobile Retroreflectometer Certification Program.
 - Use a portable retroreflectometer that:
 1. uses 30-meter geometry and meets the requirements described in ASTM E1710;
 2. has either an internal global positioning system (GPS) or the ability to be linked with an external GPS with a minimum accuracy rating of 16 ft. 5 in., in accordance with the circular error probability (CEP) method (CEP is the radius of the circle with its origin at a known position that encompasses 50% of the readings returned from the GPS instrument);
 3. can record and print the GPS location and retroreflectivity reading for each location where readings are taken.
2. Material Placement Requirements. Use equipment that can place:
- at least 40,000 ft. of 4-in. solid or broken non-profile markings per working day at the specified thickness;
 - at least 15,000 ft. of solid or broken profile pavement markings per working day at the specified thickness;
 - linear non-profile markings up to 8 in. wide in a single pass;
 - non-profile pavement markings other than solid or broken lines at an approved production rate;
 - a centerline and no-passing barrier-line configuration consisting of 1 broken line and 2 solid lines at the same time to the alignment, spacing, and thickness for non-profile pavement markings shown on the plans;
 - solid and broken lines simultaneously;
 - white line from both sides;
 - lines with clean edges, uniform cross-section with a tolerance of $\pm 1/8$ in. per 4 in. width, uniform thickness, and reasonably square ends;
 - skip lines between 10 and 10-1/2 ft., a stripe-to-gap ratio of 10 to 30, and a stripe-gap cycle between 39-1/2 ft. and 40-1/2 ft., automatically;
 - beads uniformly and almost instantly on the marking as the marking is being applied;
 - beads uniformly during the application of all lines (each line must have an equivalent bead yield rate and embedment); and
 - double-drop bead applications using both Type II and Type III beads from separate independent bead applicators, unless otherwise approved by the Engineer.

PART 3 – EXECUTION

3.1 CONSTRUCTION METHODS

1. General.

- Obtain approval for the sequence of work and estimated daily production. Minimize interference to roadway operations when placing markings on roadways open to traffic. Use traffic control as shown on the plans or as approved. Protect all markings placed under open-traffic conditions from traffic damage and disfigurement.
- Establish guides to mark the lateral location of pavement markings as shown on the plans or as directed, and have guide locations verified. Use material for guides that will not leave a permanent mark on the roadway.
- Apply markings on pavement that is completely dry and passes the following tests:
 - a. Type I Marking Application—Place a sample of Type I marking material on a piece of tarpaper placed on the pavement. Allow the material to cool to ambient temperature, and then inspect the underside of the tarpaper in contact with the pavement. Pavement will be considered dry if there is no condensation on the tarpaper.
 - b. Type II Marking Application—Place a 1-sq. ft. piece of clear plastic on the pavement, and weight down the edges. The pavement is considered dry if, when inspected after 15 min., no condensation has occurred on the underside of the plastic.
- Apply markings:
 - a. that meet the requirements of Tex-828-B,
 - b. that meet minimum retroreflectivity requirements when specified on the plans (applies to Type I markings only),
 - c. using widths and colors shown on the plans,
 - d. at locations shown on the plans,
 - e. in proper alignment with the guides without deviating from the alignment more than 1 in. per 200 ft. of roadway or more than 2 in. maximum,
 - f. without abrupt deviations,
 - g. free of blisters and with no more than 5% by area of holes or voids,
 - h. with uniform cross-section, density and thickness,
 - i. with clean and reasonably square ends,
 - j. that are retroreflectorized with drop-on glass beads, and
 - k. using personnel skilled and experienced with installation of pavement markings.

Remove all applied markings that are not in alignment or sequence as stated on the plans, or in the specifications, at the Contractor's expense in accordance with Item 677, "Eliminating Existing Pavement Markings and Markers," except for measurement and payment.

2. Surface Preparation. Prepare surfaces in accordance with this Section unless otherwise shown on the plans.
3. Cleaning for New Asphalt Surfaces and Retracing of All Surfaces. Air blast or broom the pavement surface for new asphalt surfaces (less than 3 years old) and for retracing of all surfaces to remove loose material, unless otherwise shown on the plans. A sealer for Type I markings is not required unless otherwise shown on the plans.
4. Cleaning for Old Asphalt and Concrete Surfaces (Excludes Retracing). Clean old asphalt surfaces (more than 3 years old) and all concrete surfaces in accordance with Item 678,

“Pavement Surface Preparation for Markings,” to remove curing membrane, dirt, grease, loose and flaking existing construction markings, and other forms of contamination.

5. Sealer for Type I Markings. Apply a pavement sealer to old asphalt surfaces (more than 3 years old) and to all concrete surfaces before placing Type I markings on locations that do not have existing markings, unless otherwise approved. The pavement sealer may be either a Type II marking or an acrylic or epoxy sealer as recommended by the Type I marking manufacturer unless otherwise shown on the plans. Follow the manufacturer’s directions for application of acrylic or epoxy sealers. Clean sealer that becomes dirty after placement by washing or in accordance with Section 666.4.2.1., “Cleaning for New Asphalt Surfaces and Retracing of All Surfaces,” as directed. Place the sealer in the same configuration and color (unless clear) as the Type I markings unless otherwise shown on the plans.
6. Application. Apply markings during good weather unless otherwise directed. If markings are placed at Contractor option when inclement weather is impending and the markings are damaged by subsequent precipitation, the Contractor is responsible for all required replacement costs.
7. Type I Markings. Place the Type I marking after the sealer cures. Apply within the temperature limits recommended by the material manufacturer. Flush the spray head if spray application operations cease for 5 min or longer by spraying marking material into a pan or similar container until the material being applied is at the recommended temperature.
 - Apply on clean, dry pavements passing the moisture test described in Section 666.4.1., “General,” and with a surface temperature above 50°F when measured in accordance with Tex-829-B.
 - Non-Profile Pavement Markings. Apply Type I non-profile markings with a minimum thickness of:
 - 0.100 in. (100 mils) for new markings and retracing water-based markings on surface treatments involving Item 316, “Seal Coat,”
 - 0.060 in. (60 mils) for retracing on thermoplastic pavement markings, or
 - 0.090 in. (90 mils) for all other Type I markings.The maximum thickness for Type I non-profile markings is 0.180 in. (180 mils). Measure thickness for markings in accordance with Tex-854-B using the tape method.
8. Profile Pavement Markings. Apply Type I profile markings with a minimum thickness of:
 - 0.060 in. (60 mil) for edgeline markings, or
 - 0.090 in. (90 mil) for gore and centerline/no-passing barrier line markings.
9. In addition, at a longitudinal spacing indicated on the plans, the markings must be profiled in a vertical manner such that the profile is transverse to the longitudinal marking direction. The profile must not be less than 0.30 in. (300 mil) nor greater than 0.50 in. (500 mil) in height when measured above the normal top surface plane of the roadway. The transverse width of the profile must not be less than 3.25 in., and the longitudinal width not less than 1 in., when measured at the top surface plane of the profile bar. The profile may be either a 1 or 2 transverse bar profile. When the 2 transverse bar profile is used, the spacing between the bases of the profile bars must not exceed 0.50 in. The above transverse bar width is for each 4 in. of line width.
10. Type II Markings. Apply on surfaces with a minimum surface temperature of 50°F. Apply at least 20 gal. per mile on concrete and asphalt surfaces and at least 22 gal. per mile on surface treatments for a solid 4-in. line. Adjust application rates proportionally for other widths. When

Type II markings are used as a sealer for Type I markings, apply at least 15 gal. per mile using Type II drop-on beads.

11. **Bead Coverage.** Provide a uniform distribution of beads across the surface of the stripe for Type I and Type II markings, with 40% to 60% bead embedment.
12. **Retroreflectivity Requirements.** When specified on the plans, Type I markings must meet the following minimum retroreflectivity values for edgeline markings, centerline or no passing barrier-line, and lane lines when measured any time after 3 days, but not later than 10 days after application:
 - White markings: 250 millicandelas per square meter per lux (mcd/m²/lx)
 - Yellow markings: 175 mcd/m²/lx
13. **Retroreflectivity Measurements.** Use a mobile retroreflectometer for projects requiring minimum retroreflectivity requirements to measure retroreflectivity for Contracts totaling more than 200,000 ft. of pavement markings, unless otherwise shown on the plans. For Contracts with less than 200,000 ft. of pavement markings or Contracts with callout work, mobile or portable retroreflectometers may be used at the Contractor's discretion.
14. **Mobile Retroreflectometer Measurements.** Provide mobile measurements averages for every 0.1 miles unless otherwise specified or approved. Take measurements on each section of roadway for each series of markings (i.e., edgeline, center skip line, each line of a double line, etc.) and for each direction of traffic flow. Measure each line in both directions for centerlines on two-way roadways (i.e., measure both double solid lines in both directions and measure all center skip lines in both directions). Furnish measurements in compliance with Special Specification, "Mobile Retroreflectivity Data Collection for Pavement Markings," unless otherwise approved. The Engineer may require an occasional field comparison check with a portable retroreflectometer meeting the requirements listed above to ensure accuracy. Use all equipment in accordance with the manufacturer's recommendations and directions. Inform the Engineer at least 24 hr. before taking any measurements.

A marking meets the retroreflectivity requirements if:

- the combined average retroreflectivity measurement for a one-mile segment meets the minimum retroreflectivity values specified, and
- no more than 30% of the retroreflectivity measurement values are below the minimum retroreflectivity requirements value within the one-mile segment.
- The Engineer may accept failing one-mile segments if no more than 20% of the retroreflectivity measurements within that mile segment are below the minimum retroreflectivity requirement value.
- The one-mile segment will start from the beginning of the data collection and end after a mile worth of measurements have been taken; each subsequent mile of measurements will be a new segment. Centerlines with 2 stripes (either solid or broken) will result in 2 miles of data for each mile segment. Each centerline stripe must be tested for compliance as a stand-alone stripe.
- Restripe at the Contractor's expense with a minimum of 0.060 in. (60 mils) of Type I marking if the marking fails retroreflectivity requirements. Take measurements every 0.1 miles a minimum of 10 days after this second application within that mile segment for that series of markings.
- If the markings do not meet minimum retroreflectivity after 10 days of this second application, the Engineer may require removal of all existing markings, a new application as initially specified, and a repeat of the application process until minimum retroreflectivity requirements are met.

15. Portable Retroreflector Measurements. Take a minimum of 20 measurements for each 1-mi. section of roadway for each series of markings (i.e., edgeline, center skip line, each line of a double line, etc.) and direction of traffic flow when using a portable reflectometer. Measure each line in both directions for centerlines on two-way roadways (i.e., measure both double solid lines in both directions and measure all center skip lines in both directions). The spacing between each measurement must be at least 100 ft. The Engineer may decrease the mileage frequency for measurements if the previous measurements provide satisfactory results. The Engineer may require the original number of measurements if concerns arise.

Restripe once at the Contractor's expense with a minimum of 0.060 in. (60 mils) of Type I marking material if the average of these measurements fails. Take a minimum of 10 more measurements after 10 days of this second application within that mile segment for that series of markings. Restripe again at the Contractor's expense with a minimum of 0.060 in. (60 mils) of Type I marking material if the average of these measurements fall below the minimum retroreflectivity requirements. If the markings do not meet minimum retroreflectivity after this third application, the Engineer may require removal of all existing markings, a new application as initially specified, and a repeat of the application process until minimum retroreflectivity requirements are met.

16. Traffic Control. Provide traffic control, as required, when taking retroreflectivity measurements after marking application. On low volume roadways (as defined on the plans), refer to the figure, "Temporary Road Closure" in Part 6 of the Texas Manual on Uniform Traffic Control Devices for the minimum traffic control requirements. For all other roadways, the minimum traffic control requirements will be as shown on the Traffic Control Plan (TCP) standard sheets TCP (3-1) and TCP (3-2). The lead vehicle will not be required on divided highways. The TCP and traffic control devices must meet the requirements listed in Item 502, "Barricades, Signs, and Traffic Handling." Time restrictions that apply during striping application will also apply during the retroreflectivity inspections except when using the mobile retroreflector unless otherwise shown on the plans or approved.
17. Performance Period. All markings must meet the requirements of this specification for at least 30 calendar days after installation. Unless otherwise directed, remove pavement markings that fail to meet requirements, and replace at the Contractor's expense. Replace failing markings within 30 days of notification. All replacement markings must also meet all requirements of this Item for a minimum of 30 calendar days after installation.

END OF SECTION

SECTION 32 17 23.15

Pavement Surface Preparation for Markings

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Prepare pavement surface areas before placement of pavement markings and raised pavement markings (RPMs). SECTION 32 01 12, "Pavement Cleaning and Marking Removal," governs removal of existing markings.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Use a commercial abrasive blasting medium capable of producing the specified surface cleanliness. Use potable water, when water is required.

PART 3 – EQUIPMENT

3.1 EQUIPMENT

- A. Furnish and maintain equipment in good working condition. Use moisture and oil traps in air compression equipment to remove all contaminants from the blasting air and prevent the deposition of moisture, oil, or other contaminants on the roadway surface.

PART 4 – EXECUTION

4.1 CONSTRUCTION METHODS

- A. Prepare enough pavement surface for the pavement markings or RPMs shown on the plans. Remove all contamination and loose material. Avoid damaging the pavement surface. Remove loose and flaking material when existing pavement markings are present. Approved pavement surface preparation methods are sweeping, air blasting, flail milling, and blast cleaning unless otherwise specified on the plans.

Air blast concrete pavement surfaces, in addition to the above, after the removal of contamination or existing material and just before placing the stripe. Perform air blasting with a compressor capable of generating compressed air at a minimum of 150 cu. ft. per minute and 100 psi using 5/16 in. or larger hosing.

Contaminants up to 0.5 sq. in. may remain if they are not removed by the following test, performed just before application of markings:

STEP 1. Air blast the surface to be tested, to simulate blasting during application of markings.

STEP 2. Firmly press a 10-in. long, 2-in. wide strip of monofilament tape onto the surface, leaving approximately 2 in. free.

STEP 3. Grasp the free end and remove the tape with a sharp pull.

END OF SECTION