

SECTION	SECTION TITLE	NO. OF PGS.	REV. DATE	REVISION DOC.
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4/15/2022

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**HARLANDALE INDEPENDENT SCHOOL DISTRICT  
DEPARTMENT OF PURCHASING**

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**HISD Parking Lot Improvements & New Parking Lot  
RFCSP 200049**

*Due Date: May 19, 2022 at 1:00pm (CT)*

Benjamin S. Mora, Purchasing Manager  
12115 S.E. Loop 410 – San Antonio, Texas 78221  
210 - 989-4800 (P) 210 - 921-4400 (F)  
[Benjamin.Mora1@harlandale.net](mailto:Benjamin.Mora1@harlandale.net)

**Purchasing Department Business Hours for Deliveries:  
Monday – Friday 8:00AM (CT) to 4:30PM (CT)**

**District Holidays:**

**7-5-21; 9-6-21; 11-22-21 to 11-26-21; 12-20-21 to 12-31-21; 1-17-22; 2-14-22;  
3-14-22 to 3-18-22; 4-8-22; 4-15-22; 4-18-22; 5-30-22**

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**NOTICE TO VENDORS**

To Whom It May Concern:

Thank you for the submission of your proposal to the Harlandale Independent School District. The District understands and appreciates all of the efforts undertaken in the preparation and submission of a proposal.

It is the intent of this administration to conduct a fair and impartial evaluation of these proposals with an emphasis on determining the best value for the District at the lowest possible price.

Essential to an impartial objective analysis is that it not be subjected to extraneous influences. The District requests and appreciates that no efforts be undertaken by vendors to independently contact the District's evaluation team for this proposal with the purpose of seeking an unfair advantage. As a matter of fairness, this is necessary in order to provide due and proper consideration to each and every proposal.

This request also extends to contact, communications, and/or interactions with the members of the School Board. Independent communications with the Trustees by vendors puts the administration and the Trustees in a very difficult position. It is our experience that such advocacy efforts result in members receiving non-objective information that can result in confusion during the competitive procurement process.

When vendors contact members independently, it facilitates the crossing over of those clearly defined and legally required roles of the Board and the Administration. This can result in legal issues and most certainly a compromise in the integrity of the entire proposal process. Please be advised that this administration will not favorably receive any evidence that a vendor has contacted the District staff or members of the Board in an effort to seek an unfair advantage.

We anticipate your cooperation in maintaining the integrity of the competitive procurement process and thank you in advance for such efforts.

Respectfully,

Harlandale Independent School District  
Business and Finance Department

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**GENERAL TERMS AND CONDITIONS**

- 1.0 The workmanship and material specified in this proposal shall be fully guaranteed for a **minimum period of one (1) year** from date of delivery and/or acceptance of work, unless otherwise stated in District specifications.
- 2.0 The Harlandale Independent School District reserves the right to waive formalities and irregularities and to accept or reject the proposal or each item there under separately.
- 3.0 **NA**
- 4.0 The proposal and any eventual award may not be assigned or any right there under transferred to a third party.
- 5.0 Proposer agrees to comply with all policies and regulations of the Harlandale Independent School District.
- 6.0 **QUANTITY** - It is understood and agreed that the Harlandale Independent School District reserves the right to increase or decrease quantities or modify conditions or specifications by mutual agreement with the selected vendor, both at the time of the acceptance of the proposal offered as so modified, and subsequent thereto.
- 7.0 **INDEMNITY** - The contractor/vendor/service provider shall indemnify, defend and hold harmless the Harlandale Independent School District, its employees, officials, and representatives from any and all claims made, lawsuits filed, losses, costs (including but not limited to attorney's fees) or damages incurred as a result of contractor/vendor/service provider acts or omissions of any nature relating to a contract entered into as a result of a Request for Proposals. The District will not enter into any agreement requiring the District to indemnify a contractor, vendor, or service provider. Further, the District will not enter into any agreement requiring the District to pay attorneys fees on behalf of any vendor or service provider.

The following conditions must be stated on all contracts:

- 7.1 "The Contractor shall defend, indemnify, and save whole and harmless, Harlandale Independent School District and all of its officers, agents and employees from and against all suits, actions or claims of any character, name and description brought for or on account of any injuries or damages (including death) received or sustained by any person or property on account of any agent, employee, subcontractor or supplier of Contractor in the execution or performance of this contract."

"The Contractor shall also defend and indemnify the Harlandale Independent School District against claim by any subcontractor, supplier, material man or mechanic for payment of work or materials provided on behalf of the Contractor in the performance of the services and all such claimants shall look solely to Contractor and not Harlandale Independent School District for satisfaction of such claims."

- 8.0 **LEGAL VENUE** -The contractor/vendor understands and agrees that venue for any litigation arising from this award or contract shall lie in the State District Courts of Bexar County, Texas, and any dispute shall be governed by the laws of the State of Texas. The District will not enter into any agreement requiring arbitration of disputes. Proposers shall not disclose to any third party, information provided by the District in connection with this solicitation for proposals.

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- 9.0 **PROPERTY TAXES** - Proposer affirms that it does not currently owe or is otherwise indebted to the Harlandale Independent School District for adjudicated delinquent property taxes. The Harlandale Independent School District reserves the right to reject a proposal if the Proposer is currently indebted to the Harlandale Independent School District for delinquent taxes or to terminate a contract if the successful Proposer subsequently becomes delinquent. The Harlandale Independent School District further reserves the right to deduct any delinquent taxes owed from payments that the Harlandale Independent School District may owe to the successful Proposer under the awarded contract.
- 10.0 **INCORPORATION OF TERMS INTO CONTRACT** -The terms and conditions set out in any Request for Proposal including these general terms and conditions shall be made part of any contract entered into by the District with any Vendor, Contractor or Service Provider. A response to any Request for Proposal indicates the responders binding agreement to the terms and conditions set out therein.
- 11.0 **RELIEF** - The District will not agree to any contract requiring waiver of any legal relief to which the District may be entitled.
- 12.0 **CONTROLLING LANGUAGE** - Despite any terms or provisions in any contract entered into by the District as a result of any Request for Proposal, the language of the Request for Proposal shall be controlling and shall supersede any contrary language contained in any contract.
- 13.0 **ISRAEL** - Effective, September 1, 2017, the CONTRACTOR affirms that it does not boycott Israel and will not boycott Israel during the contract term. Pursuant to Section 2270.002 of the Texas Government Code, Respondent certifies that either (i) it meets an exemption criteria under Section 2270.002; or (ii) it does not boycott Israel and will not boycott Israel during the term of the contract resulting from this solicitation. Respondent shall state any facts that make it exempt from the boycott certification in its Response.

# HARLANDALE INDEPENDENT SCHOOL DISTRICT

## DEPARTMENT OF PURCHASING

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### PROPOSAL SPECIFICATIONS

1. **TERM** – One-Time Purchase
2. **NA**
3. The right is reserved by the Harlandale Independent School District to accept and/or reject proposals on each item separately and/or as a whole proposal. Proposals received after the time and date specified will be returned unopened.

Emailed or faxed submission will be rejected without consideration.

4. **PROPOSAL OPENING** - Proposals received unsigned by a representative of the company will not be considered. **All proposals must be delivered to the Purchasing no later than the designated date and time.**
5. **ADDENDUM** - In the event that any changes to this proposal occur subsequent to the mailing or other delivery of the original proposal, the changes or corrections to this proposal will be made by ADDENDUM, and any updated information contained in any ADDENDUM will be in addition to and may prevail over the information contained in the proposal or any previous ADDENDUM. Each ADDENDUM must be acknowledged on the acknowledgement form provided with the ADDENDUM. Any required acknowledgement form must be submitted along with the submission of any proposal response.
6. **NA**
7. **WITHDRAWAL** - The Harlandale Independent School District will consider a WRITTEN request from any vendor permitting the vendor to withdraw any proposal submitted, but ONLY IN ITS ENTIRETY, and ONLY UNTIL THE DUE DATE AND TIME FOR SUBMISSION OF THE PROPOSAL. A representative from the vendor submitting the proposal that is authorized to enter into contracts on behalf of the vendor must sign the request to WITHDRAW, indicate their title on the request, and submit the request to the Harlandale Independent School District in a manner deemed satisfactory by the Harlandale Independent School District. No proposal may be withdrawn after the date and time proposals are due. If a vendor requests to withdraw a proposal and the Harlandale Independent School District permits the WITHDRAWAL of the proposal, the vendor may resubmit the proposal or submit a new proposal up until the due date and time for submission provided the new submission meets all the qualifications of the proposal. All proposals in the possession of the Harlandale Independent School District at the time proposals are due shall be deemed final, conclusive, and irrevocable, and no proposal shall be subject to withdrawal, amendment, or correction after the due date and time unless otherwise permitted by the Harlandale Independent School District during a subsequent negotiation process. The decision of the Harlandale Independent School District relating to any matters pertaining to proposal withdrawal will be final.**BRAND NAMES AND CATALOG NUMBERS** - The use of brand names and catalog numbers does not prohibit the substitution of other brands of equal or greater quality, unless “no substitute or only” is specified. All substitutions must meet or exceed specifications to be acceptable. The make, model, and description of all substitutions must be listed by specified item. **FAILURE OF THE VENDOR TO COMPLY WITH THESE SPECIFICATIONS MAY, AT THE OPTION OF THE HARLANDALE INDEPENDENT SCHOOL DISTRICT DISQUALIFY THAT PORTION, OR THE ENTIRE PROPOSAL, FROM CONSIDERATION.**
11. **PRODUCT INFORMATION** - Complete warranty information and descriptive and/or illustrative literature covering the item(s) proposed is to accompany the proposal. All electrical items must meet all applicable OSHA standards and regulations, and must bear the appropriate listing from US, FMRC, NEMA, or UL Laboratories. Material Safety Data Sheets (MSDS) on chemicals or any other products customarily requiring MSDS Sheets must be provided for each order within the contract period. Additional MSDS Sheets must be provided in a timely manner at no charge upon request.



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12. **SAMPLES** - Samples, when requested, must be furnished at no cost to the Harlandale independent School District. If not destroyed during examination, they will be returned to the proposer on request and at the company's expense. Each sample, when requested, should be clearly marked with the proposer's name and item number on the proposal. **DO NOT ENCLOSE IN OR ATTACH PROPOSAL TO SAMPLE.**
13. **AUTHORIZED PURCHASE** - The successful proposer will not begin services or deliver product without a purchase order signed by an authorized representative of the Department of Purchasing. The Harlandale Independent School District **will neither be responsible nor make payment** for any goods delivered or services performed without a valid purchase order.
14. **PACKAGING** - Unless otherwise provided for on this proposal, all products supplied under any contract resulting from this proposal must be packaged in containers that are new and appropriately designed for the products involved, and sturdy enough to protect the products involved in loading, transit, unloading, and storage. Any products supplied under any contract resulting from this proposal for which palletizing is appropriate must be delivered on standard forty-eight (48") inch four-way pallets in good and serviceable condition.
15. **SHIPPING** - All freight, delivery, and handling charges are the responsibility of the vendor and all prices must be quoted freight prepaid, F.O.B. destination, and shall include all freight, delivery and handling charges, including unloading and inside deliveries where required. Unless otherwise noted or unless prior approval has been obtained from the Harlandale Independent School District all deliveries shall be made between the hours of **7:00 a.m. through 3:00 p.m.**, Monday through Friday at the following address.

Harlandale Independent School District  
Central Receiving/Warehouse  
12115 SE Loop 410  
San Antonio, TX 78221
16. **VISITATIONS** - The District mandates that any/all vendors/visitors on any district site are subject to a Sexual Predator check through our Visitor Management System prior to being given access.
  - a. Vendors/visitors must check-in and identify themselves through their driver's license at the site's front office for a verification of any past/present convictions.
  - b. Failure to comply or pass the verification check will result in their denial of access and potential loss of contractual rights.
17. **TAXES** - The Harlandale Independent School District is a public jurisdiction that is exempt from federal, state, sales, excise, and use taxes. Tax exemption certificates will be provided by the Harlandale Independent School District upon individual requests from the vendor. Sales tax must not be included in any proposal response or invoice submitted by any vendor unless failure to obtain a Tax Exemption Certificate from the Harlandale Independent School District has occurred. No taxes of any kind may be passed through by any vendor to the District
18. **INVOICES** - Invoices regarding this proposal must be addressed to the **Accounts Payable Dept. at the following address: 102 Genevieve, San Antonio, Texas 78214.** Payment on a properly submitted invoice will usually be made on the seventh business day of the month for items/services received prior to or on the last business day of the previous month. No late and/or finance charges will be paid by the District.

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19. **NON-APPROPRIATION AND TERMINATION AT-WILL** - The award of a contract is dependent on the availability of funds. In the event sufficient funds are not appropriated, the contract or award may be terminated or the scope amended. Written notice will be given to the vendor of such termination or amendment, and there will be no penalty or other charge assessed against or incurred by the Harlandale Independent School District. The successful proposer shall be required to agree to non-appropriation language as follows: The obligation of the District to perform under this agreement shall be contingent upon the Board of Trustees of the District appropriating funds for this Agreement as of September 1st of each year in which this agreement is in effect. Should the District Board of Trustees fail to appropriate funds for this agreement then this agreement shall terminate. District shall notify "Contractor" in writing within five (5) days of any non-appropriation. Except in certain limited circumstances as determined by the District in its sole discretion, the District will require any contract to contain a termination at-will clause in favor of the District.
20. Nothing herein shall be construed as creating the relationship of employer or employee between the Harlandale Independent School District and the contractor/vendor or between the Harlandale Independent School District and the contractor /vendor's employee. The contractor/vendor is an independent contract and nothing contained herein shall constitute or designate the contractor/vendor or any of his employees as employees of the Harlandale Independent School District.
21. The contractor/vendor understands and agrees that the above general proposal specifications are terms and conditions of the contract between the Harlandale Independent School District and the contractor/vendor. These general proposal specifications, terms, and conditions shall control and govern in the event of any conflict with any other terms and conditions submitted by the contractor/vendor.
22. **DISQUALIFICATION** - The District reserves the right to disqualify any proposer at the District's sole discretion.
23. Upon Notice of Award, a **CERTIFICATE OF INTERESTED PARTIES (HB 1295 FORM)** will be required. In 2015, the Texas Legislature adopted House Bill 1295, which added section 2252.908 of the Government Code. The law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency. More information is located at the following site:

**<https://www.ethics.state.tx.us/tec/1295-Info.htm>**

A business entity must use the on-line application to enter the required information on Form 1295 and print a copy of the completed form, which will include a certification of filing that will contain a unique certification number. An authorized agent of the business entity must sign the printed copy of the form and have the form notarized. The completed Form 1295 with the certification of filing number must be filed with the governmental body or state agency with which the business entity is entering into the contract.

**The on-line application may be obtained at the following site:**

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

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24. **CONFIDENTIALITY** - Please indicate if a form or document is privileged information by clearly labeling it “CONFIDENTIAL” at the bottom of the page. Confidentiality is subject to decision by the Texas Attorney General. Information provided may not be publicly disclosed if such information (1) is confidential by law, (2) would give advantage to a competitor or bidder, or (3) constitutes a trade secret or commercial/financial information which, if released, would cause substantial competitive harm to the person/entity providing the information.
25. **LIABILITY INSURANCE (Construction Only)** - The Contractor shall purchase, prior to the commencement of the Work, and keep in force the following insurance:
- (a.) Workmen’s Compensation and Employer’s Liability Insurance in the Contractor’s name containing a waiver of subrogation in favor of Owner, executed by the Insurance Company.
    - (1) Statutory – amounts and coverage required by state or states of operation, including provisions for voluntary benefits as required in labor agreements, if any, and including “All States endorsement”, if applicable.
    - (2) Employer’s Liability – the limit of liability for this portion of the policy shall not be less than:
      - \$500,000.00 per accident
      - \$500,000.00 per employee (disease)
      - \$500,000.00 Policy Limit (disease)
  - (b.) Comprehensive General Liability Insurance (with XCU exclusions deleted), including but not limited to Products and Completed Operations coverage, Contractor Protective Liability Insurance in the Contractor’s name, Broad Form Property Damage Insurance, and Personal Injury Liability Insurance with a combined single limit of not less than \$1,000,000.00 for bodily injury and property damage per occurrence.
  - (c.) Contractual Liability Insurance in the Contractor’s name specifically endorsed to cover the indemnity agreement below in Paragraph (a)(1) hereof. The limit of liability shall not be less than \$1,000,000.00 combined single limit for bodily injury and property damage per occurrence.
  - (d.) Automobile Liability Insurance with an Employer’s Non-Ownership Liability Endorsement in the Contractor’s name. The limit of liability shall not be less than \$1,000,000.00 combined single limit for bodily injury and property damage per occurrence.
  - (e.) Owner’s Protective Liability Insurance with Owner as the named insured to cover Owner for the Contractor’s operations at the site with a combined single limit of liability of not less than \$1,000,000.00 for bodily injury and property damage per occurrence.
  - (f.) Umbrella Liability Insurance - \$2,000,000.00
26. **Certificate of Insurance (Construction Only)** - Before the work is commenced, the Contractor shall forward to Owner two (2) copies of the Certificate(s) of Insurance executed by an authorized representative of the insurance company. Such Certificate(s) shall contain a provision that coverage afforded under the policy(s) will not be canceled until at least fifteen (15) days prior written notice has been given Owner. Further, the Contractor shall furnish to Owner similar certificates of insurance from each of the Subcontractors before their respective portions of the Work are commenced, evidencing that each Subcontractor is covered by insurance of similar character and similar amounts as the Contractor.

**27. Indemnity Agreement (Construction Only)**

- (a.) To the fullest extent permitted by law, the contractor shall defend, protect, indemnify, and hold harmless Owner, the Consultant and any other Owner, and their respective directors, officers, employees, agents, partners, and principals from the following:
  - (1) Any and all claims, actions, liabilities, losses, costs, and expenses including, but not limited to, attorney’s fees relating to any and all losses or damages (including, without limitations, injury to or death of persons and damage to property) allegedly or actually suffered by any person or persons allegedly or actually arising out of or incidental to the Work, or services and activities of the Contractor or any Subcontractors or other person or entity acting directly or indirectly through or under the contractor (including, without limitation, all acts and omissions of the officers, employees, and agents of the Contractor, any Subcontractor or any other person or entity acting directly or indirectly through or under the Contractor) in connection with any installation, job, or work under the Contract or while proceeding to or from the Site, whether or not lawful or within the scope of their employment and/or whether or not allegedly or actually arising out of any statute or other law requiring a safe working place or other requirement of law;
  - (2) Any and all liability and costs for delay or failure by the Contractor, any Subcontractors, or any other person or entity acting directly or indirectly through or under the Contractor to pay any taxes or make any contributions required by the Contract of them to be paid or made;
  - (3) Any and all liens, claims or actions for funds allegedly or actually unpaid filed or brought by any person or entity directly or indirectly through or under the Contractor;
  - (4) Violation in or in connection with the performance of the Work of any law statute or ordinance or any governmental or administrative order, rule, or regulation.
- (b.) In the event any of the matters is brought, made, or asserted by an employee of the Contractor or of any Subcontractor or any other person or entity acting directly or indirectly through or under the Contractor any defense, hold harmless or indemnification obligations of the Contractor under the Contract shall not be limited or barred in any way by any limitation on the amount of type of damages, compensation, or benefits payable by or for the Contractor or any Subcontractor or other person or entity under worker’s compensation acts, disability benefits acts, or other employee benefit acts or by any statutory bar or limitation in any worker’s compensation or other similar type of statute.

**28. Interlocal Agreements with other School Districts through the Central Texas Purchasing Alliance**

- A. Membership. District Name is a member in good standing of the Central Texas Purchasing Alliance (CTPA / txctp.org), an alliance of over 40 school districts in Texas representing over a million students, sharing information, services and contractual opportunities. CTPA is an alliance created in accordance with Section 791.001 of the Texas Government Code through interlocal agreements.
- B. Adoption of Awarded Contracts. In support of this collaborative effort, all awards made by District Name may be adopted by other active CTPA member districts. By adopting a contract from another CTPA member district, the adopting district has met the competitive bidding requirements established by the Texas Education Code, Section 44.031(a)(4) and as required by the adopting district’s policies. There is no obligation on either party to participate unless both parties agree. The goods and services provided under the contract will be at the same or better contract pricing and purchasing terms established by the originating district.
- C. Adopted Contract Management. The adopting district shall be responsible for the management of the new contract and all payments to the contracted vendor. The originating district shall have no responsibilities under the new contract agreement.

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**PROPOSAL PROCESS OVERVIEW**

- 1.0 The proposals are released to the potential proposer.
- 2.0 Deadline for submitting the Proposals.
- 3.0 The Harlandale Independent School District reviews all Proposals and selects the Proposals reasonably qualified for selection of award.
- 4.0 The Harlandale Independent School District and proposer(s) enter into discussions, negotiations, and clarification of Proposals as necessary.
- 5.0 A recommendation to the Harlandale Independent School District Board of Trustees for Proposal award.
- 6.0 A purchase order/contract is executed with the successful proposal.

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**INVITATION TO PROPOSE**

**REPRESENTATIONS:** By execution and submission of this proposal, the undersigned authorized representative of the contracting company indicated below hereby represents and warrants to the Harlandale Independent School District as follows:

That said person is authorized to enter into contractual relationships on behalf of the contracting company indicated below, and

That said person has read and understands this Sealed Proposal, the accompanying General Terms and Conditions, General Proposal Specifications, and Proposal Form(s) and that this proposal is made in accordance with the provided documents, and

That said person proposes to supply any products and/or services submitted under this Sealed Proposal at the prices quoted and provided and in strict compliance with the proposal documents and

That if any part of this proposal is accepted, said person and company will furnish all products and/or services awarded under this proposal at the prices quoted and provided and in strict compliance with the proposal documents and

That the Harlandale Independent School District or any representative or agent of the Harlandale Independent School District is authorized by the undersigned to contact any firm, institution, and/or person to obtain information about the firm's services, financial condition, and/or any other information Harlandale Independent School District may deem necessary.

\_\_\_\_\_  
 Name of Company

\_\_\_\_\_  
 Date of Submittal

\_\_\_\_\_  
 Address

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

\_\_\_\_\_  
 City, State, Zip

\_\_\_\_\_  
 Printed Name of Authorized Representative

\_\_\_\_\_  
 Telephone and Fax No. of Authorized Representative

\_\_\_\_\_  
 Position or Title of Authorized Representative

\_\_\_\_\_  
 Delivery Date

\_\_\_\_\_  
 Payment Terms

EMAIL ADDRESS: \_\_\_\_\_

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**CONFLICT OF INTEREST QUESTIONNAIRE**

FORM MUST BE RETURNED WITH PROPOSAL – COMPLETE AS INDICATED  
**NO CONFLICT** – Line 1: Company Name; Line 3: None; Line 7: Sign and Date

<b>CONFLICT OF INTEREST QUESTIONNAIRE</b>		<b>FORM CIQ</b>
<b>For vendor doing business with local governmental entity</b>		
<p><b>This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.</b></p> <p>This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).</p> <p>By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. See Section 176.006(a-1), Local Government Code.</p> <p>A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.</p>	<p><b>OFFICE USE ONLY</b></p> <p>Date Received</p>	
<p><b>1</b> Name of vendor who has a business relationship with local governmental entity.</p>		
<p><b>2</b> <input type="checkbox"/> Check this box if you are filing an update to a previously filed questionnaire. (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)</p>		
<p><b>3</b> Name of local government officer about whom the information is being disclosed.</p> <p style="text-align: center;">_____</p> <p style="text-align: center;">Name of Officer</p>		
<p><b>4</b> Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.</p> <p style="margin-left: 40px;">A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?</p> <p style="margin-left: 80px;"><input type="checkbox"/> Yes      <input type="checkbox"/> No</p> <p style="margin-left: 40px;">B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?</p> <p style="margin-left: 80px;"><input type="checkbox"/> Yes      <input type="checkbox"/> No</p>		
<p><b>5</b> Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.</p>		
<p><b>6</b> <input type="checkbox"/> Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).</p>		
<p><b>7</b></p> <p style="text-align: center;">_____</p> <p style="text-align: center;">Signature of vendor doing business with the governmental entity      Date</p>		

**HARLANDALE INDEPENDENT SCHOOL DISTRICT**  
**DEPARTMENT OF PURCHASING**  
**12115 SE LOOP 410 • San Antonio, TX 78221 • (210) 989-4800 • Fax (210) 921-4400**

**NON-COLLUSION STATEMENT**

“The undersigned affirms that they are duly authorized to execute this contract, that this company, corporation, firm, partnership, or individual has not prepared this proposal in collusion with any other Proposer, and that the contents of this proposal as to prices, terms, or conditions of said proposal have not been communicated by the undersigned nor by any employee or agent to any other person engaged in this type of business prior to the official opening of this proposal.”

**VENDOR** \_\_\_\_\_

**ADDRESS** \_\_\_\_\_  
\_\_\_\_\_

**PHONE AND FAX** \_\_\_\_\_

**PROPOSER (SIGNATURE)** \_\_\_\_\_

**PROPOSER (PRINT NAME)** \_\_\_\_\_

**POSITION WITH COMPANY** \_\_\_\_\_

**SIGNATURE OF COMPANY  
OFFICIAL AUTHORIZING  
THIS PROPOSAL** \_\_\_\_\_

**COMPANY OFFICIAL  
(PRINT NAME)** \_\_\_\_\_

**OFFICIAL POSITION** \_\_\_\_\_



**HARLANDALE INDEPENDENT SCHOOL DISTRICT**  
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(PRINT OR TYPE)

AUTHORIZED COMPANY OFFICIAL'S NAME: \_\_\_\_\_

(PRINT OR TYPE)

**\*\*SIGN ONLY A, B, OR C\*\***

A. My firm is a publicly held corporation; therefore, this reporting requirement is not applicable.

\_\_\_\_\_  
SIGNATURE OF COMPANY OFFICIAL

B. My firm is not owned nor operated by anyone who has been convicted of a felony.

\_\_\_\_\_  
SIGNATURE OF COMPANY OFFICIAL

C. My firm is owned or operated by the following individual(s) who has/have been convicted of a felony.

Details of Conviction: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
SIGNATURE OF COMPANY OFFICIAL

**HARLANDALE INDEPENDENT SCHOOL DISTRICT**  
**DEPARTMENT OF PURCHASING**  
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**CONTRACTOR & SUBCONTRACTOR CERTIFICATION OF CRIMINAL**  
**HISTORY RECORD INFORMATION**

Each Texas public school district must receive certification from any entity with which it contracts to provide services regarding the fact that the entity has obtained the following for all employees who have or will have “continuing duties related to contracted services;” and have “direct contact with students” before employing or immediately after employing or securing the services of the individual:

- A name-based criminal history background checks on all employees hired before January 1, 2008;
- A national criminal history record information review on all employees hired on or after January 1, 2008, which may include fingerprints and photographs.

“Continuing duties related to contracted services” – work duties that are performed pursuant to a contract to provide services to a school district on a regular, repeated basis rather than infrequently or one time only.

“Direct contact with students” – The contact that results from activities that provide substantial opportunity for verbal or physical interaction with students that is not supervised by a certified educator or other professional district employee. Contact with students that results from services that do not provide the opportunity for unsupervised interaction with an individual student, such as addressing an assembly, officiating a sports contest, or judging an extracurricular event, is not, by itself, direct contact with students. However, direct contact with students does result from any activity that provides the opportunity for unsupervised contact with students such as, without limitation, the provision of individualized coaching, tutoring, or other services.

19 TAC § 153.1101

The required criminal history record information shall be obtained from the Texas Department of Public Safety Fingerprint Applicant Services of Texas (FAST) system:

[https://www.dps.texas.gov/administration/crime\\_records/pages/applicantfingerprintservices.htm](https://www.dps.texas.gov/administration/crime_records/pages/applicantfingerprintservices.htm)

The school district may not allow any employee of the entity or an individual to serve at the district if information obtained through this review verifies that the employee has been convicted of one of the following and at the time of the offense, the victim was under 18 years of age or was enrolled in a public school:

- (1) A Title 5 felony offense;
- (2) An offense requiring the individual to register as a sex offender; or
- (3) An offense under the laws of another state or federal law that is equivalent to a Title 5 felony in the state of Texas or that would require registration in the Texas sex offender databank.

**BY SIGNING BELOW, YOU ACKNOWLEDGE THAT YOU UNDERSTAND & WILL COMPLY WITH THE STATE OF TEXAS’ CRIMINAL BACKGROUND CHECK REQUIREMENTS:**

SIGNATURE OF COMPANY  
 OFFICIAL AUTHORIZING THIS BID: \_\_\_\_\_

COMPANY OFFICIAL  
 (PRINT NAME): \_\_\_\_\_

OFFICIAL POSITION: \_\_\_\_\_

**HARLANDALE INDEPENDENT SCHOOL DISTRICT**  
**DEPARTMENT OF PURCHASING**  
12115 SE LOOP 410 • San Antonio, TX 78221 • (210) 989-4800 • Fax (210) 921-4400

**DEBARMENT AND SUSPENSION CERTIFYING STATEMENT**

In accordance with Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510 the contracted certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal Department or Agency.

The Harlandale Independent School District hereby agrees to abide by the aforementioned terms and conditions.

**VENDOR NAME** \_\_\_\_\_

**ADDRESS** \_\_\_\_\_  
\_\_\_\_\_

**TELEPHONE NUMBER** \_\_\_\_\_

**FAX NUMBER** \_\_\_\_\_

**COMPANY OFFICIAL**  
**(SIGNATURE)** \_\_\_\_\_

**COMPANY OFFICIAL**  
**(PRINT NAME)** \_\_\_\_\_

**POSITION WITH COMPANY** \_\_\_\_\_

**HARLANDALE INDEPENDENT SCHOOL DISTRICT**  
**DEPARTMENT OF PURCHASING**  
 12115 SE LOOP 410 • San Antonio, TX 78221 • (210) 989-4800 • Fax (210) 921-4400

**DEVIATION/COMPLIANCE FORM**

The Harlandale Independent School District requires that if the undersigned bidder/proposer intends to deviate from either

- General Terms and Conditions
- General Bid/Proposal Specifications
- Bid/Proposal Specifications
- Sample Contract for Applicable Construction Methodology

All such deviations must be listed on this page, with complete and detailed conditions and information included or attached. The Harlandale Independent School District shall consider any deviations in its bid/proposal award decisions, and the Harlandale Independent School District reserves the right to accept or reject any bid/proposal based upon any deviations indicated below or in any attachments and/or inclusions.

***In the absence of any deviation entry on this form, the bidder/proposer assures the Harlandale Independent School District of their full compliance with the General Terms and Conditions, General Bid/Proposal Specifications, Construction Contract and all other information pertinent and contained in this Bid/Proposal.***

**DEVIATIONS**

(Check One)

**YES**, please list below

**NO**

List any and all deviations submitted by your company below *(if additional space is required please provide attachments):*

---



---



---

\_\_\_\_\_  
 NAME OF COMPANY

\_\_\_\_\_  
 DATE OF SUBMITTAL

\_\_\_\_\_  
 ADDRESS

\_\_\_\_\_  
 SIGNATURE OF AUTHORIZED REPRESENTATIVE

\_\_\_\_\_  
 CITY, STATE, ZIP

\_\_\_\_\_  
 PRINTED NAME OF AUTHORIZED REPRESENTATIVE

\_\_\_\_\_  
 TELEPHONE AND FAX NUMBER OF AUTHORIZED REPRESENTATIVE

\_\_\_\_\_  
 POSITION OR TITLE OF AUTHORIZED REPRESENTATIVE

**HARLANDALE INDEPENDENT SCHOOL DISTRICT**  
**DEPARTMENT OF PURCHASING**  
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**OUT OF STATE CERTIFYING STATEMENT**

A “**NONRESIDENT PROPOSER**” means a proposer whose principal place of business is not in the State of Texas, but excludes a contractor whose ultimate parent company or majority owner has its principal place of business in the State of Texas.

*(Check One)*

<input type="checkbox"/>	I certify that my company is a “ <b>RESIDENT PROPOSER</b> ”.						
<table style="width: 100%; border: none;"> <tr> <td style="border-top: 1px solid black; width: 45%;"></td> <td style="border-top: 1px solid black; width: 55%;"></td> </tr> <tr> <td style="font-size: small;">COMPANY NAME</td> <td style="font-size: small;">ADDRESS</td> </tr> </table>				COMPANY NAME	ADDRESS		
COMPANY NAME	ADDRESS						
<table style="width: 100%; border: none;"> <tr> <td style="border-top: 1px solid black; width: 33%;"></td> <td style="border-top: 1px solid black; width: 33%;"></td> <td style="border-top: 1px solid black; width: 33%;"></td> </tr> <tr> <td style="font-size: small;">CITY</td> <td style="font-size: small;">STATE</td> <td style="font-size: small;">ZIP CODE</td> </tr> </table>					CITY	STATE	ZIP CODE
CITY	STATE	ZIP CODE					
<input type="checkbox"/> I certify that my company qualifies as a “ <b>NONRESIDENT PROPOSER</b> ”							
Indicate the following information for your “ <b>RESIDENT STATE</b> ” (State principal place of business is located in):							
<table style="width: 100%; border: none;"> <tr> <td style="border-top: 1px solid black; width: 45%;"></td> <td style="border-top: 1px solid black; width: 55%;"></td> </tr> <tr> <td style="font-size: small;">COMPANY NAME</td> <td style="font-size: small;">ADDRESS</td> </tr> </table>				COMPANY NAME	ADDRESS		
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CITY	STATE	ZIP CODE					
1. Does your “ <b>RESIDENT STATE</b> ” require proposers whose principal place of business is in the State of Texas to underbid proposers whose resident state is the same as yours by a prescribed amount or percentage to receive a comparable contract? (“ <b>RESIDENT STATE</b> ” means the state in which the principal place of business is located)							
<input type="checkbox"/> YES <input type="checkbox"/> NO							
2. What is the prescribed amount or percentage? \$ _____ or _____ %							

**CERTIFICATION:** I certify that the information provided above is correct.

\_\_\_\_\_  
 SIGNATURE OF AUTHORIZED REPRESENTATIVE

\_\_\_\_\_  
 (PRINT OR TYPE NAME AND TITLE)

**HARLANDALE INDEPENDENT SCHOOL DISTRICT**  
**DEPARTMENT OF PURCHASING**  
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**HISTORICALLY UNDERUTILIZED BUSINESS (HUB)**  
**CERTIFYING STATEMENT**

Proposing companies that have been certified by the State of Texas as Historically Underutilized Business (HUB) entities are encouraged to indicate their HUB status when responding to this proposal.

*(Check one)*

<input type="checkbox"/>	I certify that my company has been certified by the State of Texas as a Historically Underutilized Business (HUB), and I have attached a copy of our HUB Certification to this form. <i>(Please provide documentation for recognition as a HUB).</i>
<input type="checkbox"/>	My company has NOT been certified by the State of Texas as a Historically Underutilized Business (HUB),

\_\_\_\_\_  
NAME OF COMPANY

\_\_\_\_\_  
DATE OF SUBMITTAL

\_\_\_\_\_  
ADDRESS

\_\_\_\_\_  
SIGNATURE OF AUTHORIZED REPRESENTATIVE

\_\_\_\_\_  
CITY, STATE, ZIP

\_\_\_\_\_  
PRINTED NAME OF AUTHORIZED REPRESENTATIVE

\_\_\_\_\_  
TELEPHONE AND FAX NUMBER OF AUTHORIZED REPRESENTATIVE

\_\_\_\_\_  
POSITION OR TITLE OF AUTHORIZED REPRESENTATIVE

**HARLANDALE INDEPENDENT SCHOOL DISTRICT**  
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**MINORITY BUSINESS ENTERPRISES (MBEs) AND WOMEN BUSINESS ENTERPRISES (WBEs) CERTIFYING STATEMENT**

A continuing goal of the District is to increase the participation by Minority Business Enterprises (MBEs) and Women Business Enterprises (WBEs) in all phases of the District's procurement practices and to provide them equal opportunities.

The term "minority business enterprise" means a business, at least 51 percent of which is owned, controlled and managed by minority group members. Minority group members are Blacks, women, Spanish-surnamed Americans, American Indians, Aleuts, Asians and other socially or economically disadvantaged groups.

(Check One)

<input type="checkbox"/>	I certify that my company is recognized as a Minority Business Enterprise (MEB) <i>(Please provide documentation for recognition as a MBE).</i>
<input type="checkbox"/>	I certify that my company is recognized as a Women Business Enterprise (WBE). <i>(Please provide documentation for recognition as a WBE).</i>
<input type="checkbox"/>	I certify that my company is not recognized through neither affiliations listed above

\_\_\_\_\_  
 NAME OF COMPANY

\_\_\_\_\_  
 DATE OF SUBMITTAL

\_\_\_\_\_  
 ADDRESS

\_\_\_\_\_  
 SIGNATURE OF AUTHORIZED REPRESENTATIVE

\_\_\_\_\_  
 CITY, STATE, ZIP

\_\_\_\_\_  
 PRINTED NAME OF AUTHORIZED REPRESENTATIVE

\_\_\_\_\_  
 TELEPHONE AND FAX NUMBER OF AUTHORIZED REPRESENTATIVE REPRESENTATIVE

\_\_\_\_\_  
 POSITION OR TITLE OF AUTHORIZED REPRESENTATIVE

**HARLANDALE INDEPENDENT SCHOOL DISTRICT**  
**DEPARTMENT OF PURCHASING**  
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**TEXAS GOVERNMENT CODE CHAPTER 2270 VERIFICATION FORM**

Pursuant to Section 2270.002 of the Texas Government Code, Respondent certifies that either (i) it meets an exemption criteria under Section 2270.002; or (ii) it does not boycott Israel and will not boycott Israel during the term of the contract resulting from this solicitation. Respondent shall state any facts that make it exempt from the boycott certification in its Response. This form must be completed and returned with your proposal.

The undersigned verifies that: \_\_\_\_\_  
(Insert Company Name Here)

1. does not boycott Israel; and
2. will not boycott Israel during the term of the contract.

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

\_\_\_\_\_  
Signature of Company Representative

\_\_\_\_\_  
Printed Name of Company Representative

Definitions per Section 2270.001:

1. “Boycott Israel” means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes; and

2. “Company” means a for-profit sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or any limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of those entities or business associations that exist to make a profit.



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**SB 252 VERIFICATION FORM**

I, the undersigned vendor, do hereby certify and verify that Contractor is not a company identified on the Texas Comptroller’s list of companies known to have contracts with, or provide supplies or services to, a foreign organization designated as a Foreign Terrorist Organization by the U.S. Secretary of State.

The undersigned verifies that: \_\_\_\_\_  
(Insert Company Name Here)

- 1. does not have contracts; or
- 2. provide supplies or services to Foreign Terrorist Organizations.

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

\_\_\_\_\_  
Signature of Company Representative

\_\_\_\_\_  
Printed Name of Company Representative

**HARLANDALE INDEPENDENT SCHOOL DISTRICT**  
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 12115 SE LOOP 410 • San Antonio, TX 78221 • (210) 989-4800 • Fax (210) 921-4400

**PAST LITIGATION & SANCTIONS DISCLOSURE STATEMENT**

	NO	YES
<b>1.a. Identify all claims, lawsuits or arbitration proceedings with respect to provision of goods or services, if any, brought by or against your firm within the last five (5) years.</b>		
<b>1.b. Describe all instances in which your firm was unable to complete the work or provide goods under a contract.</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>1.c. Identify any judgments, claims, arbitration proceedings or suits pending or outstanding against your firm or its officers.</b>		
<b>2. Has your firm ever been sanctioned by any Local, State or Federal agencies? Please provide a description of such sanctions and the outcomes below.</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3. Does your firm have pending or past litigation with Harlandale Independent School District (HISD)? Please provide a complete description of such litigation and outcomes below.</b>	<input type="checkbox"/>	<input type="checkbox"/>

*Failure to honestly and completely disclose may subject your proposal to disqualification.*

I hereby certify that the above statements are true to the best of my ability.

\_\_\_\_\_  
 Company Representative Signature

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 Company Representative (Type/Printed)

**SECTION 00 21 13  
INSTRUCTIONS TO BIDDERS**

**SUMMARY**

**1.01 DOCUMENT INCLUDES**

- A. Bid Documents and Contract Documents
  - 1. Definitions
  - 2. Contract Documents Identification
  - 3. Inquiries/Addenda
  - 4. Product/Assembly/System Substitutions
- B. Site Assessment
  - 1. Site Examination
  - 2. Prebid Conference
- C. Qualifications
- D. Bid Submission
- E. Bid Enclosures/Requirements
- F. Offer Acceptance/Rejection
- G. Proposal Selection Criteria

**1.02 RELATED DOCUMENTS**

- A. Document 01 10 00 - Summary.
- B. Document 00 31 00 - Available Project Information.
- C. Document 00 42 00 - Proposal Form.

**INVITATION**

**2.01 BID SUBMISSION - REFER TO INVITATION FOR PROPOSAL DOCUMENT**

**2.02 CONTRACT TIME**

- A. Identify Contract Times for each package in the Proposal Form. The completion date in the Agreement shall be the Contract Time added to the commencement date.

**BID DOCUMENTS AND CONTRACT DOCUMENTS**

**3.01 DEFINITIONS**

- A. Bid Documents: Contract Documents supplemented with Invitation To Bid, Instructions to Bidders, Information Available to Bidders, Bid Form Supplements To Bid Forms and Appendices identified.
- B. Contract Documents: Defined in AIA A201 Article 1 including issued Addenda.
- C. Bid, Offer, or Bidding: Act of submitting an offer.
- D. Clarification: Any reference to bid, bidding or any other derivation of the word in these Procurement Documents shall also be interpreted to mean "Sealed Competitive Proposal".

**3.02 AVAILABILITY**

- A. Bid documents may be obtained through the following:
  - 1. The District's Bonfire Procurement Portal. <https://harlandaleisd.bonfirehub.com/opportunities/65862>
  - 2. Virtual Builders Exchange.

### **3.03 INQUIRIES ADDENDA**

- A. All questions shall be submitted through the Message Module under Opportunity &A tab in the District's Bonfire Portal (see link above). Responses to questions will be issued as an Addendum, and will be posted to the Procurement Portal in the File Module.
- B. Verbal answers are not binding on any party.
- C. Clarifications requested by bidders must be in writing not less than 7 days before date set for receipt of bids. The reply will be in the form of an Addendum, a copy of which will be forwarded to known recipients.

### **3.04 PRODUCT ASSEMBLY SYSTEM SUBSTITUTIONS**

- A. Where the Bid Documents stipulate a particular product, substitutions will be considered up to 10 days before receipt of bids.
- B. Submit substitution requests by completing the form in Section 01 25 00, Substitution Request Form - During Procurement.
- C. When a request to substitute a product is made, Engineer may approve the substitution and will issue an Addendum to known bidders.
- D. The submission shall provide sufficient information to determine acceptability of such products.
- E. Provide complete information on required revisions to other work to accommodate each proposed substitution.
- F. Provide products as specified unless substitutions are submitted in this manner and accepted.

## **SITE ASSESSMENT**

### **4.01 SITE EXAMINATION**

- A. Examine the project site before submitting a bid.

### **4.02 PRE-PROPOSAL CONFERENCE**

- A. A non-mandatory bidders conference has been scheduled for 10:00 a.m. (CT) on the 12th day of May, 2022.
- B. All general contract and major sub-contract bidders are invited.
- C. Representatives of Engineer will be in attendance.
- D. Information relevant to the Bid Documents will be recorded in an Addendum, issued to the Procurement Portal in the File Module.

## **QUALIFICATIONS**

### **5.01 EVIDENCE OF QUALIFICATIONS**

- A. To demonstrate qualification for performing the Work of this Contract, bidders are required to submit written evidence of previous experience and current commitments and other supporting documents to assist the Owner in selecting a Contractor using the evaluation criteria in Paragraph 8.01 in this document.
- B. Proposers shall provide 2 (two) hard copies of qualification documents, plus 3 (three) CD-ROMs at the time of proposal submission.

## **BID SUBMISSION**

### **6.01 SUBMISSION PROCEDURE**

- A. Bidders shall be solely responsible for the delivery of their sealed proposals in the manner and time prescribed.
- B. Submit one original, plus two copies of the executed offer on the Bid Form provided, signed with the required security in a closed opaque envelope, clearly identified with bidder's name, project name and Owner's name on the outside.

- C. Address proposals and deliver to:  
Benjamin S Mora, Purchasing Manager  
HISD Purchasing Department  
12115 S.E. Loop 410  
San Antonio, Texas 78221
- D. An abstract summary of submitted bids will be made available to all bidders following bid opening.

## **BID ENCLOSURES RE QUIREMENTS**

### **7.01 SECURITY DEPOSIT**

- A. Bids shall be accompanied by a security deposit as follows:
  - 1. Bid Bond of a sum no less than 5 percent of the Bid Amount.
- B. Endorse the Bid Bond in the name of the Owner as obligee, signed and sealed by the principal (Contractor) and surety.
- C. The security deposit will be returned after delivery to the Owner of the required Performance and Payment Bond(s) by the accepted bidder.
- D. Include the cost of bid security in the Bid Amount.
- E. After a proposal has been accepted, all securities will be returned to the respective bidders .

### **7.02 PERFORMANCE ASSURANCE**

- A. Include the cost of Performance and Payment Bonds in the Bid Amount.

### **7.03 BID FORM RE QUIREMENTS**

- A. Complete all requested information in the Proposal Form and Appendices.

### **7.04 SALES AND USE TAXES**

- A. As a public entity, this work is exempt from sales and use taxes.

### **7.05 FEES FOR CHANGES IN THE WORK**

- A. Include in the Bid Form, the overhead and profit fees on own Work and Work by subcontractors, applicable for Changes in the Work, whether additions to or deductions from the Work on which the Bid Amount is based.

### **7.06 BID FORM SIGNATURE**

- A. The Bid Form shall be signed by the bidder, as follows:
  - 1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature.
  - 2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature.
  - 3. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the bid is signed by officials other than the president and secretary of the company, or the president/secretary/treasurer of the company, a copy of the by-law resolution of their board of directors authorizing them to do so, must also be submitted with the Bid Form in the bid envelope.
  - 4. Joint venture: Each party of the joint venture shall execute the Bid Form under their respective seals in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

### **7.07 ADDITIONAL BID INFORMATION**

- A. Submit the following Supplements concurrent with bid submission:
  - 1. Document 00 43 36 - Proposed Subcontractors Form: Include the names of all Subcontractors and the portions of the Work they will perform.

## **7.08 SELECTION AND AWARD OF ALTERNATES**

- A. Bids will be evaluated on the total of the base bid price and all of the Alternates. After determination of the successful bidder, consideration will be given to which Alternates will be included in the Work.

## **OFFER ACCEPTANCE RE ECTION**

### **8.01 DURATION OF OFFER**

- A. Bids shall remain open to acceptance and shall be irrevocable for a period of sixty (60) days after the bid closing date.

### **8.02 ACCEPTANCE OF OFFER**

- A. Owner reserves the right to accept or reject any or all offers.
- B. After acceptance by Owner, Engineer on behalf of Owner, will issue to the successful bidder, a written acceptance of proposal.

## **PROPOSAL SELECTION CRITERIA**

### **9.01 GENERAL**

- A. Award of the Contract resulting from this solicitation shall be under the selection process described herein. A committee appointed by Owner will evaluate Proposals submitted in response to this solicitation. The general evaluation criteria are as follows:
  - 1. Proposal Price (30 points)
  - 2. Reputation of the vendor and of the vendor's goods or services. (15 points)
  - 3. The quality of the vendor's good or services. (15 points)
  - 4. The extent to which the goods or services meet the District's needs. (15 points)
  - 5. The vendor's past relationship with the District. (5 points)
  - 6. The impact on the ability of the District to comply with laws and rules relating to historically underutilized businesses. (5 points)
  - 7. The long term cost to the District to acquire the vendor's goods or services. (5 points)
  - 8. For a contract for goods and services, other than goods and services related to telecommunications and information services, building construction and maintenance, or instructional materials, whether the vendor or the vendor's ultimate parent company or majority owner (5 points):
    - a. Has its principal place of business in the state; or
    - b. employs at least 500 persons in this state; and
  - 9. Past litigation history (5 points)
  - 10. Any other relevant factor specifically listed in the request for bids or proposals
- B. Each of the Divisions has been assigned an appropriate weight by the Owner. Following an analysis and evaluation of the proposals, ranking of the Offerors will be made based upon the selection criteria. Subjective judgment on the part of the Owner is implicit in the criteria selection process. The application of the foregoing criteria selection process permits placing technical and other considerations above total price. Therefore, the Owner reserves the right to award to other than the lowest proposed price. Once the Offerors have been ranked, the Owner will begin contract negotiations with the first ranked Offeror. If the Owner is unable to come to terms with the first ranked Offeror, discussions will be terminated and the Owner will proceed to the next ranked Offeror and repeat the process until a contract agreement is reached or all proposals are rejected. Any Proposal may be considered unacceptable if the committee determines it fails to provide adequate information in technical and price proposals as specified in these Instructions to Offerors. Within 45 days after the opening of the proposals, the Owner shall evaluate and rank sequentially each proposal submitted in relation to the selection criteria.

## **END OF SECTION**

**SECTION 00 42 00  
PROPOSAL FORM**

**PROJECT IDENTIFICATION**

Project Identification: Parking Lot Improvements at Multiple Campuses (Collier Elementary, McCollum High School , and Campus Police), located in the Harlandale ISD proper, in San Antonio, Texas .

- A. Date of Issuance of Request for Proposals (RFCSP 200049): April 29, 2022.
- B. Proposal To: Harlandale ISD.
- C. Proposal From:

**PROPOSER'S OBLIGATIONS AND REPRESENTATIONS**

- D. The undersigned Proposer proposes and agrees, if this Proposal is accepted, to enter into an Agreement with the Owner in the form included in the Procurement Documents to perform all Work as specified or indicated in the Procurement Documents, for the Contract Sum, and within the Contract Times specified in this Proposal, in accordance with all other terms and conditions of Contract Documents.
- E. The Proposal will constitute one of Contract Documents, except for provisions that contradict the requirements of the Conceptual Documents and that are not specifically accepted by the Owner by means of written Addendum prior to execution of the Agreement.
- F. This Proposal will remain subject to acceptance for 60 days after the day of Proposal opening. The Proposer will sign and deliver the required number of copies of the Agreement with any bonds and other documents required by the Instructions to Proposers within 15 days after the date of the Owner's Notice of Award.
- G. In submitting this Proposal, the Proposer represents and agrees, as more fully set forth in the Agreement, that:
  - 1. The Proposer has examined and carefully studied the Proposal Documents.
    - a. Addendum No. , dated .
    - b. Addendum No. , dated .
    - c. Addendum No. , dated .
  - 2. The Proposer has visited the site(s) and become familiar with the general, local, and site conditions that may affect cost, progress, and performance of the work.
  - 3. The Proposer is familiar with all applicable federal, state, and local laws and regulations that may affect cost, progress, and performance of the work.
  - 4. The Proposer has carefully studied all data relating to existing surface and subsurface conditions and structures which has been identified or made available by Owner.
  - 5. The Proposer is aware of the general nature of the work to be performed by the Owner and other at the site that relates to the work for which this Proposal is submitted.
  - 6. The Proposer has correlated the information known to the Proposers, information and observations obtained from visits to the site, reports and drawings identified in the RFP Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Conceptual Documents.
  - 7. The Proposer has given the Owner written notice of all conflicts, errors, ambiguities, and discrepancies that the Proposer has discovered in the Conceptual Documents and the written resolution thereof by the Owner is acceptable to the Proposer, and the Conceptual Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing the work for which this Proposal is submitted.

8. This Proposal is genuine and is not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of group, association, organization, or corporation; the Proposer has not directly or indirectly induced or solicited any other Proposer to submit a false or sham Proposal; the Proposer has not solicited or induced any individual or entity to refrain from submitting a Proposal; and the Proposer has not sought by collusion to obtain for itself any advantage over any other Proposer or over the Owner.

**1.02 CONTRACT SUM -- THE PROPOSER WILL COMPLETE THE WORK IN ACCORDANCE WITH CONTRACT DOCUMENTS FOR THE FOLLOWING PRICE(S) (ENTER ALL COSTS IN BOTH WORDS AND FIGURES)**

- A. Total (of all three projects): Base Price Lump Sum of \$ \_\_\_\_\_ dollars  
Base Price Lump Sum of \_\_\_\_\_ dollars  
(\$ \_\_\_\_\_).

**1.03 CONTRACT TIMES -- THE PROPOSER AGREES THAT THE WORK WILL BE**

- A. Substantially complete in accordance with the Agreement within \_\_\_\_\_ days after the date on which the Contract commences to run (enter the number of days).

**1.04 EXHIBITS - THE FOLLOWING DOCUMENTS ARE ATTACHED TO AND MADE A CONDITION OF THIS PROPOSAL**

- A. Proposal Security.  
B. Proposer's qualification statement, with supporting data.

**1.05 MISCELLANEOUS**

- A. Communications concerning this Proposal shall be directed to the address, phone number, and facsimile number of the Proposer indicated below.  
B. The terms used in this Proposal which are defined in the Conditions of the Contract have the meanings assigned to them in Contract Documents. Terms defined in the Instructions to Proposers are used with the same meanings in this Proposal.

**1.06 SUBMITTED BY (PROPOSER TO FILL IN ALL BLANKS)**

- A. By: \_\_\_\_\_ (SEAL)  
1. (Firm Name)  
B. Signature:  
C. \_\_\_\_\_  
1. (Typed or Printed Partner or Officer's Name)  
D. Title:  
E. Address:  
F. \_\_\_\_\_  
G. Phone No.: \_\_\_\_\_ Facsimile No.: \_\_\_\_\_  
H. State of Incorporation:  
I. Submitted on \_\_\_\_\_ (Proposer to enter date of signature)

**END OF SECTION**



**SECTION 00 50 00  
CONTRACTING FORMS AND SUPPLEMENTS**

**PART 1 GENERAL**

**1.01 AGREEMENT AND CONDITIONS OF THE CONTRACT**

- A. See Section 00 73 00 - Supplementary Conditions for the Supplementary Conditions.
- B. The Agreement is based on AIA A101.
- C. The General Conditions are based on AIA A201.

**1.02 FORMS**

- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in Contract Documents.
- B. Bond Forms:
  - 1. Bid Bond Form: AIA A310.
  - 2. Performance and Payment Bond Form: AIA A312.
- C. Post-Award Certificates and Other Forms:
  - 1. Schedule of Values Form: AIA G703.
  - 2. Application for Payment Forms: AIA G702 with AIA G703 (for Contractors).
- D. Clarification and Modification Forms:
  - 1. Architect's Supplemental Instructions Form: AIA G710.
  - 2. Construction Change Directive Form: AIA G714.
  - 3. Change Order Form: AIA G701.
- E. Closeout Forms:
  - 1. Certificate of Substantial Completion Form: AIA G704.
  - 2. Contractor's Affidavit of Release of Liens Form: AIA G706A
  - 3. Consent of Surety to Final Payment Form: AIA G707.

**1.03 REFERENCE STANDARDS**

- A. AIA A101 - Standard Form of Agreement Between Owner and Contractor where the basis of Payment is a Stipulated Sum 2017.
- B. AIA A201 - General Conditions of the Contract for Construction 2017.
- C. AIA A310 - Bid Bond 2010.
- D. AIA A312 - Performance Bond and Payment Bond 2010.
- E. AIA G701 - Change Order 2017.
- F. AIA G702 - Application and Certificate for Payment 1992.
- G. AIA G703 - Continuation Sheet 1992.
- H. AIA G704 - Certificate of Substantial Completion 2017.
- I. AIA G706A - Contractor's Affidavit of Release of Liens 1994.
- J. AIA G707 - Consent of Surety to Final Payment 1994.
- K. AIA G710 - Architect's Supplemental Instructions 2017.
- L. AIA G714 - Construction Change Directive 2017.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 00 73 00  
SUPPLEMENTARY CONDITIONS (2017)**

**PART 1 GENERAL**

**1.01 SUMMARY**

**1.02 THESE SUPPLEMENTARY CONDITIONS AMEND AND SUPPLEMENT THE GENERAL CONDITIONS AND OTHER PROVISIONS OF THE CONTRACT DOCUMENTS AS INDICATED BELOW. PROVISIONS THAT ARE NOT SO AMENDED OR SUPPLEMENTED REMAIN IN FULL FORCE AND EFFECT.**

**1.03 THE TERMS USED IN THESE SUPPLEMENTARY CONDITIONS THAT ARE DEFINED IN THE GENERAL CONDITIONS HAVE THE MEANINGS ASSIGNED TO THEM IN THE GENERAL CONDITIONS.**

**1.04 MODIFICATIONS TO GENERAL CONDITIONS**

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**MODIFICATIONS TO AIA A201**

**4.01 ARTICLE 1 - GENERAL PROVISIONS**

**1.1 - BASIC DEFINITIONS**

- A. 1.1.3 Add the following to the end of the first sentence:  
... , including the transportation of materials and supplies to or from the site, competent supervision of the Work and the provision of insurance and payment and performance bonds in accordance with the Contract Documents.”
- B. 1.1.5.1 Add the following new Subparagraph:  
Any discrepancy or conflict within or between the Drawings and Specifications shall be brought to the attention of the Architect. Notwithstanding Subparagraph 1.2.1, discrepancies or conflicts not brought to Architect’s attention and clarified during the bidding of the Project will be deemed to have been bid or proposed in the more costly or difficult manner, and the better quality or greater quantity of the Work shall be provided by the Contractor in accordance with Architect’s interpretation.
- C. Add the following Subparagraphs to Paragraph 1.1:
- D. 1.1.9 Alternate - A variation in the Work for which the Owner requires a price separate from the Base Price. If the alternate is accepted by Owner, the variation will become a part of the Contract and the Base Price will be adjusted in the amount quoted.
- E. 1.1.10 Base Price - The price quoted before Alternates are considered.
- F. 1.1.11 Day - A calendar day beginning and ending at midnight.
- G. 1.1.12 Not-In-Contract (NIC) - Work not included in this Contract.
- H. 1.1.13 The term “provide” when used in any document relating to this project, including but not limited to Drawings, Specifications, proposal requests, change orders and other similar documents, shall mean to furnish, install and complete, in place and ready for operation and use.
- I. 1.1.14 Manufacturers - Manufacturers acceptable to perform Work subject to requirements of the specific Specifications Section.

## **4.02 ARTICLE 3 - CONTRACTOR**

### **3.1 - GENERAL**

- A. 3.1.1 Add the following to the end of the Subparagraph:  
"The Contractor shall at all times be an independent contractor, not an employee or agent of the Owner, and the relationship of the parties hereunder shall in no event be construed as constituting any other relationship."

### **3.3 - SUPERVISION AND CONSTRUCTION PROCEDURES**

- B. 3.3.1 Add the following to the end of subparagraph:  
"The Contractor shall assign a superintendent or foreman who shall make decisions in behalf of the Contractor and his Subcontractors. He shall be on the project, in this capacity, at all times while work on the Project is in progress."
- C. 3.3.4 Add a new Subparagraph as follows:  
"Contractor acknowledges that the Work may be performed in connection with a facility which may be occupied and in use during the performance of the Work. It is imperative that Contractor's operations and the performance of the Work not interfere with, interrupt, disturb or disrupt Owner's normal operations or facilities. Contractor agrees to and shall comply with all rules, regulations and requirements of the Owner on which the Work is to be performed, and shall take all steps necessary to protect and guard the safety of the employees, visitor, vendors, and invitees of Owner. Contractor shall exercise the utmost skill and judgment to ensure that continuing construction activity will not interfere with the use, occupancy and quiet enjoyment of facilities in use on the site. Contractor recognizes that the ongoing activities in proximity with its construction activities shall result in the need for prompt and effective coordination of its services with those involved in the ongoing utilization of the premises. Such coordination and adequate site access shall be the responsibility of Contractor. Contractor understands and accepts the difficulties and costs associated with working in an existing facility and the potential delays and disruptions in its Work and has included such items in the Contract Time and the Contract Sum. The Contractor shall perform all the Work in such a manner as to cause minimum interference with the operations of the Owner and other contractors and subcontractors on the site, and shall take, and cause the Contractor's and its Subcontractor's employees, agents, licensees and permittees to take all necessary precautions to protect the Work and the site and all persons and property thereon from damage or injury. The Contractor shall maintain good order among its employees and those of its Subcontractors, and shall confine its employees to such work areas, roads and gates as directed by the Owner."

### **3.5 - WARRANTY**

- D. 3.5.1 Add the following at the end of the Subparagraph:  
"Neither the Owner's or Architect's inspection nor failure to inspect shall relieve the Contractor of any obligation hereunder. If any Work fails to conform to the Contract Documents, the Contractor shall promptly replace and remedy the same at the Contractor's expense. No acceptance or payment by the Owner shall constitute a waiver of the foregoing and nothing herein shall exclude or limit any warranties implied by law."

### **3.6 - TAXES**

- E. 3.6.1 Modify subparagraph 3.6 by deleting "legally enacted" and replacing with "required by law."
- F. 3.6.2 Add the following subparagraph:  
The Owner, as a tax-exempt organization, is not required to pay state sales tax. The materials to be used in the Work will be exempt from the limited sales, excise and use tax imposed by Chapter 151 of the Texas Tax Code. The Contractor shall obtain an exemption certificate evidencing exemption from such taxes from the local office of the State Comptroller of Public Accounts.

### **3.7 - PERMITS, FEES, AND NOTICES**

- G. 3.7.1 Add the following sentence to Paragraph 3.7.1:  
"A building permit shall be obtained from the authority having jurisdiction before commencement any work for which a permit is required."

### **3.9 - SUPERINTENDENT**

- H. 3.9.1 Delete entire paragraph 3.9.1 and replace with the following:  
"The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project at all times during the progress of the Work. The Superintendent shall at all times be satisfactory to the Owner. Subject to the Contractor's sole right to terminate the employment of the Superintendent, the Contractor shall not replace the Superintendent without the consent of the Owner. Should the Superintendent terminate his employment with the Contractor, his replacement is subject to the Owner's approval. The Superintendent shall represent the Contractor and all communications given to him shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case."

### **3.13 - USE OF THE SITE**

- I. 3.13.1 Add the following at the end of paragraph 3.13:  
"The Contractor shall so conduct its operations as not to unreasonably interfere with traffic on public thoroughfares adjacent or near to the Project site."

### **3.18 - INDEMNIFICATION**

1. 3.18.1 Delete the Subparagraph and replace with the following:
- a. "To the fullest extent allowed by law, the Contractor agrees to indemnify and hold harmless the Owner and any other person or entity designated by this Contract, their parent, subsidiary and affiliated companies, and their respective shareholders, directors, officers, employees, agents and representatives (hereinafter referred to as "Indemnitees") against all claims, demands, actions, suits, losses, damages, liabilities, costs and/or expenses of every kind and nature (including but not limited to court costs, litigation expenses and attorneys fees) and all recoverable interest thereon, incurred by or sought to be imposed on Indemnitees because of injury (including death) or damages to property (whether real, personal or inchoate), arising out of or in any way related (whether directly or indirectly, causally or otherwise) to: (1) the performance or attempted performance of, or failure to perform operations or work under this Contract by Indemnitees, Contractor, its subcontractors and/or any other person or entity; (2) the condition of the premises of which said operations or work are being performed; (3) the selection, provision, use or failure to use, by any person or entity, of any tools, supplies, materials, equipment or vehicles (whether owned or supplied by the Owner, Contractor or any other person or entity) in connection with said work or operations; or (4) the presence on the premises of Contractor, its subcontractors, employees, supplies, vendors or any other person acting by or on behalf of Contractor. This indemnity shall apply, whether or not any such injury or damage has been, or is alleged to have been, caused in whole or in part by the negligence or fault of any Indemnitee, or on any other theory of liability including negligence, intentional wrongdoing, strict products liability or the breach of non-delegable duty. Contractor further agrees to defend (at the election of any Indemnitee) against any claim, demand, action or suit for which indemnification is provided hereunder.

- b. The Contractor represents that it possesses the skills required for the Work, assumes the responsibilities of an employer for performance of the Work, and acts as an employer of one or more employees by paying wages, directing activities, and performing other similar functions. The Contractor is an independent contractor, free to determine the manner in which the Work is performed. The employees of the Contractor are not employees of the Owner, and the Owner shall have no responsibility to maintain Workers' Compensation Insurance for the employees of the Contractor, the Contractor having sole responsibility therefor. The Contractor agrees, at the request of the Owner, to execute a written agreement in the form promulgated by the Texas Workers' Compensation Commission stating that the Contractor is an independent contractor, not an employee of the Owner, and that neither the Contractor nor its employees are entitled to Workers' Compensation coverage from the Owner.
- c. 3.18.1.1 Without in any way limiting or restricting the indemnification and defense agreements stated above, Contractor agrees that it is the intention of the parties hereto that Contractor and its insurers bear the entire risk of loss or injury to any of Contractor's employees, "borrowed servants," agents, representatives, subcontractors, vendors, materialmen, or any other person present on the premises or performing any other act or service on Contractor's behalf or at its request, whether or any such loss or injury is caused in whole or in part by any negligence or fault of any Indemnitee, and without seeking any contribution therefor from any Indemnitee or its insurers."

#### **4.03 ARTICLE 4 - ARCHITECT**

##### **4.2 - ADMINISTRATION OF THE CONTRACT**

- A. 4.2.6 Add the following at the end of the Subparagraph:  
"Certain portions of the Work will be tested and/or observed at various stages, sometimes off the Project site, between initial observation or review and final positioning of the completed Work. Nothing in any initial or prior approval or test result shall govern if at any subsequent time the Work or any portion thereof is found not to conform to the requirements of the Contract Documents."
- B. 4.2.7 Delete the Subparagraph and replace with the following:  
"The Architect will review and comment or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with the design concept expressed in the Contract Documents. The Architect's action will be taken with reasonable promptness as to cause no delay in the Work or in the activities of the Owner or separate contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, or for coordination of the various trades, or for compliance with schedules, all of which remain the sole responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of its obligations under Paragraphs 3.3, 3.5 and 3.12. The Architect's review shall not constitute consideration or approval of safety precautions or, unless otherwise stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component. If, on occasion, the Architect reviewed and/or commented upon items or subjects which are the responsibility of the Contractor, such action shall be interpreted as voluntary assistance by the Architect, and shall not create a duty or obligation upon the Architect to provide similar review and comment on other items or subjects."

### **4.3 - CLAIMS AND DISPUTES**

- C. 4.3.4 Delete the Subparagraph and replace with the following:
1. 4.3.4 Claims for Concealed or Unknown Conditions. Contractor acknowledges that there may exist at the project site certain soil and geological conditions and/or subsurface physical conditions which are not disclosed in the Contract Documents, and which have been known to or may be reasonably anticipated to occur in the area or be related to any past use of the project site, including, without limitation, the presence of rock and its hardness, geologic formations, differing soils, and subsurface structures, equipment or other impediments, either natural or man-made (collectively, "Subsurface Conditions").  
Owner makes no representations or warranties regarding Subsurface Conditions at the Project site, or of the accuracy or continuity of conditions which may be noted in any reports furnished or made available to Contractor. Contractor covenants and agrees that any such reports are furnished or made available by Owner to Contractor for information purposes only, and Contractor acknowledges that Owner is not responsible for the content thereof. Contractor shall be responsible for inspecting the site and determining the existence or likelihood of any Subsurface Conditions which may affect the Contract Time or the Contract Sum, or both. The Contract Time and the Contract Sum bid by Contractor shall be deemed to include all costs of and time to complete all work associated with or attributable to Subsurface Conditions, and Contractor shall not be entitled to submit a claim for or to obtain an extension of the Contract Time or increase in the Contract Sum due to the existence of Subsurface Conditions.
  2. Except as provided above with respect to Subsurface Conditions, if conditions are encountered at the site which are (1) concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within 21 days after the Architect has given notice of the decision. If the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

### **4.04 ARTICLE 5 - SUBCONTRACTORS**

#### **5.2 - AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK**

- A. 5.2.1 Add the following to the end of the sub-paragraph:  
"Failure to object shall not constitute a waiver of any of the requirements of the Contract Documents."
- B. 5.2.1.1 Add the following sub-subparagraph:  
"Before entering into a contract with any Subcontractor, the General Contractor shall investigate the proposed Subcontractor's reputation and ability to perform the work and satisfy himself that the Subcontractor is stable, reputable and skilled in the work of this section. Should the Subcontractor selected by the General Contractor default on the contract including failure to complete the Work in conformance with the Contract Documents, or enters into bankruptcy, the Owner will pay the Architect as an additional service for any additional work occasioned by such default or bankruptcy. The Owner and the Contractor will then deduct an equal amount from the Contract Sum by Change Order as reimbursement to the Owner for such payments to the Architect."

### 5.3 - SUBCONTRACTUAL RELATIONS

- C. Add the following to the end of the sub-paragraph 5.3:  
"Nothing contained in the Contract Documents shall create any contractual relation between the Owner or Architect and any Subcontractor or Sub-Subcontractor, nor shall there be any obligation on the Owner to pay, to see to the payment of any sums due any Subcontractor or Sub-Subcontractor, nor create any obligation of any kind express or implied upon the Owner or Architect in favor of any Subcontractor or Sub-Subcontractor."

## 4.05 ARTICLE 9 - PAYMENTS AND COMPLETION

### 9.1 - CONTRACT SUM

- A. 9.1.1 Add the following at the end of Subparagraph 9.1.1:  
"All costs of overtime work required by the Contract Time and the nature of the Work, as set forth in or inferable from the Contract Documents, except costs of emergencies covered in Paragraph 10.4, shall be and are included in the Contract Sum."

### 9.3 - APPLICATIONS FOR PAYMENT

- B. 9.3.1 Add the following to Subparagraph 9.3.1:
1. "The form of Application for Payment shall be a notarized AIA Document G702, Application and Certification for Payment, supported by AIA Document G703, Continuation Sheet."
  2. **Last sentence referring to retainage, which shall be 5% (five percent) retainage from each pay application, to be released at Final Completion.**
- C. 9.3.1.3 Add the following as a new Clause to Subparagraph 9.3.1:
1. "Along with the Application for Payment, and as a condition to the payment of any amounts stated therein, the Contractor will submit the following:
  2. An Affidavit certifying that payment has been made to all Subcontractors, Sub-subcontractors, suppliers, employees, materialmen and other persons relating to Work for which the Contractor has been paid; and
  3. A revised and updated Construction Schedule reflecting actual job progress to the date of the Application for Payment, taking into account all factors known at the time of such Application for Payment.
  4. Payment shall be made on the percentage of value of the Work actually performed and included in the Application for Payment, as specified in Article 5 of the Agreement.

### 9.5 - DECISIONS TO WITHHOLD CERTIFICATION

- D. 9.5.1.6 Add the following as a new Subparagraph 9.5.4:  
"The progress of construction must not lag behind the construction progress schedule approved by the Owner. If the construction or any portion or phase thereof falls behind the schedule approved by the Owner, further payment may be withheld until the pace of construction is accelerated to the satisfaction of the Owner to meet the scheduled Contract Time."

### 9.8 - SUBSTANTIAL COMPLETION

- E. Add the following new sub-subparagraph:  
9.8.2.1 "If, in the Architect's opinion during the inspection, the Project or the designated portion thereof which Owner has agreed to accept separately is not sufficiently complete to warrant inspection, or if the list of items to be completed or corrected is not sufficiently complete to warrant inspection, then Architect may terminate the inspection and notify the Contractor that the Project is not ready for inspection. If for such reasons, Architect is required to make additional inspections, the Owner may deduct the cost of Architect's additional services made necessary thereby from any payments due the Contractor. The Architect's compensation shall be determined in accordance with the applicable provisions of the Owner-Architect Agreement."

## **9.10 - FINAL COMPLETION AND FINAL PAYMENT**

- F. Add new Sub-paragraphs as follows:
1. 9.10.6 Contractor shall pay promptly, and see that any subcontractor pays promptly, all indebtedness for labor, materials, equipment or other work used in performance of the Work. Contractor shall not permit any lien or charge to attach to the Work or Owner's premises; if any does so attach, Contractor shall promptly procure its release and indemnify Owner against all damage and expense incident thereto. Upon completion of the Work and before any final settlement, Contractor shall show evidence satisfactory to Owner of payment and release of all debts, taxes, liens, charges, obligations and claims for labor, materials, or subcontractors or for injuries to persons or property arising out of or connected with the performance of this Agreement. Contractor waives any rights it may now have, or which it may acquire during the operation of this Agreement to file liens or encumbrances against Owner or Owner's property.
  2. 9.10.7 Prior to written acceptance of the Work by Owner, all work shall remain the risk of Contractor. Contractor shall be responsible for all loss, deterioration, damage or destruction and shall repair, renew and make good at his own expense, all such loss, damage or destruction however caused.

## **4.06 ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY**

### **10.3 - HAZARDOUS MATERIALS**

- A. 10.3.3 Add the following to the end of the Subparagraph:
- Notwithstanding anything to the contrary contained in this Subparagraph 10.3.3, the agreement of the Owner to indemnify, defend and hold harmless the parties described in this Subparagraph shall not extend or apply to claims, damages, losses, expenses or liabilities related to, created or caused in whole or in part by a party indemnified hereunder; it being agreed and understood that the Owner and any party so indemnified shall each bear liability for its own negligent acts or omissions, and that such indemnity shall extend only to liability for the negligent acts and omissions of the Owner.

## **4.07 ARTICLE 11 - INSURANCE AND BONDS**

### **11.1 - CONTRACTOR'S INSURANCE AND BONDS**

- A. 11.1.1.9 Liability insurance shall include all major divisions of coverage and be on a comprehensive basis including:
1. Premises Operations (including X, C, and U coverages as applicable.)
  2. Independent Contractors' Protective.
  3. Products and Completed Operations.
  4. Personal Injury Liability with Employment Exclusion deleted.
  5. Contractual, including specified provision for Contractor's obligation under paragraph 3.18.
  6. Owned, non-owned and hired motor vehicles.
  7. Broad Form Property Damage including Completed Operations.
- B. 11.1.2 Add the following clauses to paragraph 11.1.2:
- C. 11.1.2.1 Insurance required by Subparagraph 11.1.1 shall be written for not less than the following limits, or greater if required by law:
- Comprehensive General Liability:
1. General Aggregate \$1,000,000.
  2. Products/Completed Operations Aggregate \$1,000,000.
  3. Personal & Advertising Injury \$1,000,000.
  4. Each Occurrence \$500,000.
  5. Fire Damage (Any one fire) \$50,000.
  6. Medical Expense (Any one person) \$5,000.
- Automobile Liability:
7. Combined Single Limit \$1,000,000.
  8. Bodily Injury - Per Person \$500,000.
  9. Bodily Injury - Per Accident \$1,000,000.
  10. Property Damage \$1,000,000.



Umbrella Excess Liability:

11. Each Occurrence \$2,000,000.
  12. Aggregate \$2,000,000.
- Worker's Compensation Statutory Limits
- Employers' Liability:
13. Each Accident \$500,000.
  14. Disease - Policy Limit \$500,000.
  15. Disease - Each Employee \$500,000.
  16. Aircraft Liability (owned and non-owned) when applicable \$1,000,000.
  17. Watercraft Liability (owned and non-owned) when applicable \$1,000,000.
  18. 11.1.2 Add the following to the end of the paragraph and add the following subparagraphs:  
"Coverage afforded under said insurance shall be extended, endorsements added, and exclusions removed as follows:
    - a. .1 Coverage shall be extended for products/completed operations and Contractor's (or subcontractor's) contractual liability. Specifically, said insurance must provide coverage for all indemnification and/or defense obligations created by this Contract.
    - b. .2 Coverage shall be extended to include as additional insured, the Owner and any other person or entity so required by this Contract.
    - c. .3 Any restrictions or limitations on coverage afforded to the Owner (or any other person or entity required by the Contract to be named as "additional insureds") shall be deleted, including, but not limited to, any restriction of coverage to liability "arising out of Contractor's work or materials, parts, or equipment furnished in connection therewith." The parties agree that it is their intention that the insurance required to be obtained shall apply fully to any "additional insured," as if that person or entity were a "named insured."
    - d. .4 All coverage shall be endorsed to state that it is primary with respect to any and all other insurance that may be available to the Owner and any other person or entity required by the Contract to be named as an additional insured, and shall be endorsed to include waivers of subrogation in favor of the Owner, any other "additional insureds", and their respective insurers;
    - e. .5 Commercial or business auto liability insurance, including uninsured/underinsured motorists and personal injury protection coverage shall be endorsed to state that it is primary and non-contributing with respect to any other insurance that may be available to the Owner and any other person or entity required by the Contract documents to be named as an additional insured, and shall be endorsed to include waivers of subrogation in favor of the Owner, any other "additional insureds" required by this Contract, and their respective insurers;
    - f. .6 All coverage shall be endorsed to require that the Owner and any other person or entity required by Contract to be named as an additional insured be given written notice at least 45 days prior to any cancellation, modification, or non-renewal of coverage occurring before the policy's expiration date.
    - g. .7 Should the Contractor fail to purchase, or fail to continue in force until completion of the project insurance in the amount indicated above, the Owner may purchase such insurance and the cost thereof shall be borne by the Contractor."
  - 11.1.3 Modify the second sentence as follows: Delete "...at least 30 days prior written notice..." and substitute "... at least 45 days prior written notice...".
  - h. Add the following sentence to Subparagraph 11.1.3: "The Certificates shall be ACORD form 25-S."
19. Add new sub-paragraphs as follows:
  - a. 11.1.4.1 Contractor shall cause all subcontractors employed by the Contractor to furnish and maintain the same minimum limits and coverage as specified under 11.1.2.1, 11.1.2.2 and 11.1.2.3. Contractor shall maintain evidence of such insurance for the duration of the job. As an alternative, the Contractor may add subcontractors employed by the Contractor to his policy as additional insureds for the duration of the project.

- b. 11.1.4.2 Contractor shall require that all policies in any way related to any work and maintained by Contractor, as well as all policies maintained by subcontractors to include clauses wherein each underwriter agrees to waive its rights of subrogation against the Owner. The limits of liability shown for each type of insurance coverage to be provided by Contractor pursuant hereto shall not be deemed to constitute a limitation of Contractor's liability for claims hereunder.
- c. 11.1.4.3 Should the Contractor fail to purchase, or fail to continue in force until completion of the project insurance in the amounts indicated above, or required below, the Owner may purchase such insurance and the cost thereof shall be borne by the Contractor. In the alternative, at the Owner's option, the Owner hereby specifically reserves the right to rescind or terminate this Contract at any time, if the Owner determines that Contractor has not complied with any of the requirements for any insurance required under any provision of Article 11.

## **11.2 - OWNER'S INSURANCE**

- D. 11.2.1 Delete the sentence under Section 11.2 and substitute the following:  
"The Contractor shall purchase and maintain insurance naming Owner as the insured and covering the Owner's contingent liability for claims which may arise from operations under the Contract."
- E. 11.2.2 Add the following Sub-subparagraph as 11.2.1:  
"Should the Contractor fail to purchase, or fail to continue in force until completion of the project insurance in the amount indicated above, the Owner may purchase such insurance and the cost thereof shall be borne by the Contractor."
- F. 11.3.1 Delete paragraph and replace with the following:
  - 1. "The Contractor shall purchase and maintain an "All Risk" builders risk policy covering the entire work at the site for the full insurable value of the Work, including transit thereto and including materials stored offsite and destined to become a part of the Work. Policy shall include insurance coverage of the construction against physical loss or damage for perils of fire, theft, vandalism, malicious mischief, flood, earthquake and other acts of nature. Insurance shall include endorsement allowing occupancy of the project, in part or in whole, by the Owner prior to final completion of the construction. This insurance shall include the interest of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the work. A copy of such policy will be furnished to the Owner upon request."
- G. 11.3.1.1 Add the following at the end of subparagraph: "The policy shall contain a provision that coverage afforded under the policy will not be canceled until at least 45 days prior written notice has been given to the Owner."
- H. 11.3.1.3 Modify the paragraph by substituting "Contractor" for "Owner" at the first reference to "Owner" in the first sentence.
- I. 11.3.6 Change the word "Owner" to read "Contractor" and change the word "Contractor" to read "Owner".
- J. 11.3.7 Add the following new paragraph:
  - 1. "In waiving rights of recovery under terms of this subparagraph, the term Owner shall be deemed to include his employees and the Architect/Engineer and his employees as the Owner's representative, as provided in the contract documents."
- K. 11.3.8 and 11.3.9 Change the words "Owner's" and "Owner" to read "Contractor's" and "Contractor".

**END OF SECTION**

"General Decision Number: TX20220007 02/25/2022

Superseded General Decision Number: TX20210007

State: Texas

Construction Types: Heavy and Highway

Counties: Atascosa, Bandera, Bastrop, Bell, Bexar, Brazos, Burleson, Caldwell, Comal, Coryell, Guadalupe, Hays, Kendall, Lampasas, McLennan, Medina, Robertson, Travis, Williamson and Wilson Counties in Texas.

HEAVY (excluding tunnels and dams, not to be used for work on Sewage or Water Treatment Plants or Lift / Pump Stations in Bell, Coryell, McClennon and Williamson Counties) and HIGHWAY Construction Projects

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<ul style="list-style-type: none"> <li>. Executive Order 14026 generally applies to the contract.</li> <li>. The contractor must pay all covered workers at least \$15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2022.</li> </ul>
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<ul style="list-style-type: none"> <li>. Executive Order 13658 generally applies to the contract.</li> <li>. The contractor must pay all covered workers at least \$11.25 per hour (or the applicable wage rate listed on this wage determination,</li> </ul>

if it is higher) for all hours spent performing on that contract in 2022.
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The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Modification Number	Publication Date
0	01/07/2022
1	02/25/2022

\* SUTX2011-006 08/03/2011

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER (Paving and Structures).....	\$ 12.56	**
ELECTRICIAN.....	\$ 26.35	
FORM BUILDER/FORM SETTER		
Paving & Curb.....	\$ 12.94	**
Structures.....	\$ 12.87	**
LABORER		
Asphalt Raker.....	\$ 12.12	**
Flagger.....	\$ 9.45	**
Laborer, Common.....	\$ 10.50	**
Laborer, Utility.....	\$ 12.27	**
Pipelayer.....	\$ 12.79	**
Work Zone Barricade Servicer.....	\$ 11.85	**
PAINTER (Structures).....	\$ 18.34	
POWER EQUIPMENT OPERATOR:		
Agricultural Tractor.....	\$ 12.69	**
Asphalt Distributor.....	\$ 15.55	
Asphalt Paving Machine.....	\$ 14.36	**

Boom Truck.....	\$ 18.36	
Broom or Sweeper.....	\$ 11.04	**
Concrete Pavement Finishing Machine.....	\$ 15.48	
Crane, Hydraulic 80 tons or less.....	\$ 18.36	
Crane, Lattice Boom 80 tons or less.....	\$ 15.87	
Crane, Lattice Boom over 80 tons.....	\$ 19.38	
Crawler Tractor.....	\$ 15.67	
Directional Drilling Locator.....	\$ 11.67	**
Directional Drilling Operator.....	\$ 17.24	
Excavator 50,000 lbs or Less.....	\$ 12.88	**
Excavator over 50,000 lbs...	\$ 17.71	
Foundation Drill, Truck Mounted.....	\$ 16.93	
Front End Loader, 3 CY or Less.....	\$ 13.04	**
Front End Loader, Over 3 CY.	\$ 13.21	**
Loader/Backhoe.....	\$ 14.12	**
Mechanic.....	\$ 17.10	
Milling Machine.....	\$ 14.18	**
Motor Grader, Fine Grade....	\$ 18.51	
Motor Grader, Rough.....	\$ 14.63	**
Pavement Marking Machine....	\$ 19.17	
Reclaimer/Pulverizer.....	\$ 12.88	**
Roller, Asphalt.....	\$ 12.78	**
Roller, Other.....	\$ 10.50	**
Scraper.....	\$ 12.27	**
Spreader Box.....	\$ 14.04	**
Trenching Machine, Heavy....	\$ 18.48	
 Servicer.....	\$ 14.51	**
 Steel Worker		
Reinforcing.....	\$ 14.00	**
Structural.....	\$ 19.29	
 TRAFFIC SIGNALIZATION:		
Traffic Signal Installation		
Traffic Signal/Light Pole Worker.....	\$ 16.00	
 TRUCK DRIVER		
Lowboy-Float.....	\$ 15.66	
Off Road Hauler.....	\$ 11.88	**

Single Axle.....\$ 11.79 \*\*  
Single or Tandem Axle Dump  
Truck.....\$ 11.68 \*\*  
Tandem Axle Tractor w/Semi  
Trailer.....\$ 12.81 \*\*

WELDER.....\$ 15.97

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

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\*\* Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$15.00) or 13658 (\$11.25). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

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

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The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage

determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

#### Union Rate Identifiers

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

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

#### Survey Rate Identifiers

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

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

#### Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those

classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

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

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#### WAGE DETERMINATION APPEALS PROCESS

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

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

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:



Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

**SECTION 01 10 00  
SUMMARY**

**PART 1 GENERAL**

**1.01 PROJECT**

- A. Project Name: Harlandale ISD - Parking Lot Improvements at Multiple Campuses.
- B. Owner's Name: Harlandale Independent School District.
- C. The Project consists of improvements to parking lots at Collier Elementary School, McCollum High School, and the Campus Police Station.

**1.02 CONTRACT DESCRIPTION**

- A. Contract Type: A single prime contract based on a Stipulated Price for all work indicated in the Contract Documents.

**1.03 OWNER OCCUPANCY**

- A. Owner intends to continue to occupy adjacent portions of the existing campuses during the entire construction period.
- B. Owner intends to occupy the Project(s) upon Substantial Completion.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- D. Schedule the Work to accommodate Owner occupancy.

**1.04 CONTRACTOR USE OF SITE AND PREMISES**

- A. Construction Operations: Limited to areas noted on Drawings.
  - 1. Locate and conduct construction activities in ways that will limit disturbance to site.
- B. Arrange use of site and premises to allow:
  - 1. Owner occupancy.
  - 2. Use of site and premises by the public.
- C. Provide access to and from site as required by law and by Owner:
  - 1. Do not obstruct roadways, sidewalks, or other public ways without permit.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 20 00  
PRICE AND PAYMENT PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.

**1.02 RELATED REQUIREMENTS**

- A. Section 00 50 00 - Contracting Forms and Supplements: Forms to be used.
- B. Section 01 22 00 - Unit Prices: Monetary values of unit prices; Payment and modification procedures relating to unit prices.

**1.03 SCHEDULE OF VALUES**

- A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Engineer for approval.
- C. Forms filled out by hand will not be accepted.
- D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization and general conditions .
- E. Include within each line item, a direct proportional amount of Contractor's overhead and profit.

**1.04 APPLICATIONS FOR PROGRESS PAYMENTS**

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Provide separate applications for payment for each package.
- C. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.
- D. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Engineer for approval.
- E. Forms filled out by hand will not be accepted.
- F. For each item, provide a column for listing each of the following:
  - 1. Item Number.
  - 2. Description of work.
  - 3. Scheduled Values.
  - 4. Previous Applications.
  - 5. Work in Place and Stored Materials under this Application.
  - 6. Authorized Change Orders.
  - 7. Total Completed and Stored to Date of Application.
  - 8. Percentage of Completion.
  - 9. Balance to Finish.
  - 10. Retainage.
- G. Execute certification by signature of authorized officer.
- H. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- I. Submit electronic copies of each Application for Payment.
- J. Include the following with the application:
  - 1. Transmittal letter as specified for submittals in Section 01 30 00.
  - 2. Partial release of liens from major subcontractors and vendors.

### **1.05 MODIFICATION PROCEDURES**

- A. For minor changes not involving an adjustment to the Contract Price or Contract Time, Engineer will issue instructions directly to Contractor.
- B. For other required changes, Engineer will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
  - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
  - 2. Promptly execute the change.
- C. For changes for which advance pricing is desired, Engineer will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 10 days.
- D. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
- E. Substantiation of Costs: Provide full information required for evaluation.
  - 1. Provide the following data:
    - a. Quantities of products, labor, and equipment.
    - b. Taxes, insurance, and bonds.
    - c. Overhead and profit.
    - d. Justification for any change in Contract Time.
    - e. Credit for deletions from Contract, similarly documented.
- F. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- G. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- H. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

### **1.06 APPLICATION FOR FINAL PAYMENT**

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
  - 1. All closeout procedures specified in Section 01 70 00.
  - 2. All release of liens submitted.

### **PART 2 PRODUCTS - NOT USED**

### **PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 25 00  
SUBSTITUTION PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Procedural requirements for proposed substitutions.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 60 00 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

**1.03 DEFINITIONS**

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
  - 1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
    - a. Unavailability.
    - b. Regulatory changes.
  - 2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
    - a. Substitution requests offering advantages solely to the Contractor will not be considered.

**1.04 REFERENCE STANDARDS**

- A. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage) Current Edition.
- B. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase) Current Edition.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 GENERAL REQUIREMENTS**

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
  - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
  - 2. Agrees to provide the same warranty for the substitution as for the specified product.
  - 3. Agrees that, should a substitution be accepted and this substitution prove within the Warranty Period, the Contractor's standard one-year warranty or the product's warranty beyond one year whichever is greater, to be defective or otherwise unsatisfactory for service for which it was intended, the Contractor shall replace defective material with material originally specified at no additional cost.
  - 4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
  - 5. Waives claims for additional costs or time extension that may subsequently become apparent.
  - 6. Agrees to reimburse Owner and Engineer for review or redesign services associated with re-approval by authorities.
- B. Complete the Substitution Request Form (Sample Attachment A or B).
  - 1. Forms are available from the Architect. To initiate this process contact the Architect's representative and the form(s) will be sent to entity requesting a substitution. These forms provided are licensed to RVK for use in this project only. Any other use will violate copyright protections.
- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.

- D. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
  - 1. Forms indicated in the Project Manual are adequate for this purpose, and must be used, and include the following:
    - a. Substitution Request Information:
      - 1) Indication of whether the substitution is for cause or convenience.
      - 2) Reference to particular Contract Document(s) specification section number, title, and article/paragraph(s).
      - 3) Description of Substitution.
      - 4) Reason why the specified item cannot be provided.
    - b. Attached Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
      - 1) Physical characteristics.
      - 2) In-service performance.
      - 3) Expected durability.
      - 4) Visual effect.
      - 5) Warranties.
      - 6) Other salient features and requirements.
      - 7) Include, as appropriate or requested, the following types of documentation:
        - (a) Product Data:
        - (b) Certificates, test, reports or similar qualification data.
        - (c) Drawings, when required to show impact on adjacent construction elements.
      - 8) Impact of Substitution:
        - (a) Savings to Owner for accepting substitution.
        - (b) Change to Contract Time due to accepting substitution.
- E. Limit each request to a single proposed substitution item.
  - 1. Submit an electronic document, combining the request form with supporting data into single document.

### **3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT**

- A. Submittal Form (before award of contract):
  - 1. Submit substitution requests by completing CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage). See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable. See sample attached to this section.
- B. Architect will consider requests for substitution only if submitted at least 10 days prior to the date for receipt of bids.

### **3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION**

- A. Submittal Form (after award of contract):
  - 1. Submit substitution requests by completing CSI/CSC Form 13.1A - Substitution Request. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable. See sample attached to this section.
- B. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Engineer, in order to stay on approved project schedule.

- C. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Engineer, in order to stay on approved project schedule.
  - 1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
  - 2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
  - 3. Bear the costs engendered by proposed substitution of:
    - a. Owner's compensation to the Engineer for any required redesign, time spent processing and evaluating the request.
- D. Substitutions will not be considered under one or more of the following circumstances:
  - 1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
  - 2. Without a separate written request.

#### **3.04 RESOLUTION**

- A. Engineer may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Engineer will notify Contractor in writing of decision to accept or reject request.
  - 1. Engineer's decision following review of proposed substitution will be noted on the submitted form.

#### **3.05 ACCEPTANCE**

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

#### **3.06 CLOSEOUT ACTIVITIES**

- A. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

#### **3.07 ATTACHMENTS**

- A. A facsimile of the Substitution Request Forms required to be used on the Project are included after this section.

**END OF SECTION**

# SUBSTITUTION REQUEST

(During the Bidding/Negotiating Stage)

Project: \_\_\_\_\_ Substitution Request Number: \_\_\_\_\_

From: \_\_\_\_\_

To: \_\_\_\_\_ Date: \_\_\_\_\_

A/E Project Number: \_\_\_\_\_

Re: \_\_\_\_\_ Contract For: \_\_\_\_\_

Specification Title: \_\_\_\_\_ Description: \_\_\_\_\_

Section: \_\_\_\_\_ Page: \_\_\_\_\_ Article/Paragraph: \_\_\_\_\_

Proposed Substitution: \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_

Trade Name: \_\_\_\_\_ Model No.: \_\_\_\_\_

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: \_\_\_\_\_

Signed by: \_\_\_\_\_

Firm: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

### A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01 30 00 Administrative Requirements.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01 30 00 Administrative Requirements.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: \_\_\_\_\_

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

Supporting Data Attached:  Drawings  Product Data  Samples  Tests  Reports  \_\_\_\_\_



# SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase)

Project: \_\_\_\_\_ Substitution Request Number: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ From: \_\_\_\_\_  
 To: \_\_\_\_\_ Date: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ A/E Project Number: \_\_\_\_\_  
 Re: \_\_\_\_\_ Contract For: \_\_\_\_\_

Specification Title: \_\_\_\_\_ Description: \_\_\_\_\_  
 Section: \_\_\_\_\_ Page: \_\_\_\_\_ Article/Paragraph: \_\_\_\_\_

Proposed Substitution: \_\_\_\_\_  
 Manufacturer: \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Trade Name: \_\_\_\_\_ Model No.: \_\_\_\_\_  
 Installer: \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_

History:  New product  1-4 years old  5-10 years old  More than 10 years old

Differences between proposed substitution and specified product: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Point-by-point comparative data attached — REQUIRED BY A/E

Reason for not providing specified item: \_\_\_\_\_  
 \_\_\_\_\_

Similar Installation:  
 Project: \_\_\_\_\_ Architect: \_\_\_\_\_  
 Address: \_\_\_\_\_ Owner: \_\_\_\_\_  
 \_\_\_\_\_ Date Installed: \_\_\_\_\_

Proposed substitution affects other parts of Work:  No  Yes; explain \_\_\_\_\_  
 \_\_\_\_\_

Savings to Owner for accepting substitution: \_\_\_\_\_ (\$ \_\_\_\_\_).

Proposed substitution changes Contract Time:  No  Yes [Add] [Deduct] \_\_\_\_\_ days.

Supporting Data Attached:  Drawings  Product Data  Samples  Tests  Reports  \_\_\_\_\_

# SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase — Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: \_\_\_\_\_

Signed by: \_\_\_\_\_

Firm: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Attachments:

## A/E's REVIEW AND RECOMMENDATION

- Approve Substitution - Make submittals in accordance with Specification Section 01 30 00 Administrative Requirements.
- Approve Substitution as noted - Make submittals in accordance with Specification Section 01 30 00 Administrative Requirements.
- Reject Substitution - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: \_\_\_\_\_ Date: \_\_\_\_\_

## OWNER'S REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01 30 00 Administrative Requirements. Prepare Change Order.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01 30 00 Administrative Requirements. Prepare Change Order.
- Substitution rejected - Use specified materials.

Signed by: \_\_\_\_\_ Date: \_\_\_\_\_

Additional Comments:  Contractor  Subcontractor  Supplier  Manufacturer  A/E

**SECTION 01 30 00  
ADMINISTRATIVE REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General administrative requirements.
- B. Electronic document submittal procedures.
- C. Preconstruction meeting.
- D. Site mobilization meeting.
- E. Progress meetings.
- F. Construction progress schedule.
- G. Contractor's daily reports.
- H. Progress photographs.
- I. Requests for Information (RFI) procedures.
- J. Submittal procedures.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 60 00 - Product Requirements: General product requirements.
- B. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.
- C. Section 01 78 00 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

**1.03 GENERAL ADMINISTRATIVE REQUIREMENTS**

- A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to Engineer:
  - 1. Requests for Interpretation (RFI).
  - 2. Requests for substitution.
  - 3. Shop drawings, product data, and samples.
  - 4. Test and inspection reports.
  - 5. Design data.
  - 6. Manufacturer's instructions and field reports.
  - 7. Applications for payment and change order requests.
  - 8. Progress schedules.
  - 9. Coordination drawings.
  - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
  - 11. Closeout submittals.

**1.04 DEFINITIONS**

- A. Shop Drawings: Drawings, diagrams, schedules and other data specifically prepared for the Work by the Contractor or a Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.
- B. Product Data: Illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- C. Samples: Physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

- D. Governmental Review Comments: Written comments and process stamps by authorized governmental representatives on or accompanying returned documents previously submitted for building permits, operating licenses, code or ordinance approvals or variances, or other similar or related governmental reviews or approvals.
- E. "A ACTION": Fabrication, manufacture and/or construction may proceed, providing the Work is in accordance with all requirements of the Contract Documents. The Architect's final acceptance of the Work will be contingent upon such compliance.
- F. "B ACTION": Manufacture and fabrication for construction may proceed. The Architect's final acceptance of the Work will be contingent upon compliance with all notations and all requirements of the Contract Documents.
- G. "C ACTION": No work shall be fabricated, manufactured and/or constructed. The Contractor shall redraw and resubmit the Shop Drawings or other submittals to conform with all requirements of the Contract Documents. Resubmit to the Architect, until resubmission is not required. Submittals marked "C ACTION" are not permitted on the construction site.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION**

### **3.01 ELECTRONIC DOCUMENT SUBMITTAL PROCEDURES**

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF) format and transmitted via email at a minimum. At Contractor's option, an Internet-based submittal service or project management software that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email may be used..
  - 1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
  - 2. It is Contractor's responsibility to submit documents in allowable format.
  - 3. All users need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, [www.adobe.com](http://www.adobe.com), or Bluebeam PDF Revu, [www.bluebeam.com](http://www.bluebeam.com)), unless such software capability is provided by the project management software.
  - 4. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
  - 5. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.

### **3.02 PRECONSTRUCTION MEETING**

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance Required:
  - 1. Owner.
  - 2. Engineer.
  - 3. Contractor.
- C. Agenda:
  - 1. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
  - 2. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  - 3. Scheduling.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

### **3.03 SITE MOBILIZATION MEETING**

- A. Owner will schedule meeting at the Project site prior to Contractor mobilization.
- B. Attendance Required:
  - 1. Contractor.
  - 2. Owner.
  - 3. Engineer.
  - 4. Special consultants.
  - 5. Contractor's superintendent.
  - 6. Major subcontractors.
- C. Agenda:
  - 1. Use of premises by Owner and Contractor.
  - 2. Owner's requirements.
  - 3. Construction facilities and controls.
  - 4. Temporary utilities.
  - 5. Security and housekeeping procedures.
  - 6. Schedules.
  - 7. Application for payment procedures.
  - 8. Procedures for testing.
  - 9. Procedures for maintaining record documents.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

### **3.04 PROGRESS MEETINGS**

- A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required:
  - 1. Contractor.
  - 2. Owner.
  - 3. Engineer.
  - 4. Contractor's superintendent.
  - 5. Major subcontractors.
- D. Recommended Agenda:
  - 1. Review minutes of previous meetings.
  - 2. Review of work progress.
  - 3. Field observations, problems, and decisions.
  - 4. Identification of problems that impede, or will impede, planned progress.
  - 5. Review of submittals schedule and status of submittals.
  - 6. Review of RFIs log and status of responses.
  - 7. Maintenance of progress schedule.
  - 8. Corrective measures to regain projected schedules.
  - 9. Planned progress during succeeding work period.
  - 10. Maintenance of quality and work standards.
  - 11. Effect of proposed changes on progress schedule and coordination.
  - 12. Other business relating to work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

### **3.05 CONSTRUCTION PROGRESS SCHEDULE**

- A. Submit updated schedule with each Application for Payment.

### **3.06 DAILY CONSTRUCTION REPORTS**

- A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.
- B. Prepare a daily construction report recording the following information concerning events at Project site and project progress:
  - 1. Date.
  - 2. High and low temperatures, and general weather conditions.
  - 3. List of subcontractors at Project site.
  - 4. Approximate count of personnel at Project site.
    - a. Include a breakdown for supervisors, laborers, journeymen, equipment operators, and helpers.
  - 5. Major equipment at Project site.
  - 6. Material deliveries.
  - 7. Safety, environmental, or industrial relations incidents.
  - 8. Meetings and significant decisions.
  - 9. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
  - 10. Testing and/or inspections performed.
  - 11. Signature of Contractor's authorized representative.

### **3.07 PROGRESS PHOTOGRAPHS**

- A. Submit new photographs at least once a month, within 3 days after being taken.
- B. Photography Type: Digital; electronic files.
- C. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Engineer.
- D. In addition to periodic, recurring views, take photographs of each of the following events:
  - 1. Completion of site clearing.
  - 2. Excavations in progress.
  - 3. Foundations in progress and upon completion.
  - 4. Structural framing in progress and upon completion.
  - 5. Enclosure of building, upon completion.
  - 6. Final completion, minimum of ten (10) photos.
- E. Views:
  - 1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
  - 2. Consult with Engineer for instructions on views required.
  - 3. Provide factual presentation.
  - 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
- F. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
  - 1. Delivery Medium: Via email.
  - 2. File Naming: Include project identification, date and time of view, and view identification.
  - 3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.

### **3.08 GOVERNMENTAL REVIEW COMMENTS**

- A. Submit within seven (7) days of receipt from governmental agency.

### 3.09 REQUESTS FOR INTERPRETATION (RFI)

- A. Definition: A request seeking one of the following:
  - 1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
  - 2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
  - 1. Prepare a separate RFI for each specific item.
    - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
    - b. Do not forward requests which solely require internal coordination between subcontractors.
  - 2. Prepare in a format and with content acceptable to Owner.
    - a. Use AIA G716 - Request for Information .
  - 3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
  - 1. Unacceptable Uses for RFIs: Do not use RFIs to request the following::
    - a. Approval of submittals (use procedures specified elsewhere in this section).
    - b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
    - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
    - d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
  - 2. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
  - 3. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
- E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
  - 1. Official Project name and number, and any additional required identifiers established in Contract Documents.
  - 2. Owner's, Engineer's, and Contractor's names.
  - 3. Discrete and consecutive RFI number, and descriptive subject/title.
  - 4. Issue date, and requested reply date.
  - 5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
  - 6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
  - 7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.

- F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- G. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
  - 1. Indicate current status of every RFI. Update log promptly and on a regular basis.
  - 2. Note dates of when each request is made, and when a response is received.
  - 3. Highlight items requiring priority or expedited response.
  - 4. Highlight items for which a timely response has not been received to date.
  - 5. Identify and include improper or frivolous RFIs.
- H. Review Time: Engineer will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
  - 1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
- I. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
  - 1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
  - 2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
  - 3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.

### **3.10 SUBMITTAL SCHEDULE**

- A. Submit to Engineer for review a schedule for submittals in tabular format.
  - 1. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
    - a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

### **3.11 PRE-SUBMITTAL COORDINATION**

- A. Conduct pre-submittal conference at Project site to coordinate with appropriate trades that require coordination before proceeding with final submittal preparation and subsequent submission for review and approval.
- B. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations. Advise Architect and/or Engineer of scheduled meeting dates.
- C. Pre-submittal coordination conference will be required for the following:
  - 1. Division 21 - Fire Suppression: Review proposed pipe routing, both exposed and concealed, to ascertain compliance with architect / engineer design intent.
  - 2. Division 23 - HVAC Piping and Air Distribution.
- D. With the exception of structural and building envelope materials, product data submittal review will be waived when named or basis of design product is used as certified by the contractor; but will not be waived for unnamed products of named manufacturers.
- E. DO NOT SUBMIT MATERIAL SAFETY DATA SHEETS, unless specifically requested. Inclusion of material safety data (MSDS or SDS) in submittal may result in rejection of submittal.



### 3.12 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
  - 1. Retained samples will not be returned to Contractor unless specifically so stated.

### 3.13 SUBMITTAL PROCEDURES

- A. General Requirements:
  - 1. Use a separate transmittal for each item.
  - 2. Transmit using approved form.
    - a. Use Contractor's form, subject to prior approval by Engineer.
  - 3. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
  - 4. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
  - 5. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
    - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
  - 6. Schedule submittals to expedite the Project, and coordinate submission of related items.
    - a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
    - b. For sequential reviews involving Engineer's consultants, Owner, or another affected party, allow an additional 7 days.
  - 7. Identify variations from Contract Documents by clouding around or highlighting the variation and product or system limitations that may be detrimental to successful performance of the completed work.
  - 8. Provide space for Contractor and Engineer review stamps.
  - 9. When revised for resubmission, identify all changes made since previous submission.
  - 10. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
  - 11. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
- B. Product Data Procedures:
  - 1. Submit only information required by individual specification sections.
  - 2. Collect required information into a single submittal.
  - 3. Do not submit (Material) Safety Data Sheets for materials or products.
- C. Shop Drawing Procedures:
  - 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
  - 2. Do not reproduce Contract Documents to create shop drawings.
  - 3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- D. Samples Procedures:
  - 1. Transmit related items together as single package.
  - 2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.

### **3.14 SUBMITTAL REVIEW**

- A. Submittals for Review: Engineer will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Engineer will acknowledge receipt and review. See below for actions to be taken.
- C. Engineer's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
- D. Engineer's and consultants' actions on items submitted for review:
  - 1. Authorizing purchasing, fabrication, delivery, and installation:
    - a. "A Action (Approved)", or language with same legal meaning.
    - b. "B Action (Approved as Noted)", or language with same legal meaning.
      - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
    - c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.
      - 1) Resubmit corrected item, with review notations acknowledged and incorporated. Resubmit separately, or as part of project record documents.
  - 2. Not Authorizing fabrication, delivery, and installation:
    - a. "C Action (Revise and Resubmit)".
      - 1) Resubmit revised item, with review notations acknowledged and incorporated.

**END OF SECTION**



**AIA**<sup>®</sup>

# Document G716<sup>TM</sup> – 2004

## Request for Information (RFI)

TO:

FROM:

PROJECT:

ISSUE DATE:

RFI No.:

REQUESTED REPLY DATE:

PROJECT NUMBERS:

COPIES TO:

RFI DESCRIPTION: *(Fully describe the question or type of information requested.)*

REFERENCES/ATTACHMENTS: *(List specific documents researched when seeking the information requested.)*

SPECIFICATIONS

DRAWINGS

OTHER

SENDER'S RECOMMENDATION: *(If RFI concerns a site or construction condition, the sender may provide a recommended solution, including cost and/or schedule considerations.)*

RECEIVER'S REPLY: *(Provide answer to RFI, including cost and/or schedule considerations.)*

By: \_\_\_\_\_ Date: \_\_\_\_\_ Copies to: \_\_\_\_\_

**NOTE:** This reply is not an authorization to proceed with work involving additional cost, time or both. If any reply requires a change to the Contract Documents, a Change Order, Construction Change Directive or a Minor Change in the work must be executed in accordance with the Contract Documents.

**SECTION 01 40 00  
QUALITY REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Submittals.
- B. Quality assurance.
- C. References and standards.
- D. Testing and inspection agencies and services.
- E. Contractor's construction-related professional design services.
- F. Contractor's design-related professional design services.
- G. Control of installation.
- H. Manufacturers' field services.
- I. Defect Assessment.

**1.02 RELATED REQUIREMENTS**

- A. Document 00 31 00 - Available Project Information: Soil investigation data.
- B. Section 01 30 00 - Administrative Requirements: Submittal procedures.
- C. Section 01 45 33 - Code-Required Special Inspections and Procedures: Inspection reports.

**1.03 DEFINITIONS**

- A. Contractor's Professional Design Services: Design of some aspect or portion of the project by party other than the design professional of record. Provide these services as part of the Contract for Construction.
  - 1. Design Services Types Required:
    - a. Construction-Related: Services Contractor needs to provide in order to carry out the Contractor's sole responsibilities for construction means, methods, techniques, sequences, and procedures.
    - b. Design-Related: Design services explicitly required to be performed by another design professional due to highly-technical and/or specialized nature of a portion of the project. Services primarily involve engineering analysis, calculations, and design, and are not intended to alter the aesthetic aspects of the design.
  - B. Design Data: Design-related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

**1.04 CONTRACTOR'S CONSTRUCTION-RELATED PROFESSIONAL DESIGN SERVICES**

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
- B. Provide such engineering design services as may be necessary to plan and safely conduct certain construction operations, pertaining to, but not limited to the following:
  - 1. Temporary sheeting, shoring, or supports.
  - 2. Temporary scaffolding.
  - 3. Temporary bracing.
  - 4. Temporary stairs or steps required for construction access only.
  - 5. Temporary hoist(s) and rigging.

### **1.05 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES**

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
- B. Base design on performance and/or design criteria indicated in individual specification sections.
- C. Scope of Contractor's Professional Design Services: Provide for the following items of work:
  - 1. Sprinkler Layout: Coordinate with ceiling installation, detailed pipe layout, and hydraulic calculations as described in Section 21 13 00 - Fire-Suppression Sprinkler Systems.

### **1.06 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Designer's Qualification Statement: Submit for Engineer's knowledge as contract administrator, or for Owner's information.
  - 1. Include information for each individual professional responsible for producing, or supervising production of, design-related professional services provided by Contractor.
    - a. Full name.
    - b. Professional licensure information.
    - c. Statement addressing extent and depth of experience specifically relevant to design of items assigned to Contractor.
- C. Design Data: Submit for Engineer's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
- D. Test Reports: After each test/inspection, promptly submit two copies of report to Engineer and to Contractor.
  - 1. Include:
    - a. Date issued.
    - b. Project title and number.
    - c. Name of inspector.
    - d. Date and time of sampling or inspection.
    - e. Identification of product and specifications section.
    - f. Location in the Project.
    - g. Type of test/inspection.
    - h. Date of test/inspection.
    - i. Results of test/inspection.
    - j. Compliance with Contract Documents.
    - k. When requested by Engineer, provide interpretation of results.
  - 2. Test report submittals are for Engineer's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
- E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Engineer, in quantities specified for Product Data.
  - 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- F. Manufacturer's Field Reports: Submit reports for Engineer's benefit as contract administrator or for Owner.
  - 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
- G. Erection Drawings: Submit drawings for Engineer's benefit as contract administrator or for Owner.
  - 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
  - 2. Data indicating inappropriate or unacceptable Work may be subject to action by Engineer or Owner.

### **1.07 QUALITY ASSURANCE**

- A. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

### **1.08 REFERENCES AND STANDARDS**

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Engineer shall be altered from Contract Documents by mention or inference otherwise in any reference document.

### **1.09 TESTING AND INSPECTION AGENCIES AND SERVICES**

- A. Owner will employ and pay for services of an independent testing agency to perform other specified testing.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION**

### **3.01 CONTROL OF INSTALLATION**

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

### **3.02 TESTING AND INSPECTION**

- A. Testing Agency Duties:
  - 1. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
  - 2. Perform specified sampling and testing of products in accordance with specified standards.
  - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  - 4. Promptly notify Engineer and Contractor of observed irregularities or non-compliance of Work or products.

5. Perform additional tests and inspections required by Engineer.
  6. Submit reports of all tests/inspections specified.
- B. Limits on Testing/Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
  2. Agency may not approve or accept any portion of the Work.
  3. Agency may not assume any duties of Contractor.
  4. Agency has no authority to stop the Work.
- C. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
  2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
  3. Provide incidental labor and facilities:
    - a. To provide access to Work to be tested/inspected.
    - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
    - c. To facilitate tests/inspections.
    - d. To provide storage and curing of test samples.
  4. Notify Engineer and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
  5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
  6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- D. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Engineer.
- E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

### **3.03 MANUFACTURERS' FIELD SERVICES**

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

### **3.04 DEFECT ASSESSMENT**

- A. Replace Work or portions of the Work not complying with specified requirements.

**END OF SECTION**

**SECTION 01 50 00  
TEMPORARY FACILITIES AND CONTROLS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Temporary telecommunications services.
- B. Temporary sanitary facilities.
- C. Waste removal facilities and services.

**1.02 TEMPORARY UTILITIES**

- A. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.

**1.03 TELECOMMUNICATIONS SERVICES**

- A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
- B. Telecommunications services shall include:
  - 1. Internet Connections: Minimum of one; Cable modem or faster.

**1.04 TEMPORARY SANITARY FACILITIES**

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.
- C. Provide protection for plants designated to remain. Refer to Section 01 56 39 - Landscape Protection for detailed requirements.
- D. Construction: Commercial grade chain link fence.
- E. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

**1.05 VEHICULAR ACCESS AND PARKING**

- A. Coordinate access and haul routes with governing authorities and Owner.
- B. Provide and maintain access to fire hydrants, free of obstructions.
- C. Provide means of removing mud from vehicle wheels before entering streets.
- D. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

**1.06 WASTE REMOVAL**

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site periodically.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

**1.07 FIELD OFFICES**

- A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate 16 persons.
- C. Locate offices a minimum distance of 30 feet from existing and new structures.



**1.08 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS**

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 57 23**  
**TEMPORARY STORM WATER POLLUTION CONTROL**

**PART 1 - GENERAL**

**1.1 DEFINITIONS**

- A. A/E, Architect, Engineer of Record – The licensed design professional applying stamp and signature to the drawings regardless of their contractual relationship to the Owner.
- B. BMP – Best Management Practices
- C. Contractor – Firm responsible for providing prime construction services for the project under contract with the Owner. Refers to the General Contractor, Prime Contractor, Construction Manager at Risk or Design Build firm under various contract types.
- D. CSN –Construction Site Notice
- E. NOI &NOT – Notice of Intent and Notice of Termination for TPDES permits.
- F. SWPPP – Storm Water Pollution Prevention Plan
- G. TCEQ – Texas Commission on Environmental Quality
- H. TPDES – Texas Pollutant Discharge Elimination System
- I. Large Construction Activities – Construction activities including clearing, grading and excavating that result in land disturbance of equal to or greater than five (5) acres
- J. Small Construction Activities - Construction activities including clearing, grading and excavating that result in land disturbance of equal to or greater than one (1) acre and less than five (5) acres of land.

**1.2 RELATED DOCUMENTS AND APPLICABLE WORK**

- A. The TCEQ TPDES General Permit No. TXR150000, March 5, 2018 and the project SWPPP. This specification requires compliance with all provisions of the TCEQ with regards to the TPDES permit. The TCEQ requirements currently pertain to large construction activities of five (5) acres or more and small construction activities which disturb one (1) to less than five (5) acres
- B. Information to Respondents, Agreement, Uniform General Conditions, Supplementary General Conditions and Special Conditions shall be carefully read for provisions pertaining to this work. In the event of conflict, the better quality or greater quantity shall prevail.
- C. The work described in this section is applicable to any and all sections of the Contract Documents. Any and all work that would disturb the existing site conditions or present the potential for site run-off shall adhere fully to this specification section.
- D. Unless specifically notified to the contrary by the Owner, in writing, all aspects of this specification shall apply to this project.

**1.3 CONTRACTOR RESPONSIBILITIES**

- A. This project requires implementation of storm water “Best Management Practices” (BMP) for control devices and monitoring by the Contractor to comply with all provisions of the Storm Water Pollution Prevention Plan (SWPPP) developed for the project by the licensed civil engineer. The

Contractor must fulfill all Texas Pollutant Discharge Elimination System (TPDES) regulatory requirements, including the filing of a NOI and NOT or signing and posting of the Construction Site Notice (CSN).

- B. The Contractor shall provide signatures of a corporate Officer for the NOI, CSN and NOT and any other forms or applications as required by the TPDES General Permit TXR150000. The Contractor shall also provide delegated authorization to sign reports per 30 TAC 305.128. Individuals conducting site inspections shall be qualified to the satisfaction of the Owner. Documented qualifications shall be included in the SWPPP booklet.
- C. When the Contractor receives the approved SWPPP from the Owner, the Contractor signs the NOI or CSN (see Sample form in Part 4 of this section) and forwards it to the Owner. A \$100 application fee must accompany the NOI. The Owner signs his NOI and sends both NOI's and application fees to TCEQ. The Contractor shall insert a copy of the signed NOI or CSN into the SWPPP booklet to be kept at the jobsite.
- D. The SWPPP booklet kept at the jobsite shall also contain the following:
  - 1. A letter delegating signature authority to the field personnel for both the Contractor and the Owner.
  - 2. A copy of TPDES permit when received.
  - 3. Posting Notice for large construction activities
- E. The Contractor shall review SWPPP and verify existing conditions at the site before determining scope of implementation of site controls. Site survey and site plan drawings shall be used for additional reference. The Contractor shall notify the Owner, in advance, of this site review to allow for Owner participation.
- F. The Contractor shall construct a Project SWPPP sign and place it at the main entrance to the project site. This sign shall include the NOI and TPDES permit; or the Construction Site Notice for small construction projects. The sign shall be constructed as detailed in the sample SWPPP sign drawing included in Part 4 of this Section.
- G. Contractor shall contact Owners Representative for review of initial site controls in place prior to commencing site-disturbing activities, to ensure that any unusual circumstances or unforeseen site conditions with regard to erosion and sedimentation have been addressed.
- H. The Contractor shall provide all material, labor, equipment and services required to implement, maintain and monitor all erosion and sedimentation controls in compliance with the Storm Water Pollution Prevention Plan (SWPPP). All controls implemented by the Contractor shall comply with the Texas Pollutant Discharge Elimination System (TPDES) regulations as issued by the Texas Commission on Environmental Quality (TCEQ) on February 19, 2013. These controls shall remain in operation until project completion and reestablishment of the site or longer as directed by the Owners Representative. The work shall include, but not be limited to the following:

- I. All earthwork as required to implement swales, dikes, basins and other excavations for temporary routing of utilities, to protect against erosion or sediment-laden (“polluted”) storm water runoff.
- J. All structural controls as shown or specified, including silt fences, sediment traps, stabilized construction entrance, subsurface drains, pipe slope drains, inlet/outlet protection, reinforced soil retention, gabions, rock berms, etc.
- K. All non-structural controls as shown or specified, including temporary or permanent vegetation, mulching, geotextiles, sod stabilization, preservation of vegetative buffer strips, preservation/protection of existing trees and other mature vegetation.
- L. All modifications and revisions to SWPPP necessary to meet changing site conditions, and to address new sources of storm water discharges, as the work progresses.
- M. All maintenance and repair of structural and non-structural controls in place shall continue until final stabilization is achieved or as directed by the Owners Representative
- N. Weekly site inspections, as required by the SWPPP, of pollutant sources, including hazardous sources, structural and non-structural controls, and all monitoring of SWPPP revisions and maintenance of inspection records.
- O. Removal of all structural and non-structural controls as necessary upon completion, and only after final stabilization is achieved.
- P. Filing of Notice of Termination (NOT) with the Owners Representative within 30 days of final stabilization being achieved, or of another Operator assuming control of the unstabilized portions of the site.
- Q. Refer to the SWPPP for additional requirements to ensure compliance with TPDES regulations.

#### 1.4 QUALITY ASSURANCE

- A. In order to minimize the discharge of pollutants to storm water, the Contractor shall implement all permanent and temporary site controls according to Texas Pollutant Discharge Elimination System (TPDES) Guidelines, as set forth by the Texas Commission on Environmental Quality.
- B. Implementation of site controls shall be performed by a qualified contractor experienced in the proper installation of such devices in accordance with manufacturers’ specifications, and in keeping with recognized Best Management Practices (BMP’s), and in keeping with TPDES regulations. Qualification of installing Contractor shall be reviewed with the Owner prior to entering into a contract with them for services.
- C. The Contractor shall inspect all BMP’s at regular intervals as specified in the Storm Water Pollution Prevention Plan for this project. Record all deficiencies of site controls, and take immediate action to correct any deficiencies recorded. Keep records of inspections current and on file, available for review by EPA, TCEQ, MS4 operator and Owner.

#### 1.5 SUBMITTALS

- A. Submittals of products used in structural and non-structural controls shall be made through established procedures for review and approved by the Engineer of Record prior to installation on the site. The Contractor shall make available physical samples and product literature on any material used in structural or non-structural controls during the course of the project prior to its implementation in the field.

## **PART 2 - PRODUCTS**

### **2.1 TEMPORARY EROSION CONTROL**

- A. In all cases, the development of plans and specifications will give first consideration to erosion controls, as it is much easier to maintain soil cover than to trap sediment. The goal of the planned erosion control will be to divert runoff away from unstable areas or to provide a stable surface that will resist the effects of rain and runoff. All projects should utilize one or more of the following practices unless engineer ascertains that there is no chance of runoff entering the project from areas adjoining the site. The preferred erosion controls to be used on the project include:
  - 1. Interceptor swale - use as perimeter control, less than 5 acres only.
  - 2. Diversion dike – use to route runoff away from project site, less than 10 acres only.
  - 3. Pipe slope drain – transport runoff down steep, erodible slopes, less than 5 acres only.
  - 4. Outlet stabilization – prevent erosion at outlet of channel or conduit.
  - 5. Level spreader – outlet device for dikes and diversions.
  - 6. Subsurface drain – use to prevent soils from becoming saturated and prevent seeps.
  - 7. Tree protection – for erosion control and aesthetics.
  - 8. Temporary vegetation – RECOMMENDED - use for temporary stabilization of disturbed areas; for slopes steeper than 3:1 use in conjunction with matting.
  - 9. Blankets/matting – use in channels and on steep slopes.
  - 10. Mulch – use to stabilize newly seeded areas.
  - 11. Sod – use for immediate stabilization of channels, around inlets.
  - 12. Dust Control – use in areas subject to air movement of dust.

### **2.2 TEMPORARY SEDIMENT CONTROL**

- A. Activities at most sites will result in soil disturbance. Erosion will occur in the disturbed areas and best management practices must be planned to contain and sediment transported by runoff. The preferred erosion controls to be used on the project include:
  - 1. Construction exit – use at all designated access points
  - 2. Silt fence (interior) – useful in areas of minor sheet flow, use 100 ft. or more of fence for each ¼ acre
  - 3. Silt fence (exterior) – use along down slope borders of site, use 100 ft. or more of fence for each ¼ acre
  - 4. Triangular filter dikes – use for areas within site requiring frequent access (movable)

5. Hay bale dike – use in areas of minor sheet flow, use 100 ft. or more for each ¼ acre – Note: replace every 3 months
6. Rock berm – use for drainage swales and ditches within and below site, less than 5 acres
7. High service rock berm – use around sensitive features and in high flow areas within and below site, less than 5 acres
8. Brush berm – use in small areas of sheet flow, less than 2 acres
9. Sand bag berm – use for construction in streambeds, contributing drainage area 5 – 10 acres
10. Buffer (vegetative) strips – use on floodplains, next to wetlands, along stream banks, and on steep slopes
11. Inlet protection – prevent sediment from entering storm inlet, less than 1 acre
12. Sediment trap – use where flows are concentrated in a swale of channel, 1 - 5 acres
13. Sediment basin – use for larger disturbed areas, 5 – 100 acres

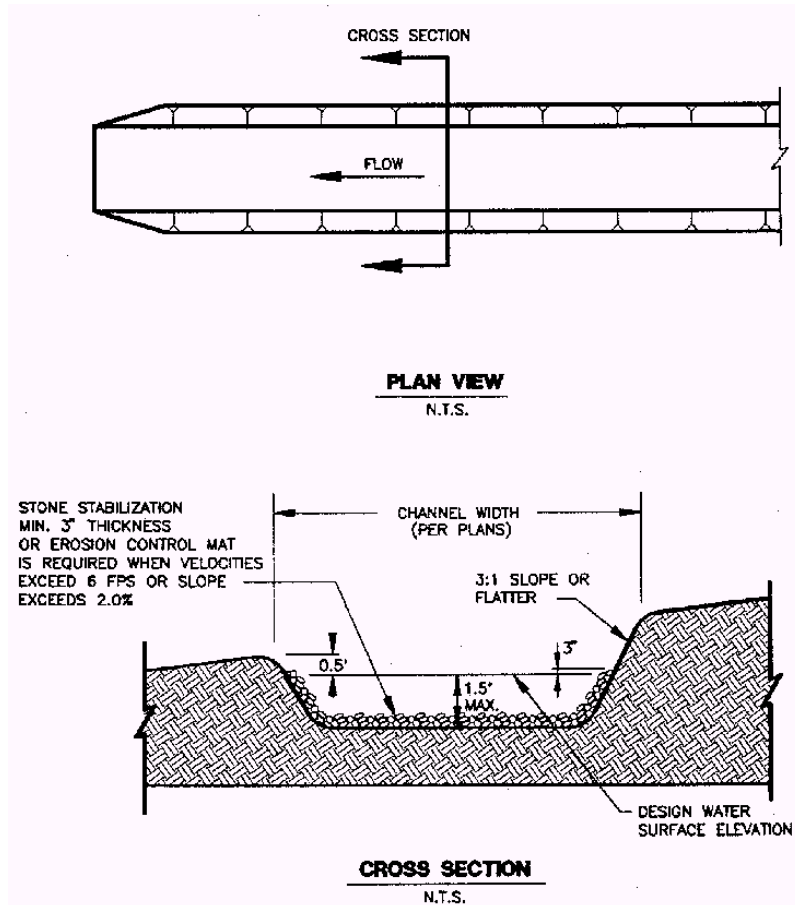
### **PART 3 - EXECUTION**

#### **3.1 EROSION CONTROLS**

##### **A. INTERCEPTOR SWALE**

1. Interceptor swales are used to shorten the length of exposed slope by intercepting runoff and can also serve as perimeter swales preventing off-site runoff from entering the disturbed area or prevent sediment-laden runoff from leaving the construction site or disturbed area. They may have a V-shape or be trapezoidal with a flat bottom and side slopes of 3:1 or flatter. The outflow from a swale should be directed to a stabilized outlet or sediment-trapping device. The swales should remain in place until the disturbed area is permanently stabilized. A schematic of an interceptor swale is shown below.
2. Materials
  - a. Stone stabilization should be used when grades exceed 2% or velocities exceed 6 feet per second and should consist of a layer of crushed stone three inches thick, riprap or high velocity erosion control mats.
  - b. Stabilization should extend across the bottom of the swale and up both sides of the channel to minimum height of three inches above the design water surface elevation based on a 2-year, 24-hour storm.
3. Installation
  - a. An interceptor swale should be installed across exposed slopes during construction and should intercept no more than 5 acres of runoff.
  - b. All earth removed and not needed in construction should be disposed of in an approved spoils site so that it will not interfere with the functioning of the swale or contribute to siltation in other areas of the site.

- c. Trees, brush, stumps, obstructions and other material should be removed and disposed of to avoid interference with proper functioning of the swale.
  - d. Should have a maximum depth of 1.5 feet with side slopes of 3:1 or flatter. Swale should have positive drainage for its entire length to an outlet.
  - e. When the slope exceeds 2 percent, or velocities exceed 6 feet per second (regardless of slope), stabilization is required. Stabilization should be crushed stone placed in a layer of at least 3 inches thick or may be high velocity erosion control matting. Check dams are also recommended to reduce velocities in the swales possibly reducing the amount of stabilization necessary.
  - f. Minimum compaction for the swale should be 90% standard proctor density.
4. Inspection and Maintenance Guidelines
- a. Swales should be inspected weekly and after each rain event to locate and repair any damage to the channel or clear debris or other obstructions so as not to diminish flow capacity.
  - b. Damage from storms or normal construction activities such as tire ruts or disturbance of swale stabilization should be repaired as soon as practical.



Schematic Diagram of an Interceptor Swale

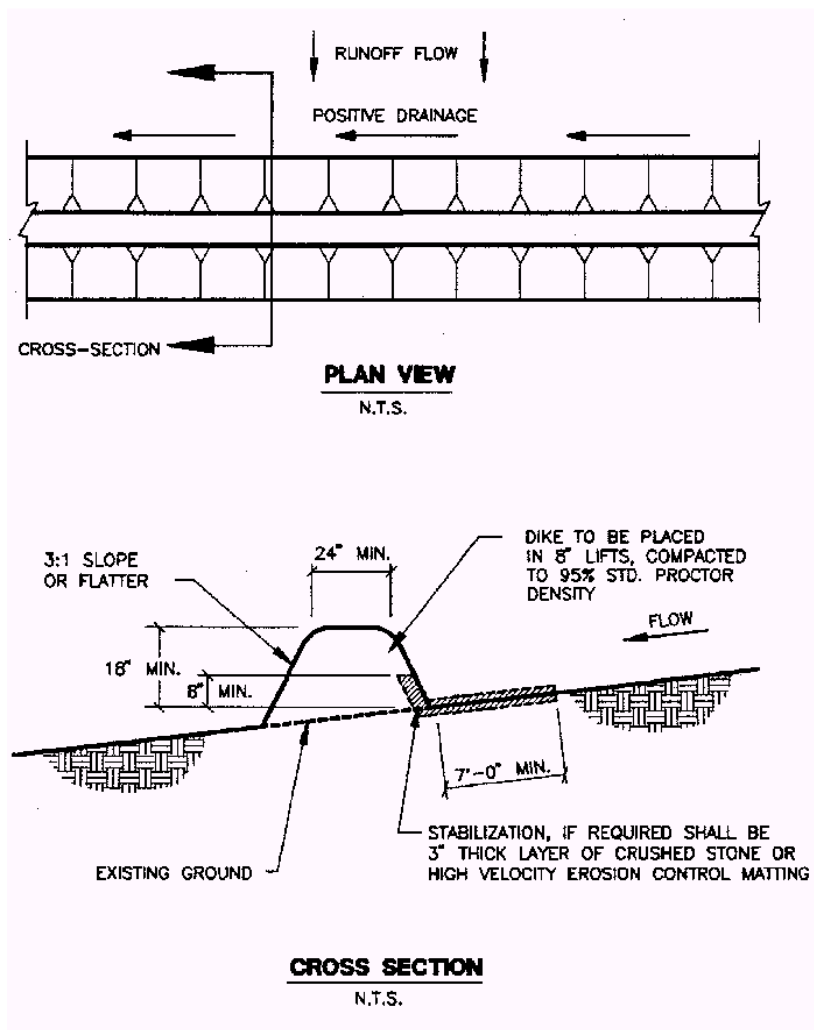
## B. DIVERSION DIKES

1. A temporary diversion dike is a barrier created by the placement of an earthen embankment to reroute the flow of runoff to an erosion control device or away from an open, easily erodible area. A diversion dike intercepts runoff from small upland areas and diverts it away from exposed slopes to a stabilized outlet, such as a rock berm, sandbag berm, or stone outlet structure. These controls can be used on the perimeter of the site to prevent runoff from entering the construction area. Dikes are generally used for the duration of construction to intercept and reroute runoff from disturbed areas to prevent excessive erosion until permanent drainage features are installed and/or slopes are stabilized. A schematic of a diversion dike is shown below.
2. Materials:
  - a. Stone stabilization (required for velocities in excess of 6 fps) should consist of riprap placed in a layer at least 3 inches thick and should extend a minimum height of 3 inches above the design water surface up the existing slope and the upstream face of the dike.



- b. Geotextile fabric should be a non-woven polypropylene fabric designed specifically for use as a soil filtration media with an approximate weight of 6 oz./yd<sup>2</sup>, a Mullen burst rating of 140 psi, and having an equivalent opening size (EOS) greater than a #50 sieve.
3. Installation
- a. Diversion dikes should be installed prior to and maintained for the duration of construction and should intercept no more than 10 acres of runoff.
  - b. Dikes should have a minimum top width of 2 feet and a minimum height of compacted fill of 18 inches measured from the top of the existing ground at the upslope toe to top of the dike and having side slopes of 3:1 or flatter.
  - c. The soil for the dike should be placed in lifts of 8 inches or less and be compacted to 95 % standard proctor density.
  - d. The channel, which is formed by the dike, must have positive drainage for its entire length to an outlet.
  - e. When the slope exceeds 2 percent, or velocities exceed 6 feet per second (regardless of slope), stabilization is required. Situations in which velocities do not exceed 6 feet per second, vegetation may be used to control erosion.
4. Inspection and Maintenance Guidelines
- a. Swales should be inspected weekly and after each rain event to determine if silt is building up behind the dike or if erosion is occurring on the face of the dike. Locate and repair any damage to the channel or clear debris or other obstructions so as not to diminish flow capacity.
  - b. Silt should be removed in a timely manner.
  - c. If erosion is occurring on the face of the dike, the slopes of the face should either be stabilized through mulch or seeding or the slopes of the face should be reduced.
  - d. Damage from storms or normal construction activities such as tire ruts or disturbance of swale stabilization should be repaired as soon as practical.

Schematic of a Diversion Dike (NCTCOG, 1993b)



### 3.2 SEDEMENTATION CONTROLS

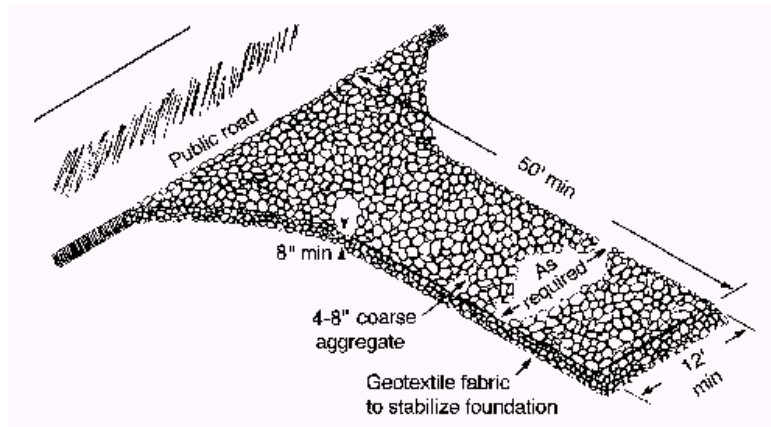
#### A. Temporary Construction Entrance/Exit

1. The purpose of a temporary construction entrance is to provide a stable entrance/exit condition from the construction site and keep mud and sediment off public roads. A stabilized construction entrance is a stabilized pad of crushed stone located at any point traffic will be entering or leaving the construction site from a public right-of-way, street, alley, sidewalk or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking or flowing of sediment onto public rights-of-way. This practice should be used at all points of construction ingress and egress. Excessive amounts of mud can also present a safety hazard to roadway users. To minimize the amount of sediment loss to nearby roads, access to the construction site should be limited to as few points as possible and

vegetation around the perimeter should be protected were access is not necessary. A rock stabilized construction entrance should be used at all designated access points.

2. Materials:
  - a. The aggregate should consist of 4 to 8 inch washed stone over a stable foundation as specified in the plan.
  - b. The aggregate should be placed with a minimum thickness of 8 inches.
  - c. The geotextile fabric should be designed specifically for use as a soil filtration media with an approximate weight of 6 oz/yd<sup>2</sup>, a mullen burst rating of 140 lb/in<sup>2</sup>, and an equivalent opening size greater than a number 50 sieve.
  - d. If a washing facility is required, a level area with a minimum of 4 inch washed stone or commercial rack should be included in the plans. Divert wastewater to a sediment trap or basin.
3. Installation
  - a. Avoid curves on public roads and steep slopes. Remove vegetation and other objectionable material from the foundation area. Grade crown foundation for positive drainage.
  - b. The minimum width of the entrance/exit should be 12 feet or the full width of exit roadway, whichever is greater.
  - c. The construction entrance should be at least 50 feet long.
  - d. If the slope toward the road exceeds 2%, construct a ridge, 6 to 8 inches high with 3:1 (H:V) side slopes, across the foundation approximately 15 feet from the entrance to divert runoff away from the public road.
  - e. Place geotextile fabric and grade foundation to improve stability, especially where wet conditions are anticipated.
  - f. Place stone to dimensions and grade shown on plans. Leave surface smooth and slope for drainage.
  - g. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin.
  - h. Install pipe under pad as needed to maintain proper public road drainage.
4. Common Trouble Points
  - a. Inadequate runoff control – sediment washes onto public road.
  - b. Stone too small or geotextile fabric absent, results in muddy condition as stone is pressed into soil.
  - c. Pad too short for heavy construction traffic – extend pad beyond the minimum 50-foot length as necessary.
  - d. Pad not flared sufficiently at road surface, results in mud being tracked on to road and possible damage to road edge.
  - e. Unstable foundation – use geotextile fabric under pad and/or improve foundation drainage.
5. Inspection and Maintenance Guidelines

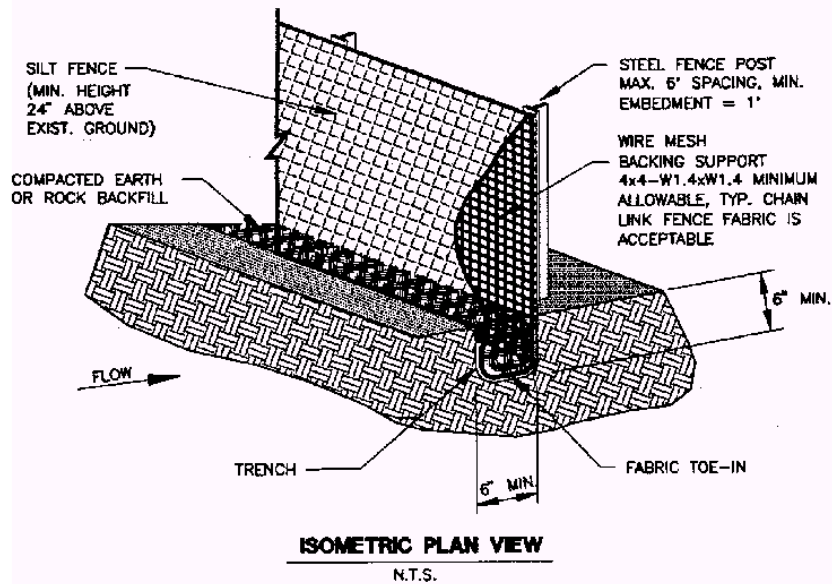
- a. The entrance should be maintained in a condition, which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment.
- b. All sediment spilled, dropped, washed or tracked on to public rights-of-way should be removed immediately by contractor.
- c. When necessary, wheels should be cleaned to remove sediment prior to entrance onto public right-of-way.
- d. When washing is required, it should be done on an area stabilized with crushed stone that drains into an approved sediment trap or sediment basin.
- e. All sediment should be prevented from entering any storm drain, ditch or water course by using approved methods.



Schematic of Temporary Construction Entrance (after NC, 1993)

## B. SILT FENCE

1. A silt fence is a barrier consisting of geotextile fabric supported by metal posts to prevent soil and sediment loss from a site. When properly used, silt fences can be highly effective at controlling sediment from disturbed areas. They cause runoff to pond, allowing heavier solids to settle out. If not properly installed, silt fences are not likely to be effective. A schematic illustration of a silt fence is shown below.



2. The purpose of a silt fence is to intercept and detain water-borne sediment from unprotected areas of a limited extent. Silt fence is used during the period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence should remain in place until the disturbed area is permanently stabilized. Silt fence should not be used where there is a concentration of water in a channel or drainage way. If concentrated flow occurs after installation, corrective action must be taken such as placing a rock berm in the areas of concentrated flow. Silt fencing within the site may be temporarily moved during the day to allow construction activity provided it is replaced and properly anchored to the ground at the end of the day. Silt fences on the perimeter of the site or around drainage ways should not be moved at any time.
3. Materials
  - a. Filter Fabric
    - 1) General: The filter fabric shall be of non-woven polypropylene, polyethylene or polyamide thermoplastic fibers with non-raveling edges. The fabric shall be non-biodegradable, inert to most soil chemicals, ultraviolet resistant, unaffected by moisture or other weather conditions, and permeable to water while retaining sediment. The filter fabric shall be supplied in rolls a minimum of 36 inches wide.

- 2) Physical Requirements: The fabric shall meet the following requirements when sampled and tested in accordance with the methods indicated:

Physical Properties	Method	Requirements
Fabric Weight (oz/sy)	ASTM D-3776	4.5 minimum
Water Flow Rate (gal/sq ft/min)	ASTM D-4491	40 maximum
Equivalent Opening Size	ASTM D4751	20 - 100
Grab Tensile (lbs)	ASTM D4632	100 minimum
Millen Burst Strength (psi)	ASTM D3786	300 minimum
Ultraviolet Resistance	ASTM D1682	70 minimum
Trapezoid Tear (lbs)	ASTM D4533	55 minimum
Elongation (%)	ASTM D4632	30 maximum

- b. Fence Posts
    - 1) Posts shall be painted or galvanized steel Tee or Y Posts with anchor plates, not less than 5 feet in length with a minimum weight of 1.3 pounds per foot with a minimum Brinell Hardness of 143. Hangers shall be adequate to secure fence and fabric to posts. Posts and anchor plates shall conform to ASTM A702.
  - c. Woven Wire shall be welded wire fabric 2x4-W1.0 x W 1.0.
4. Installation
- a. Steel posts, which support the silt fence, should be installed on a slight angle toward the anticipated runoff source. Post must be embedded a minimum of 1 foot deep and spaced not more than 8 feet on center. Where water concentrates, the maximum spacing should be 6 feet.
  - b. Lay out fencing down-slope of disturbed area, following the contour as closely as possible. The fence should be sited so that the maximum drainage area is ¼ acre/100 feet of fence.
  - c. The toe of the silt fence should be trenched in with a spade or mechanical trencher, so that the down-slope face of the trench is flat and perpendicular to the line of flow. Where fence cannot be trenched in (e.g., pavement or rock outcrop), weight fabric flap with 3 inches of pea gravel on uphill side to prevent flow from seeping under fence.
  - d. The trench must be a minimum of 6 inches deep and 6 inches wide to allow for the silt fence fabric to be laid in the ground and backfilled with compacted material.
  - e. Silt fence should be securely fastened to each steel support post or to woven wire, which is in turn attached to the steel fence post. There should be a 3-foot overlap, securely fastened where ends of fabric meet.
  - f. Silt fence should be removed when the site is completely stabilized so as not to block or impede storm flow or drainage.

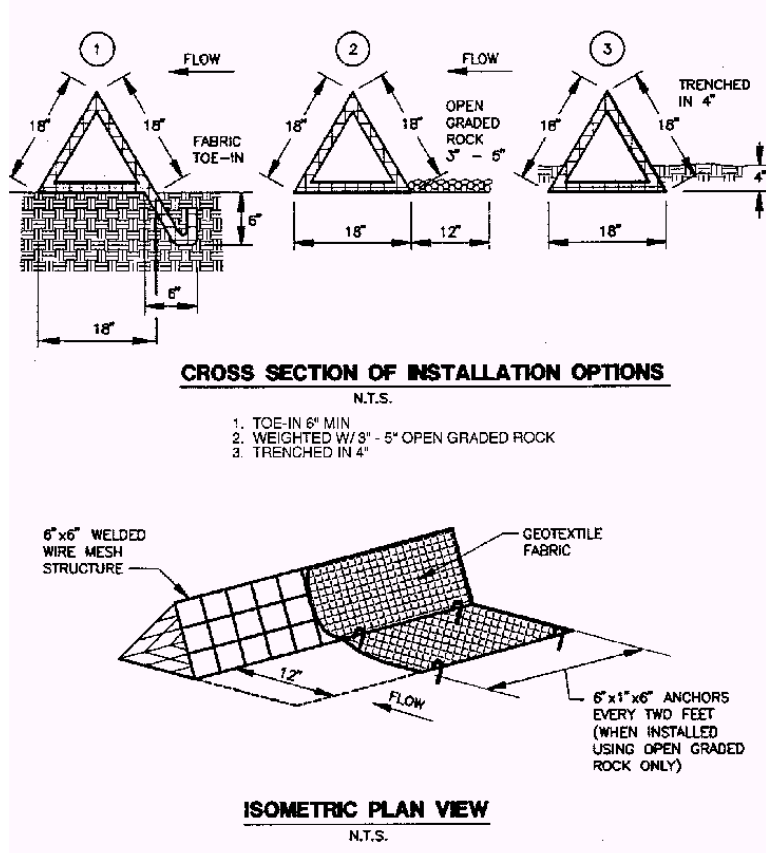
5. Common Trouble Points
    - a. Fence not installed along the contour causing water to concentrate and flow over the fence.
    - b. Fabric not seated securely to ground (runoff passing under fence)
    - c. Fence not installed perpendicular to flow line (runoff escaping around sides)
    - d. Fence treating too large an area, or excessive channel flow (runoff overtops or collapses fence)
  6. Inspection and Maintenance Guidelines
    - a. Inspect all fencing weekly, and after any rainfall.
    - b. Remove sediment when buildup reaches 6 inches, or install a second line of fencing parallel to the old fence.
    - c. Replace any torn fabric or install a second line of fencing parallel to the torn section.
    - d. Replace or repair any sections crushed or collapsed in the course of construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot where it will provide equal protection, but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicle access points
- C. TRIANGULAR SEDIMENT FILTER DIKES
1. The purpose of a triangular sediment filter dike is to intercept and detain water-borne sediment from unprotected areas of limited extent. The triangular sediment filter dike is used where there is no concentration of water in a channel or other drainage way above the barrier and the contributing drainage area is less than one acre. If the uphill slope above the dike exceeds 10%, the length of the slope above the dike should be less than 50 feet. If concentrated flow occurs after installation, corrective action should be taken such as placing rock berm in the areas of concentrated flow. This measure is effective on paved areas where installation of silt fence is not possible or where vehicle access must be maintained. The advantage of these controls is the ease with which they can be moved to allow vehicle traffic, then reinstalled to maintain sediment control.
  2. Materials
    - a. Silt fence material should be polypropylene, polyethylene or polyamide woven or non-woven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd, mullen burst strength exceeding 190 lb/in<sup>2</sup>, ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.
    - b. The dike structure should be 6-gauge 6" x 6" wire mesh folded into triangular form being eighteen (18) inches on each side.
  3. Installation
    - a. As shown in the schematic below, the frame should be constructed of 6" x 6", 6-gauge welded wire mesh, 18 inches per

side, and wrapped with geotextile fabric the same composition as that used for silt fences.

- b. Filter material should lap over ends six (6) inches to cover dike to dike junction; each junction should be secured by shoat rings.
- c. Position dike parallel to the contours, with the end of each section closely abutting the adjacent sections.
- d. There are several options for fastening the filter dike to the ground as shown in schematic below. The fabric skirt may be toed-in with 6 inches of compacted material, or 12 inches of the fabric skirt should extend uphill and be secured with a minimum of 3 inches of open graded rock, or with staples or nails. If these two options are not feasible the dike structure may be trenched in 4 inches.
- e. Triangular sediment filter dikes should be installed across exposed slopes during construction with ends of the dike tied into existing grades to prevent failure and should intercept no more than one acre of runoff.
- f. When moved to allow vehicular access, the dikes should be reinstalled as soon as possible, but always at the end of the workday.

Schematic of Triangular Sediment Filter Dike



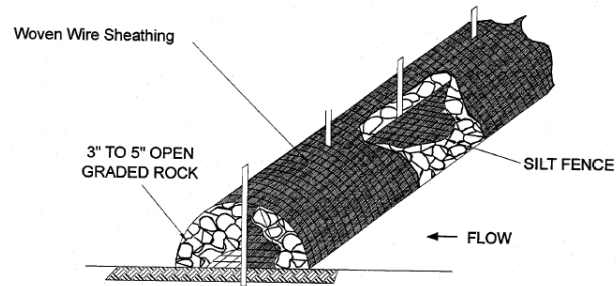
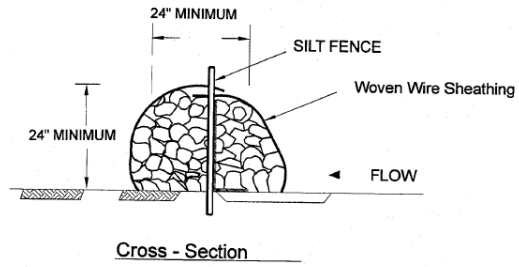


#### D. HIGH SERVICE BERM

##### 1. Materials

- Silt fence material should be polypropylene, polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd<sup>2</sup>, mullen burst strength exceeding 190 lb/in<sup>2</sup>, ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.
- Fence posts should be made of hot rolled steel, at least 4 feet long with Tee or Y-bar cross section, surface painted or galvanized, minimum nominal weight 1.25 lb/ft<sup>2</sup>, and Brindell hardness exceeding 140. Rebar (either #5 or #6) may also be used to anchor the berm.
- Woven wire backing to support the fabric should be galvanized 2" x 4" welded wire, 12-gauge minimum.
- The berm structure should be secured with a woven wire sheathing having maximum opening of 1 inch and a minimum wire diameter of 20 gauge galvanized and should be secured with shoat rings.
- Clean, open graded 3-to 5-inch diameter rock should be used, except in areas where high velocities or large volumes of flow are expected, where 5-to 8-inch diameter rocks may be used.

2. Installation
  - a. Lay out the woven wire sheathing perpendicular to the flow line. The sheathing should be 20-gauge woven wire mesh with 1-inch openings.
  - b. Install the silt fence along the center of the proposed berm placement, as with a normal silt fence described in Section 2.4.3.
  - c. Place the rock along the sheathing on both sides of the silt fence as shown in the diagram (Figure 1.30), to a height not less than 24 inches. Clean, open graded 3-5" diameter rock should be used, except in areas where high velocities or large volumes of flow are expected, where 5-to 8-inch diameter rock may be used.
  - d. Wrap the wire sheathing around the rock and secure the tie wire so that the ends of the sheathing overlap at least 2 inches, and the berm retains its shape when walked upon.
  - e. The high service rock berm should be removed when the site is revegetated or otherwise stabilized or it may remain in place as a permanent BMP if drainage is adequate.
3. Common Trouble Points
  - a. Insufficient berm height or length (runoff quickly escapes over top or around sides of berm).
  - b. Berm not installed perpendicular to flow line (runoff escaping around one side).
  - c. Internal silt fence not anchored securely to ground (high flows displacing berm).
  - d. When installed in streambeds, they often result in diversion scour, so their use in this setting is not recommended.
4. Inspection and Maintenance Guidelines
  - a. Inspection should be made weekly and after each rainfall by the responsible party. For installations in streambeds, additional daily inspections should be made on rock berm.
  - b. Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt of in an approved manner.
  - c. Repair any loose wire sheathing.
  - d. The berm should be reshaped as needed during inspection.
  - e. The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
  - f. The rock berm should be left in place until all upstream areas are stabilized and accumulated silt removed.



Schematic of High Service Rock Berm (LCRS, 1998)

END OF SECTION

**SECTION 01 60 00  
PRODUCT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General product requirements.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 25 00 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
- B. Section 01 40 00 - Quality Requirements: Product quality monitoring.

**1.03 SUBMITTALS**

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
  - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

**PART 2 PRODUCTS**

**2.01 NEW PRODUCTS**

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. Use of products having any of the following characteristics is not permitted:
  - 1. Made using or containing CFC's or HCFC's.
  - 2. Made of wood from newly cut old growth timber.
- C. Where other criteria are met, Contractor shall give preference to products that:
  - 1. If used on interior, have lower emissions, as defined in Section 01 61 16.
  - 2. If wet-applied, have lower VOC content, as defined in Section 01 61 16.
  - 3. Are extracted, harvested, and/or manufactured closer to the location of the project.
  - 4. Result in less construction waste. See Section 01 74 19

**2.02 PRODUCT OPTIONS**

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
- C. Products specified by brand name establish the level of quality desired but are in no way intended to limit competition unless substitutions is specifically excluded with a statement similar to "NO SUBSTITUTIONS ALLOWED."

## **2.03 HAZARDOUS MATERIALS**

- A. PCB or items containing PCB shall not be used or incorporated into the Work.
- B. Asbestos containing materials shall not be incorporated into the Work. Asbestos containing materials shall be defined as materials containing asbestos fibers in an amount greater than 1%, as defined by the asbestos National Emission Standards for Hazardous Air Pollutants (asbestos NESHAP), 40 Code of Federal Regulations (CFR) pt. 61, subp. M, which has been incorporated into Minnesota Rule 7011.9920.
- C. Urea formaldehyde or materials containing urea formaldehyde shall not be incorporated into the Work, except that plywood and particleboard materials containing urea formaldehyde may be used, providing said materials do not give gaseous emissions in excess of the following levels, as defined by the United States Department of Housing and Urban Development standards for testing these products under controlled air chamber conditions and HUD-specified pressures.
  - 1. Plywood - 0.2 ppm
  - 2. Particleboard - 0.3 ppm
- D. Dispose of excess or unused hazardous materials and waste products resulting from work of Subcontract in compliance with governmental regulations. Hazardous materials may not be placed in Contractor's trash facilities.

## **PART 3 EXECUTION**

### **3.01 SUBSTITUTION LIMITATIONS**

- A. See Section 01 25 00 - Substitution Procedures.

### **3.02 TRANSPORTATION AND HANDLING**

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

### **3.03 STORAGE AND PROTECTION**

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 74 19.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturer's warranty conditions, if any.

- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.
- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

**END OF SECTION**

**SECTION 01 70 00  
EXECUTION AND CLOSEOUT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Examination, preparation, and general installation procedures.
- B. Pre-installation meetings.
- C. Cutting and patching.
- D. Surveying for laying out the work.
- E. Cleaning and protection.
- F. Starting of systems and equipment.
- G. Demonstration and instruction of Owner personnel.
- H. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- I. General requirements for maintenance service.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.

**1.03 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
  - 1. On request, submit documentation verifying accuracy of survey work.
  - 2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
  - 3. Submit surveys and survey logs for the project record.
- C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
  - 1. Structural integrity of any element of Project.
  - 2. Integrity of weather exposed or moisture resistant element.
  - 3. Efficiency, maintenance, or safety of any operational element.
  - 4. Visual qualities of sight exposed elements.
  - 5. Work of Owner or separate Contractor.

**1.04 QUALIFICATIONS**

- A. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Engineer. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- C. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- D. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

## **1.05 COORDINATION**

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. 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.

## **PART 2 PRODUCTS**

### **2.01 PATCHING MATERIALS**

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

### **3.02 PREPARATION**

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.



### **3.03 PREINSTALLATION MEETINGS**

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Engineer four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
  - 1. Review conditions of examination, preparation and installation procedures.
  - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

### **3.04 LAYING OUT THE WORK**

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Engineer of any discrepancies discovered.
- C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- D. Promptly report to Engineer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.
- F. Utilize recognized engineering survey practices.
- G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
  - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
  - 2. Grid or axis for structures.
  - 3. Building foundation, column locations, ground floor elevations.
- H. Periodically verify layouts by same means.
- I. Maintain a complete and accurate log of control and survey work as it progresses.

### **3.05 GENERAL INSTALLATION REQUIREMENTS**

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

### **3.06 CUTTING AND PATCHING**

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. Perform whatever cutting and patching is necessary to:
  - 1. Complete the work.
  - 2. Fit products together to integrate with other work.
  - 3. Provide openings for penetration of mechanical, electrical, and other services.
  - 4. Match work that has been cut to adjacent work.
  - 5. Repair areas adjacent to cuts to required condition.
  - 6. Repair new work damaged by subsequent work.
  - 7. Remove samples of installed work for testing when requested.
  - 8. Remove and replace defective and non-complying work.

- C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- F. Restore work with new products in accordance with requirements of Contract Documents.
- G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.
- I. Patching:
  - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
  - 2. Match color, texture, and appearance.
  - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

### **3.07 PROGRESS CLEANING**

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

### **3.08 PROTECTION OF INSTALLED WORK**

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

### **3.09 SYSTEM STARTUP**

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify that wiring and support components for equipment are complete and tested.

- E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- F. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

### **3.10 DEMONSTRATION AND INSTRUCTION**

- A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.
- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

### **3.11 ADJUSTING**

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

### **3.12 FINAL CLEANING**

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.
- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

### **3.13 CLOSEOUT PROCEDURES**

- A. Make submittals that are required by governing or other authorities.
  - 1. Provide copies to Engineer and Owner.
- B. Accompany Owner's representative on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Engineer when work is considered ready for Engineer's Substantial Completion inspection.
- D. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Engineer's Substantial Completion review.
  - 1. Submit Contractor's Substantial Completion inspection punch list listing all items to be repaired or completed after Substantial Completion. Organize list by room, in walking order, to allow for ease of verification.

2. After Substantials Completion inspection by the Architect and Owner, add any additional item to the Contractor's punch list. Add additional items under the appropriate room for ease of verification. Architect will provide his punch list, including consultants under his purview, by electronic means for Contractor's convenience in combining said list into one document.
- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Engineer's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Engineer.
- F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- G. Notify Engineer when work is considered finally complete and ready for Engineer's Substantial Completion final inspection.
- H. Complete items of work determined by Engineer listed in executed Certificate of Substantial Completion.
- I. Schedule follow-up meeting to conduct a one-year warranty punch list no later than eleven (11) months from date of Substantial Completion.

### **3.14 MAINTENANCE**

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

**END OF SECTION**

**SECTION 01 78 00  
CLOSEOUT SUBMITTALS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

**1.03 SUBMITTALS**

- A. Project Record Documents: Submit documents to Engineer with claim for final Application for Payment.
- B. Operation and Maintenance Data:
  - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Engineer will review draft and return one copy with comments.
  - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents (hard copy) within ten days after acceptance.
  - 3. Submit one digital copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.
  - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
  - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
  - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 PROJECT RECORD DOCUMENTS**

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings: Maintain on site a current Revit (BIM) model or AutoCad files (depending on discipline) and a hard copy version.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.
  - 5. Reviewed shop drawings, product data, and samples.
  - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.

- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
  1. Manufacturer's name and product model and number.
  2. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Record actual construction including:
  1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  3. Field changes of dimension and detail.
  4. Details not on original Contract drawings.
- G. Compile all final Revit model files (or AutoCad files, whichever applies) of each discipline and store on CD-ROM(s).
- H. All project record documents shall be saved as electronic Adobe Acrobat .pdf format with text recognition and the following criteria:
  1. Separate files segregated by discipline.
  2. Individual sheet bookmarked within each file.
  3. Capable of printing a single page or multiple pages within a file.

### **3.02 OPERATION AND MAINTENANCE DATA**

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

### **3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES**

- A. For Each Product, Applied Material, and Finish:
  1. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Additional information as specified in individual product specification sections.
- D. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

### **3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS**

- A. For Each Item of Equipment and Each System:
  1. Description of unit or system, and component parts.
  2. Identify function, normal operating characteristics, and limiting conditions.
  3. Include performance curves, with engineering data and tests.
  4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

- D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Provide servicing and lubrication schedule, and list of lubricants required.
- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide control diagrams by controls manufacturer as installed.
- K. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- L. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- M. Include test and balancing reports.
- N. Additional Requirements: As specified in individual product specification sections.

### **3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS**

- A. Assemble operation and maintenance data into durable manuals (**one set only**) for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Engineer, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

- J. Arrangement of Contents: Organize each volume in parts as follows:
  - 1. Project Directory.
  - 2. Table of Contents, of all volumes, and of this volume.
  - 3. Operation and Maintenance Data: Arranged by system, then by product category.
    - a. Source data.
    - b. Product data, shop drawings, and other submittals.
    - c. Operation and maintenance data.
    - d. Field quality control data.
    - e. Photocopies of warranties and bonds.
- K. Arrange content by systems under section numbers, including subdivisions within each section, and sequence of Table of Contents of this Project Manual.
- L. Prepare all of the Record Documents data, as described in previous paragraphs, in Adobe Acrobat or Bluebeam .pdf format cataloged and stored on CD-ROM disks with appropriate labels.

### **3.06 WARRANTIES AND BONDS**

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- I. Prepare copies of the warranties and bonds, in addition to the originals, in Adobe Acrobat .pdf format on CD-ROM disk placed in the appropriate binder.

**END OF SECTION**



**SECTION 02 41 00  
SITE DEMOLITION**

**PART 1 - GENERAL**

- 1.1 *GENERAL DOCUMENTS*
  - A. *The Terms and Conditions of the Contract, including Supplementary and Special Conditions of the Contract, and the Drawings apply to this Section.*
- 1.2 *SUMMARY*
  - A. *Furnish all material, equipment and labor necessary to demolish and remove from the site those items noted on the drawings.*
- 1.3 *RELATED SECTIONS:*
  - A. *Section 31 00 00 – Site Earthwork*
  - B. *Section 31 11 00 – Clearing and Grubbing*
- 1.4 *REFERENCES:*
  - A. *OSHA Regulations.*
  - B. *American National Standards Institute (ANSI)*
    - 1. *ANSI A10.6-2006 – Safety and Health Program Requirements for Demolition Operations.*
  - C. *City of Waco Standards and Specifications*
- 1.5 *GENERAL REQUIREMENTS:*
  - A. *Remove rubbish and debris from the site on a daily basis unless otherwise directed.*
  - B. *In the interest of occupational safety and health, perform work in accordance with OSHA and ANSI requirements.*
- 1.6 *REGULATORY AND SAFETY REQUIREMENTS*
  - A. *Comply with federal, state and local regulations regarding demolition activities, hauling and disposal of materials.*
- 1.7 *DUST AND DEBRIS CONTROL*
  - A. *Prevent the spread of dust and debris and avoid creation of a nuisance in the surrounding area.*
  - B. *Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.*
  - C. *Sweep pavements as often as necessary to control the spread of debris.*
- 1.8 *PROTECTION*
  - A. *Traffic Control Signs*
    - 1. *Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights.*
  - B. *Existing Work*
    - 1. *Before beginning any demolition work, survey the site and examine the drawings and specifications to determine the extent of the work.*
  - C. *Items to Remain in Place*
    - 1. *Take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Owner. Repair or replace damaged items as approved by the Owners Representative. Coordinate the work of this section with all other work indicated. Construct and maintain shoring, bracing, and supports as required. Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload pavements to remain. Provide new supports and reinforcement for existing construction weakened by demolition or removal work.*

- D. *Existing Construction*
  - 1. *Do not disturb existing construction, vegetation or natural features beyond the extent indicated or necessary for installation of new construction.*
- E. *Trees*
  - 1. *Protect trees within the project site which might be damaged during demolition, and which are indicated to be left in place. Reference Landscape Plans and Specifications for tree protection and removal.*
- F. *Utility Service*
  - 1. *Maintain existing utilities indicated to stay in service and protect against damage during demolition operations. Prior to start of work, the Contractor will contact owners of utility lines to be disconnected, and coordinate sealing of utilities serving each area of alteration or removal.*
- G. *Facilities*
  - 1. *Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities.*

#### 1.9 SPECIAL REQUIREMENTS

- A. *Existing utilities are to remain in place and operational until all utility relocations as shown on the plans have been constructed, inspected and approved by the Owners Representative.*

#### 1.10 BURNING

- A. *The use of burning at the site for the disposal of materials, or as a method of demolition, will not be permitted.*
- B. *The accumulation of combustible debris in large quantities in one location will not be permitted. Remove combustible material from the site on a daily basis.*
- C. *Do not allow combustible materials to accumulate which could result in an accidental fire.*

#### 1.11 EXPLOSIVES

- A. *The use of explosives in any form for any purpose on this site is prohibited.*

#### 1.12 HAZARDOUS CONDITIONS

- A. *Exercise care to avoid leaving hazardous conditions on the site at the end of a work day. If unavoidable, erect appropriate barricades, signs and take other necessary precautions to protect the public and passersby from these hazardous areas.*
- B. *Large accumulations of rubble which may shift shall be avoided.*

### **PART 2 - PRODUCTS**

#### 2.1 FILL MATERIAL

- A. *Backfill material for depressions or excavations resulting from demolition operations shall meet the requirements of Section 31 00 00.*

### **PART 3 - EXECUTION**

#### 3.1 SURFACE FEATURES

- A. *The Contractor is to install all erosion and sedimentation control features including tree protection per the plans prior to any demolition activities.*
- B. *All existing surface features shown or not shown on the plans that exist and are in conflict with proposed new improvements shall be demolished prior to any other demolition activities. Demolition shall be coordinated with the Owner's Designated Representative.*
- C. *Existing trees*
  - 1. *Reference Landscape plans and specifications.*

#### 3.2 UTILITIES AND RELATED EQUIPMENT

- A. *General Requirements*
    - 1. *Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by the Owner's Designated Representative. Do not interrupt existing utilities except when approved in writing and then only after temporary utility services have been approved and provided. Do not begin demolition or deconstruction work until all utility disconnections have been made. Shut off and cap utilities for future use, as indicated.*
    - 2. *Refer to Section 31 11 00 – Clearing and Grubbing for coordination and protection requirements of existing utilities that are to remain active during construction.*
    - 3. *Notify Utility Owners' Representative to turn off affected utility services that are to be abandoned no less than 48 hours prior to starting demolition.*
  - B. *Disconnecting Existing Utilities*
    - 1. *Remove existing utilities as indicated and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the Owner's Designated Representative. When utility lines are encountered that are not indicated on the drawings, the Owner's Designated Representative shall be notified prior to further work in that area. Remove meters and related equipment and deliver to a location [on the station] in accordance with instructions of the Owner.*
- 3.3 *PAVING AND SLABS*
- A. *Remove concrete and asphaltic concrete paving and slabs, including aggregate base. Provide neat sawcuts at limits of pavement removal as indicated. Pavement and slabs designated to be recycled and utilized in this project shall be moved, ground and stored as directed by the Owner's Designated Representative. Pavement and slabs not to be used in this project shall be removed from the Owner's property at Contractor's expense.*
- 3.4 *CONCURRENT EARTH-MOVING OPERATIONS*
- A. *Do not begin excavation, filling, and other earth-moving operations that are sequential to demolition or deconstruction work in areas occupied by structures to be demolished or deconstructed until all demolition and deconstruction in the area has been completed and debris removed. Fill holes, open basements and other hazardous openings.*
- 3.5 *DUST CONTROL*
- A. *Sprinkle debris, and use temporary enclosures as necessary to limit dust to the lowest practicable level.*
  - B. *Do not use water to an extent that may cause flooding, contaminated runoff, or icing.*
- 3.6 *DISPOSAL*
- A. *All materials noted to be removed and disposed of become the property of the Contractor. All material shall be disposed of off-site in a legal manner. The Contractor shall include in his work the careful transporting of debris so that no mud, dirt, gravel, lumber, nails, concrete or any other material is allowed to fall on public property or any other property other than the destination to which the removed materials are legally being transported. In the event some materials fall on public property or other property the Contractor shall be responsible for damage caused and clean-up costs.*
- 3.7 *BACKFILLING*
- A. *Backfill to existing ground level, foundation level of new construction, finish grades as shown on the drawings of subgrade elevation of new improvements.*
  - B. *Backfill material and compaction shall conform to Sections 31 00 00.*
  - C. *Demolition debris shall not be used as backfill material.*
- 3.8 *SALVAGE*

- A. *Equipment and materials, including piping within the limits of demolition, unless otherwise specified, will become the property of the Contractor.*

**END OF SECTION**

## **SECTION 31 00 00 SITE EARTHWORK**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Furnish all labor, materials, equipment and incidentals as shown, specified and necessary to complete the work of site preparation, erosion control, surface drainage, ground water control, construction of compacted fills, excavations, trenching, installation and removal of sheeting and bracing, backfilling and final site grading.
- B. This Section includes providing backfill materials for all trenches including select backfill, backfill, fill, granular embedment, and the satisfactory disposal of surplus and unacceptable materials.
- C. No classification of excavated materials will be made. Excavation includes all materials regardless of type, character, composition, moisture, or condition thereof.
- D. The Contractor shall perform all earthwork as specified in this Section. All trenching shall conform to the requirements of Section 31 50 00 – Excavation Support and Protection.

#### **1.2 RELATED SECTIONS**

- A. Section 31 23 13 – Subgrade Preparation
- B. Section 31 50 00 – Excavation Support and Protection

#### **1.3 REFERENCE STANDARDS**

- A. The contractor shall comply with applicable provisions and recommendations of the following:
  - 1. ASTM: American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103, U.S.A. All references are to current active standard.
    - a. ASTM A36 – Standard Specification for Carbon Structural Steel.
    - b. ASTM A328 – Standard Specification for Steel Sheet Piling.
    - c. ASTM C33 – Standard Specification for Concrete Aggregates.
    - d. ASTM D421 – Standard Practice for Dry Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants.
    - e. ASTM D422 – Standard Test Method for Particle-Size Analysis of Soils.
    - f. ASTM D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
    - g. ASTM D1140 – Standard Test Methods for Amount of Material in Soils Finer than No. 200 (75- $\mu$ m) Sieve.
    - h. ASTM D1556 – Standard Test Method for Density and Unit Weight of Soil In-Place by the Sand-Cone Method.
    - i. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).

- j. ASTM D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
- k. ASTM D4318 – Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- l. ASTM D4943 – Standard Test Method for Shrinkage Factors of Soils by the Wax Method.
- m. ASTM D6938 – Standard Test Method for In Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (Shallow Depth).
- 2. OSHA: Occupational Safety & Health Administration, 200 Constitution Ave., NW, Washington DC 20210
  - a. 29 CFR Part 1926 – Safety and Health Regulations for Construction.
- 3. TxDOT: Texas Department of Transportation, 125 E 11<sup>th</sup> St, Austin, Texas 78701
  - a. Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, adopted by TxDOT June 1, 2004.
    - 1) Item 160 – Topsoil.
    - 2) Item 164 – Seeding for Erosion Control
  - b. Tex-104-E – Determining Liquid Limits of Soils
  - c. Tex-106-E – Calculating the Plasticity Index of Soils
  - d. Tex-110-E – Particle Size Analysis of Soils.
  - e. Tex-116-E – Ball Mill Method for Determining Disintegration of Flexible Base Material.
  - f. Tex-117-E – Triaxial Compression for Disturbed Soils and Base Materials.
- 4. Geotechnical Report.

#### 1.4 SUBMITTALS

##### A. Test Reports

- 1. The testing laboratory shall submit copies of the following reports directly to the Engineer, with copy to the Contractor:
  - a. Field Density Tests
  - b. Optimum Moisture – maximum density curve for each soil used as backfill.

- B. Samples of all select backfill, backfill, fill, granular embedment, pit run sand, and drain gravel, shall be submitted by the Contractor to the Testing Laboratory. Samples of the proposed material shall be submitted to least fourteen (14) days in advance of its anticipated use. Each material sample shall be submitted to the Testing Laboratory in three (3) five-gallon containers.

#### 1.5 QUALITY ASSURANCE

##### A. Testing Services

- 1. General:
  - a. Testing of materials, testing of moisture content during placement and compaction of fill materials, and of compaction requirements for compliance with technical requirements of the Specifications shall be performed by a testing laboratory. See Division 1 of Specifications.
- 2. Testing Services Include:

- a. Test the Contractor's proposed materials in the laboratory and/or field for compliance the Specifications.
  - b. Perform field moisture content and density tests to assure that the specified compaction of backfill material has been obtained.
  - c. Report all test results to the Engineer and the Contractor.
- B. Earthwork – perform sampling and testing as specified in this Section and Section 01 45 00 – Quality Control.
- 1. Perform one moisture-density (Proctor) test per soil type subgrade, backfill, fill and base materials.
  - 2. Perform one Atterberg limits test per soil type subgrade, backfill, fill and base materials.
  - 3. Perform one percent finer than #200 sieve test per soil type subgrade, backfill, fill and base materials.
  - 4. In building areas refer to structural plans, notes, and specifications for requirements.
  - 5. In pavement areas provide:
    - a. One moisture-density test per 5,000 square feet of surface area on the subgrade soil.
    - b. One moisture-density test per 5,000 square feet of surface area for each compacted six inch (6") thickness of fill.
  - 6. Failures in tested areas shall be re-tested until passed at the expense of the Contractor.
- C. Trench Backfill: Establish level of compaction effort by frequent testing of initial lifts. Provide not less than one (1) test per lift per 500 linear feet of trench.
- 1. Make random tests of subsequent lifts of backfill. Frequency of tests shall be adequate to guarantee proper compaction. In no case shall there be less than one (1) test per lift per 500 linear feet of trench.
  - 2. Failures in tested areas shall be re-tested until passed at the expense of the Contractor.

#### 1.6 SITE CONDITIONS

- A. Refer to Division 1 Specifications for information pertaining to availability of subsurface investigations.
- B. Contractor is referred to the Special Conditions and to other applicable sections of these Specifications in regard to protection of existing improvements and property shown to remain, as well as the proper barricading of all work areas.
- C. Erosion Protection: Provide erosion control as shown on the plans and maintain for the duration of the project. Provide routine maintenance as required to maintain integrity of erosion and sedimentation protection measures and remove any accumulations of mud or debris which would jeopardize the integrity of control measures. Refer to plans for details.
- D. Dust Control: The Contractor shall exercise care during site clearing operations to confine dust to the immediate work area and shall employ dust control measures to the satisfaction of the Owner to ensure adequate dust control throughout site clearing operations.
- E. Street Conditions:

1. The Contractor shall be required to remove mud or debris from existing adjacent streets scheduled to remain in service throughout his contract period.
  2. The Contractor shall be responsible and protect the Owner from damage during haul operations. Any damage shall be repaired at the Contractor's expense.
- F. The use of explosives will not be permitted.
- G. Burning is prohibited.
- H. All traffic during construction shall confine their limits to an established "traffic route" submitted by the Contractor and reviewed by the Engineer.
- 1.7 COORDINATION
- A. The Contractor shall expedite placement of compacted fill and embankments at the earliest practical time.
- 1.8 LEGALLY PERMITTED LANDFILL CERTIFICATION
- A. The Contractor shall dispose of all materials in a legally permitted landfill, permitted to accept construction waste, as determined by the Texas Department of Health, Municipal Solid Waste Management Regulation.
- B. The Contractor shall be required to provide written evidence of the permitted landfill prior to commencement of site clearing operations.

## **PART 2 - PRODUCTS**

### 2.1 MATERIALS

- A. Backfill Materials
1. Materials for use as backfill shall be acceptable materials obtained from excavations on site; if material is obtained from off-site sources, their gradation shall not be more than 15% passing the No. 200 standard sieve as measured by ASTM D1140, and whose Plasticity Index (PI) is not in excess of 20 percent (20%) as determined by ASTM D4318. The material shall contain no vegetative matter.
  2. All material to be used as backfill shall be tested and verified by the Testing Laboratory.
- B. Fill Material
1. Materials for use as fill shall be acceptable materials obtained from excavations on site; if material is obtained from off-site sources, their gradation shall not be more than 35% passing the No. 200 standard sieve as measured by ASTM D1140, and whose Plasticity Index (PI) is not in excess of 20 percent (20%) as determined by ASTM D4318. The material shall contain no vegetative matter.
  2. All material to be used as backfill shall be tested and verified by the Testing Laboratory.
- C. Select Backfill
1. Obtain select fill from a source that meets the requirements of the Geotechnical Report. In general, select fill shall consist of non-expansive (inert) soils such as a low plasticity clayey soil, clayey gravel, crushed base material or caliche. Caliche used as select fill shall have a Plasticity Index (PI) between seven percent (7%) and twelve percent (12%).



2. Select fill for building areas shall meet the requirements of the Structural drawings and Section 03 30 00.
3. The select fill materials shall be free of organic debris and shall not contain stones larger than three (3) inches in maximum dimension.
4. Select fill shall be defined as Grade 1, Grade 2, or Grade 3, adhering to the following physical requirements:
  - a. Clayey gravel materials shall be classified as crushed or uncrushed gravel.
  - b. Crushed base materials shall be produced from oversized quarried aggregate, sized by crushing and produced from a naturally occurring single source. Crushed gravel or uncrushed gravel shall not be submitted as crushed base material. No blending of sources and/or additive materials will be allowed.
  - c. Select fill shall meet the following physical requirements:

Property	Test	Grade 1	Grade 2	Grade 3
Master Gradation Sieve Size (% retained)				
2-1/2 in.	Tex-110-E	-	0	0
1-3/4 in.	Tex-110-E	0	0-10	0-10
7/8 in.	Tex-110-E	10-35	-	-
3/8 in.	Tex-110-E	30-50	-	-
No. 4	Tex-110-E	45-65	45-75	45-75
No. 40	Tex-110-E	70-85	60-85	50-85
Liquid Limit, % max.	Tex 104-E	35	40	40
Plasticity Index, max.	Tex-106-E	10	12	12
Wet Ball Mill, % max.	Tex-116-E	40	45	-
Wet Ball Mill, % max. increase passing the No. 40 sieve	Tex-116-E	20	20	-
Classification	Tex-117-E	1.0	1.1-2.3	-
Min. Compressive Strength, psi				
Lateral Pressure 0 psi	Tex-117-E	45	35	-
Lateral Pressure 15 psi	Tex-117-E	175	175	-

5. All material for select backfill must be tested and accepted by the Testing Laboratory.
  6. No select backfill shall be placed without authorization.
- D. Granular Embedment Material:
1. Granular embedment shall be as shown on the plans.
- E. Trench Plugs:
1. Clay meeting the requirements of ASTM D2487 Classification of CL or CH and with at least 60 percent fines (passing No. 200 sieve) and a Plasticity Index of 15 or greater.
  2. Flowable Fill
  3. On-site silty sand soils processed with 20 pounds of bentonite clay per cubic yard.
- F. Herbicide

1. Comply with Federal Insecticide, Fungicide, and Rodenticide Act (Title 7, U.S.C. Section 136) for requirements on Contractor's licensing, certification and record keeping.
- G. Topsoil
  1. Topsoil shall meet the requirements of TxDOT Item 160.
- H. Tree Wound Paint
  1. Bituminous based paint of standard manufacture specially formulated for tree wounds.
- I. Tracer Wire for Nonmetallic Piping
  1. Tracer wire shall be minimum 12 gauge (AWG) single strand, insulated copper wire with high molecular weight polyethylene (HMWPE) insulation, specifically manufactured for direct burial applications.
  2. Provide tracer wire in sufficient length to be continuous over each separate run of non-metallic pipe.
  3. All spliced or repaired wire connections in the tracer wire system shall be made using approved connectors.
- J. Warning Tape
  1. Detectable underground aluminum warning tape shall be minimum 3 inches wide, minimum 5 mils thick. Tape to be color coded according to American Public Works Association (APWA) Uniform Color Codes.

### **PART 3 - EXECUTION**

#### **3.1 PROTECTION**

- A. Roads and Walks
  1. Keep roads and walks free of dirt and debris at all times.
- B. Trees, Shrubs
  1. Protection shall be in accordance with project plans.
- C. Utility Lines
  1. All existing utility locations shown on plans are approximate, based on information provided by utility service providers and field surveys. Utilities were not uncovered to determine precise locations, except as noted on the plans. The contractor shall verify the location of underground utilities and drainage structures at least forty-eight (48) hours prior to construction, whether shown on the plans or not, and shall protect same during construction.
  2. Protect existing utility lines that are not identified to be removed. Notify the ODR immediately of damage to or an encounter with an unknown existing utility line. The Contractor shall be responsible for the repairs of damage to existing utility lines that are indicated or made known to the Contractor prior to start of clearing and grubbing operations. When utility lines which are to be removed are encountered within the area of operations, the Contractor shall notify the ODR in ample time to minimize interruption of the service.

#### **3.2 SITE PREPARATION**

- A. Do not begin operations until limits of clearing and grubbing have been identified and staked out by the Contractor and approved by the Owner's Designated Representative.

- B. All areas of proposed construction shall be stripped of existing vegetation, concrete, asphalt and base, and six inches (6") of topsoil. Except as noted on the plans. Topsoil is to be stockpiled for reuse on the project, as noted below.
- C. Clear and grub all existing trees and understory where indicated on the drawings.
  - 1. A certified arborist shall perform all pruning. Contractor shall submit proof of qualifications and three (3) current references to Owner's Designated Representative for approval prior to commencing pruning.
  - 2. Remove all dead trees and tree limbs or trees that have substantial structural or cosmetic damage.
  - 3. Remove all climbing vines to a height of thirty feet (30') above the ground. Grub out vine roots.
  - 4. Remove all broken limbs and vines on trees that could fall and pose a hazard to pedestrians.
  - 5. Spray all Poison Ivy with two (2) applications of a contact herbicide labeled for such use. After a complete kill has been achieved, grub out all plants and roots. Do not burn any part of Poison Ivy plants.
  - 6. Remove briars and other vines and brambles where these plants have grown up into trees.
  - 7. Remove logs and stumps higher than four inches (4") above grade and other debris from this area. Backfill holes in accordance with this Section.
  - 8. Trim tree limbs to allow five feet (5') clearance above ground.
  - 9. Remove any trash or man-made debris from this area.
  - 10. All material generated by pruning and clearing operations shall be disposed of legally off-site.
- D. General Stripping of Existing Weeds and Grasses:
  - 1. The area within the work limits shown shall be stripped of lawns and vegetation under the direction of the Owner's Designated Representative.
  - 2. Method of removal shall remove a minimum amount of topsoil and shall be even so as to not generally change the overall grading.
  - 3. Remove and dispose of all products of stripping from the site. Do not allow material to accumulate at locations in or about the work areas.
- E. Stripping and Removal of Existing Sod:
  - 1. All areas designated shall be stripped of existing sod to a depth of two and one-half inches (2 ½"), or as deep as necessary to remove the majority of roots.
  - 2. Sod shall be stripped by acceptable means and materials, Products of stripping operations shall be removed from the project area and be legally disposed of.
- F. Stripping and Stockpiling of Existing Topsoil:
  - 1. Strip from all disturbed areas all suitable topsoil. Strip to a depth of four inches (4") or as necessary to remove all topsoil. Do not strip topsoil when conditions are muddy and avoid admixture with subsoil.
  - 2. Strip no topsoil where grades require only slight change.
  - 3. Stockpile the topsoil in areas designated on the Drawings or as agreed upon with the Owner. Stockpiled topsoil shall be free from trash and other

related material and shall be protected during the duration of the Contract.

4. Stripped and stockpiled topsoil not used for landscape fill or for planting operations shall be removed from the site and be legally disposed of.
- G. Any depressions created by site preparation operations shall be filled as directed below.

### 3.3 DEWATERING

- A. The Contractor shall provide and maintain adequate dewatering equipment to remove and dispose of all surface and ground water entering excavations, trenches, or other parts of the Work. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built, or the pipe is installed therein, and backfill operations have been completed.
  1. The different working areas on the site shall be kept free of surface water at all times. The Contractor shall install drainage ditches and dikes and shall perform all pumping and other necessary work to divert or remove rainfall and all other accumulations of surface water from the excavations and fill areas. The diversion and removal of surface water shall be performed in a manner that will prevent the accumulation of water behind temporary structures or at any other locations within the construction area where it may be detrimental.
  2. Water used for working or processing, resulting from dewatering operations, or containing oils or sediments that will reduce the quality of the water downstream of the point of discharge shall not be directly discharged. Such waters shall be diverted through a settling basin or filter before being discharged.
  3. The Contractor will be held responsible for the condition of any pipe, conduit or channel which he may use for drainage purposes and all such pipes, conduits or channels shall be left clean and free of sediment.
- B. The Contractor shall provide, install and operate sufficient trenches, sumps, pumps, hose, piping, wellpoints, deep wells, etc., necessary to depress and maintain the ground water level below the base of the excavations during all stages of construction operations. The ground water table shall be lowered in advance of excavation and maintained two feet (2') below the lowest subgrade excavation made until structure has sufficient strength and weight to withstand horizontal and vertical soil and water pressures from natural ground water. The system must be operated on a 24-hour basis and standby pumping facilities and personnel shall be provided to maintain the continued effectiveness of the system. If, in the opinion of the Engineer, the water levels are not being lowered or maintained as required by these Specifications, the Contractor shall install additional or alternate dewatering devices as necessary, at no additional cost to the Owner.
  1. Elements of the system shall be located so as to allow a continuous dewatering operation without interfering with the construction of the permanent work. Where portions of the dewatering system are located in the area of permanent construction, the Contractor shall submit details of the methods he proposes to construct the permanent work in this location

for the review of the Engineer. Control of groundwater shall continue until the permanent construction provides sufficient dead load to withstand the hydrostatic uplift of the normal groundwater, until concrete has attained sufficient strength to withstand earth and hydrostatic loads, until all waterproofing work below normal groundwater level has been completed, and until pipelines are properly jointed.

2. Dispose of all water removed from the excavation in such a manner so as not to endanger any portion of the work under construction or completed. Convey water from the excavations in a closed conduit. Do not use trench excavations as temporary drainage ditches. Before discontinuing dewatering operations, or permanently permitting the rise of the groundwater level, computations shall be made to show that any pipeline or structure affected by the water level rise is protected by backfill or other means to sustain uplift. Use a safety factor of 1.25 when making these computations.
3. Dewatering operations shall not be discontinued without the prior authorizations of the Engineer.

### 3.4 GRADING

- A. The site shall be prepared and shaped in conformity with the lines and grades as shown on the plans and the recommendations contained in the Geotechnical Report.

### 3.5 EXCAVATION

#### A. General

1. The Contractor shall excavate and backfill, in advance of the construction, test pits to determine conditions or location of the existing utilities. The Contractor shall perform all work required in connection with excavating, stockpiling, maintaining, sheeting, shoring, backfilling and replacing pavement for the test pits.
2. The Contractor shall be responsible for the definite location of each facility constructed by others involved within the area of his excavation for work under this contract. Care shall be exercised during such location work to avoid damaging and/or disrupting the affected facility. The Contractor shall be responsible for repairing, at his expense, damage to any structure, piping, or utility caused by his work.
3. Excavation of every description and of whatever substance encountered within the limits of disturbance of the project shall be performed to the lines and grades indicated on the Drawings. All excavation shall be performed in the manner and sequence as required by the work.
  - a. Excavation work shall be performed in a safe and proper manner with appropriate precautions being taken against all hazards. Excavations shall provide adequate working space and clearances for the work to be performed therein and for installation and removal of concrete forms. In no case shall excavation faces be undercut for extended footings.
  - b. Exposed soil after excavations have been made shall be protected against detrimental damage and change in condition from physical

disturbance and rain. Wherever possible, concrete footings shall be done the same day the excavation is made. If this is not done, the footing excavations shall be properly protected.

4. All excavated materials that meet the requirements for backfill shall be stockpiled within the site, but not less than twenty-five feet (25') from the surface borders of any excavation, for use as backfill, or for providing final site grades. All excavated materials which are not considered suitable for fill, and any surplus or excavated material which is not required for fill shall be disposed of off the site by the Contractor. Upon completion of the fill, all on-site waste and disposal areas shall be cleaned and the debris removed from the site.
  5. Materials deposited off the site shall be transported and placed in accordance with all applicable rules and regulations of all authorities having jurisdiction thereof. No surplus or unacceptable excavated materials of any kind shall be deposited in any stream or water course or dumped on public property.
- B. Excavations for Structures
1. Excavations for construction of structures shall be carefully made to the depths indicated or required. Bottoms for footings and slabs shall be level, clean, dry and clear of loose material and the lower sections true to size.
  2. Subgrade preparation for structures shall meet the requirements of the Structural Drawings and Notes.
  3. Footings and slab excavations shall be verified by the Testing Laboratory, and reviewed by the Engineer, before concrete is placed thereon.
  4. In excavations for structures where, in the opinion of the Testing Laboratory, the ground, not affected by high water level, is spongy or otherwise unsuitable for the contemplated foundation, the Contractor will be required to remove such unsuitable earth and replace it with suitable material in accordance with the requirements of the Structural Drawings and Notes.
  5. Excavations for structures which have been carried below the depths indicated shall be refilled to the proper grade with select backfill material properly compacted in accordance with the Structural Drawings and Notes.
  6. All structure excavations shall be hand-trimmed to permit the placing of full widths and lengths of footings on horizontal beds. Rounded and undercut edges will not be permitted.
  7. Excavation shall be extended a minimum of two feet (2') on each side of structures, footings, etc., unless otherwise shown or specified.
- C. Excavations for Pavements
1. Pavement excavation shall consist of excavations for all site pedestrian and vehicular pavements, in conformity with the typical sections shown on the Drawings, and to the lines and grades established by the Engineer and shown on the Drawings, by the removal of existing material or addition of acceptable material.

2. All unstable or otherwise objectionable material shall be removed from the subgrade and replaced with acceptable material.
3. All holes, ruts, and depressions shall be filled with select fill material.
4. Subgrade preparation shall comply with the requirement of Section 31 12 13 – Subgrade Preparation.

D. Trench Excavations

1. Reference Section 31 50 00 – Excavation Support and Protection.
2. Trenches shall be excavated to a width that will provide adequate working space and clearances for proper pipe installation, jointing and embedment.
3. Where pipe elevations are not shown on the Drawings, trenches shall be excavated to a depth sufficient to provide a minimum cover of three feet (3') over the top of the pipe, unless otherwise shown or specified.
4. Where necessary to reduce earth load on pipe trench banks to prevent sliding or caving, banks may be cut back on slopes that shall not extend lower than twelve inches (12") above the top of the pipe.
5. Except where otherwise required, pipe trenches shall be excavated six inches (6") below or 1/8 of the outside diameter of the pipe, whichever is greater, the underside of the pipe to provide for the installation of granular embedment material.
6. Over depth excavations shall be backfilled with select backfill material compacted to 95 percent (95%) of maximum density, as determined by ASTM D698 at a moisture content between optimum and optimum +4%.
7. Whenever subgrade material that is incapable of properly supporting the pipe is encountered, the subgrade material shall be removed to the depth required and the trench backfilled to the proper grade with select backfill material compacted to 95 percent (95%) of maximum density, as determined by ASTM D698 at a moisture content between optimum and optimum +4%.
8. Bell holes shall provide adequate clearance for tools and methods used in installing pipe. No part of any bell or coupling should be in contact with the trench bottom, trench walls, or granular embedment when the pipe is jointed.
9. Where existing piping constructed by others cross the new pipeline trench, the existing piping or ductbank shall be adequately supported and protected from damage due to construction. All methods of supporting and maintaining these facilities shall be subject to review by the Engineer and/or the Testing Laboratory.
10. If, during construction, any recharge features are found, the Contractor shall stop work in immediate area of the feature and notify the Engineer before proceeding. **DELETE IF NOT OVER EDWARDS AQUIFER.**

3.6 UNAUTHORIZED EXCAVATION

- A. All excavation outside the lines and grades shown, and which is not in conformance with the plans and specifications as determined by the Testing Laboratory, together with the removal and disposal of the associated material shall be at the Contractor's expense.

- B. The unauthorized excavation shall be fill with select backfill and compacted as specified by the Testing Laboratory by the Contractor at his expense.

### 3.7 PLACEMENT OF FILL AND BACKFILL

#### A. General

1. All select backfill, backfill and fill required for structures and trenches and required to provide the finished grades shown and as described herein shall be furnished, placed and compacted by the Contractor.
2. Backfill excavations as promptly as work permits, but not until completion of the following:
  - a. Observation by the Engineer of construction below finish grade.
  - b. Observation, testing and recording of locations of underground piping and ductwork.
  - c. Removal of concrete formwork.
  - d. Removal of shoring and bracing, and backfilling of voids with satisfactory materials.
  - e. Removal of trash and debris.
  - f. Backfill against foundation walls only after review by the Engineer. Do not damage waterproofing when placing backfill.
3. Fill containing organic materials or other unacceptable material shall be removed and replaced with acceptable fill material.

#### B. Placement of Select Backfill, Backfill, and Fill Materials

1. Material shall be placed to the grades shown on the Drawings. The lift thickness and compaction moisture content range given herein are approximate. These values will be finally determined from the laboratory test results on the fill materials.
2. All material shall be placed in horizontal loose lifts not exceeding nine inches (9") in thickness and shall be mixed and spread in a manner assuring uniform lift thickness after placing. Each lift shall be compacted by not less than two complete coverages of the specified compactor. Select backfill shall be placed to the underside of all concrete slabs. The fill material shall extend a minimum of two feet (2') outside the face of each structure and be twelve inches (12") below finished grade. The maximum slope of select backfill to the subgrade shall be one vertical to one and one-half horizontal.
3. Backfill around and outside of structures and over select backfill shall be deposited in layers not to exceed nine inches (9") in uncompacted thickness and mechanically compacted, using platform type tampers. Compaction of structural backfill, by rolling will be permitted provided the desired compaction is obtained and damage to the structure is prevented. Compaction of select backfill and/or backfill by inundation with water will not be permitted. All materials shall be deposited as specified herein and as shown on the Drawings.
4. All material shall be placed at a moisture content that falls in the range of laboratory optimum moisture content and laboratory optimum +4%. It shall be compacted to a density of 95 percent (95%) of the maximum laboratory dry density for that material as determined by ASTM D698.



The Contractor shall provide equipment capable of adding measured amounts of water to the material to bring it to a condition within the range of the required moisture content. The Contractor shall provide equipment capable of discing, aerating, and mixing the soil to insure reasonable uniformity of moisture content throughout the material and to reduce the moisture content of the material by air drying if necessary. If the subgrade material must be moisture conditioned before compaction, the material shall be sufficiently mixed or worked on the subgrade to insure a uniform moisture content throughout the lift of material to be compacted. Materials at moisture content in excess of the specified limit shall be dried by aeration or stockpiled for drying

5. No material shall be placed when free water is standing on the surface of the area where the material is to be placed. No compaction of material will be permitted with free water on any portion of the material to be compacted. No material shall be placed or compacted in a frozen condition or on top of frozen material. Any material containing organic materials or other unacceptable material previously described shall be removed and replaced with acceptable material prior to compaction.
6. Each lift of compacted material shall be compacted by the designated number of coverages of all portions of the surface of each lift by a smooth-drum vibratory roller for granular material having a static weight not less than 5,500 pounds, a sheepfoot roller for cohesive material exerting a pressure of 250 psi on the surface of the feet, or equivalent equipment, prior to commencement of the work. One coverage is defined as the condition obtained when all portions of the surface of the backfill material have been subjected to the direct contact of the compactor. The compactor shall be operated at a forward speed not exceeding 40 feet per minute.
7. Compaction shall be performed with equipment suitable for the type of material being placed. The contractor shall select equipment that is capable of providing the minimum density required by these Specifications. The gross weight of compacting equipment shall not exceed 7,000 pounds within a distance of ten feet (10') from the wall of any existing structure or completed structure under this contract. Equipment shall be provided that is capable of compacting in restricted areas next to structures and around piping. The effectiveness of the equipment selected by the Contractor shall be tested at the commencement of compacted material work by construction of a small section of material within the area where material is to be placed. If tests on this section of backfill show that the specified compaction is not obtained, the Contractor shall increase the amount of coverages, decrease the lift thicknesses or obtain a different type of compactor.
8. Particular care shall be taken to compact structure backfill that will be beneath pipes, roads, or other surface construction or structures. In addition, wherever a trench passes through structure backfill, the structure backfill shall be placed and compacted to an elevation twelve

inches (12") above the top of the pipe before the trench is excavated. Compacted areas, in each case, shall be adequate to support the item to be constructed or placed thereon.

9. The compaction requirements specified are predicated on the use of normal materials and compaction equipment. In order to establish criteria for the placement of a controlled fill so that it will have compressibility and strength characteristics compatible with the proposed structural loadings, a series of laboratory compaction and/or compressive strength tests will be performed on the samples of materials submitted by the Contractor. From the results of the laboratory tests, the final values of the required percent compaction, the allowable compaction moisture content range, and the maximum permissible lift thickness will be established for the fill material and construction equipment proposed.
10. The requirements of this Section apply for the placement and compaction of all fill materials.

C. Backfill in Pipe trenches

1. Pipeline trenches may be backfilled prior to pressure testing, but no structure shall be constructed over any pipeline until it has been tested.
2. All pipe larger than six inches (6") in diameter shall be placed on granular embedment material. Pipe six inches (6") in diameter and smaller shall be placed in bedding zone of granular embedment material unless the trench bottom has been graded to provide uniform and continuous support of the installed pipe.
3. Backfill is divided into three (3) separate zones: (a) bedding, the material in trench bottom in direct contact with the bottom of the pipe; (b) initial backfill, the backfill zone extending from the surface of the bedding to a point one foot (1') above the top of the pipe; and (c) secondary backfill, the backfill zone extending from the initial backfill surface to the top of the trench. Placement of materials for each of the zones shall be as described herein.
  - a. Bedding
    - 1) When unacceptable materials such as water, silt, muck, trash or debris, or rock boulder or coarse gravel (particle size greater than 1 ¾ inch) exist at the bearing level or for pipes with a nominal inner diameter greater than six inches (6"), a bedding of granular embedment material shall be used.
    - 2) Unstable materials shall be removed at the direction of the Engineer and replaced to a minimum depth of four inches (4") or one-eighth (1/8) of the outside diameter of the pipe, whichever is greater, with granular embedment material. This material shall extend up to the sides of the pipe sufficient to embed the lower quadrant of the pipe. If stability is not accomplished by using the above procedure, the Engineer may require additional granular embedment.
    - 3) Granular embedment shall be spread and graded to provide a uniform and continuous bedding zone beneath the pipe at all

points between bell holes or pipe joints. It will be permissible to slightly disturb the finished subgrade surface to withdraw pipe slings or other lifting tackle. After each pipe has been graded, aligned, and shoved home, sufficient pipe embedment material shall be deposited and compacted under and around each side of the pipe and back of the bell or end thereof to hold the pipe in proper position and alignment during subsequent pipe jointing and embedment operations. Embedment material shall be deposited and compacted uniformly and simultaneously on each side of the pipe to prevent lateral displacement.

- 4) Each layer of embedment material shall be compacted by at least two complete coverages of all portions of the surface of each lift using adequate compaction equipment. One coverage is defined as the conditions reached when all portions of the lift fill have been subjected to the direct contact of the compacting surface of the compactor.
- 5) The method of compaction and the equipment used shall be appropriate for the material to be compacted and shall not transmit damaging shocks to the pipe.

b. Initial Backfill

- 1) Select Initial Backfill: Where pipe is to be laid in a rock cut or where rock in boulder ledge or coarse gravel (particle size larger than 1¾ inch) formations exist in the initial backfill zone, or where trench walls or conditions are unstable or where the pipe to be laid is flexible pipe, select initial backfill material shall conform to the requirements of Granular Embedment. For conduits less than twenty-four inches (24") in diameter select initial backfill material shall be placed in two (2) lifts. The first lift shall be spread uniformly and simultaneously on each side and under the shoulders of the pipe to the mid-point or spring line of the pipe. The first lift of select initial backfill shall be inspected and approved prior to placement of the second lift. The second lift of select initial backfill material shall extend from the spring line of the pipe to a depth sufficient to produce a compacted depth of material a minimum of one foot (1') above the top of the pipe. The second lift shall be evenly spread in a similar manner as the first lift. For conduits twenty-four (24") in diameter and larger, select initial backfill material shall be evenly and simultaneously spread alongside, under the shoulders or haunches of the pipe and over the pipe in twelve-inch (12") lifts to a point sufficient to produce a compacted depth of material a minimum of one foot (1') above the top of the pipe.
- 2) Optional Select Initial Backfill: Where the pipe to be laid is Flexible Pipe or where unstable materials exist at the pipe bearing level or the initial backfill zone, in lieu of the material specified above, an optional select backfill may be used by the

Contractor where rock, in ledge, boulder, or coarse gravel (particle size larger than 1 ¾" inch) formations are not present in the bedding or initial backfill zone of the trench and where water is not present at the pipe bearing level. Optional Select Initial Backfill shall be clean, well graded gravels, crushed screenings or sand with 100% passing a ½" sieve, 95% to 100% passing a ¼" sieve. The plasticity index shall not be more than 12 when tested in accordance with the ASTM D4318. Optional select initial backfill shall be placed around the pipe and to the defined limit for initial backfill above. Sand and other materials as may be required by the Engineer shall be thoroughly compacted. Minimum thickness of completed optional select initial backfill shall be one foot (1') above the top of the pipe.

- 3) Natural Initial Backfill: Where the pipe to be laid is rigid pipe and where stable materials and laying conditions exist at the pipe bearing level and initial backfill zone and existing excavated materials are acceptable to the Engineer, such excavated natural materials may be utilized as initial backfill material.

c. Secondary Backfill

- 1) Secondary backfill shall generally consist of materials removed from the trench and shall be free of trash brush and other debris. No rock or stones having any dimension larger than one half of the trench width, or eight inches (8"), unless otherwise approved, at the largest dimension, whichever is less, shall be used in the secondary backfilling zone. In special cases where excessive width and/or depth of the trench permit, and only with approval of the Engineer, larger rocks up to twelve inches (12") in diameter may be incorporated into the backfill provided that the surrounding compactable soil may be properly and adequately compacted. Material for backfill shall be placed in uniform layers not more than nine inches (9") in depth (loose measurement) and shall be compacted to the density specified herein.
- 2) The initial lift of secondary backfill shall be a maximum of nine inches (9") in loose thickness. Consideration should be given to keeping the initial lift of secondary backfill as close as possible to the maximum nine inches (9") thickness to reduce the possibility of damage resulting from the compaction operations. This initial lift of secondary backfill material shall be compacted to a minimum of 95 percent of the laboratory determined maximum dry density (ASTM D698) using suitable compaction equipment. The backfill material shall be wetted or dried in such a manner as to provide uniform moisture content near the optimum moisture content identified by laboratory testing. Moisture contents in excess of 5 percent above or below the

optimum laboratory moisture content are considered unacceptable and will require adjustment as necessary.

- 3) Moisture density tests will be performed by a geotechnical engineer at periodic intervals on the top of the initial lift of backfill to determine the degree of compaction. If these test results indicate marginal compaction has been obtained near the surface of this lift, the Contractor will be given the option of applying more compactive effort or excavating a portion of the upper fill materials to allow access for moisture-density testing near the bottom of the lift. Any materials determined to be under compacted will require additional work by the Contractor to meet the above compaction requirements.
- 4) After the initial lift of secondary backfill has been properly compacted as evidenced by moisture-density tests, subsequent lifts of secondary backfill material shall be placed and compacted in accordance with the above Specification. All subsequent lifts of secondary backfill shall be placed in loose lifts not to exceed twelve inches (12") in thickness and compacted in accordance with the above Specifications. Succeeding lifts of supplemental backfill may be placed only after completion of adequate moisture-density tests on backfill material already in place.
- 5) Due to the rather large vertical displacement of backfill material, experienced by using thick lifts, it is anticipated that, in some areas, the final lift of backfill material could be approximately one foot (1') thick. Compaction of this last lift of backfill material may be accomplished in the manner described above, or by a combination of use of vibratory plate compaction equipment and conventional pneumatic or sheep-foot rollers

4. Clay Plugs

- a. A clay plug shall be installed on all utility trenches before they enter the building or go under a foundation.
- b. The plug must be installed a distance of one (1) foot from the foundation.

D. Compaction Density Requirements

1. The degree of compaction required for all types of fills shall be listed below. Material shall be moistened or aerated as necessary to provide the moisture content specified below:

<u>Uncompacted Material/Location</u>	<u>Standard</u>	<u>Maximum Required Density</u>	<u>Loose Lift Thickness</u>
- Select Backfill	ASTM D698	95%	12 inches
- Backfill/Around Structures	ASTM D698	95%	12 inches
- All Other Backfill	ASTM D 698	95%	12 inches
- Fill/Roadway Embankment	ASTM D698	95%	12 inches

- Roadway Subgrade ASTM D698 95%
- Fill/Pipe Trenches ASTM D 698 95% 12 inches
- Granular Embedment/  
Pipe Trenches ASTM D 698 95% 12 inches

2. The Testing Laboratory shall perform tests necessary to provide data for selection of fill material and control of placement water content.
3. The Testing Laboratory will perform field density tests at the completion of each lift to insure that the specified density is being obtained. Number of tests shall be determined by the Testing Laboratory.
4. If the tests indicate unsatisfactory compaction, the Contractor shall provide the additional compaction necessary to obtain the specified degree of compaction. All additional compaction work shall be performed by the Contractor at no additional cost to the Owner until the specified compaction is obtained. The work shall include complete removal of unacceptable (as determined by the Testing Laboratory) fill areas and replacement and re-compaction until acceptable fill is provided.

- E. Pit Run Sand Placement: Pit run sand shall be placed and compacted to the limits shown on the Drawings.
- F. Drainage Gravel: Drain gravel shall be compacted in maximum twelve inch (12") lifts with a minimum of two passes of a hand operated vibratory plate compactor weighing between 150 and 500 pounds.
- G. Replacement of Unacceptable Excavated Materials: In cases where over-excavation for the replacement of unacceptable soil materials is required, the excavation shall be backfilled to the required subgrade with select backfill material and thoroughly compacted to 95 percent (95%) of ASTM D698, at a moisture content between optimum and optimum +4%, in layers not thicker than twelve inches (12"). Sides of the excavations shall be sloped in accordance to the maximum inclinations specified for each structure location.

### 3.8 FINAL GRADING AND EMBANKMENTS

- A. To the extent available, backfill material from excavations shall be placed in accordance with this Section to final grades with a maximum compacted depth of six inches (6").
- B. After other outside work has been finished, and backfilling and embankments completed and settled, all areas on the site of the work which are to be graded shall be brought to a subgrade suitable with the indicated elevations, slopes, and grades with suitable excess excavation material. Final grades shall be within 0.1 foot of the finished grades shown on the Drawings.
- C. Final stabilization of non-paved areas shall comply with the requirements of TxDOT Item 164.

### 3.9 DISPOSITION OF SURPLUS MATERIAL

- A. All surplus materials shall be removed from the Owner's property and be disposed of in a legal manner.

### 3.10 PROTECTION OF UTILITIES AND PROPERTY

- A. The Contractor is referred to other portions of this Section, the Special Conditions and other Sections and/or Divisions within these Specifications for requirements concerning the protection of utilities, property and existing trees.
- B. Locate and identify all above and below grade utilities in advance of any excavation operations and/or activities. Stake and flag locations. Maintain and protect existing utilities thus identified. Notify A/E or Owner's Representative if concealed conditions affect work.

**END OF SECTION**

**SECTION 31 11 00  
CLEARING AND GRUBBING**

**PART 1 - GENERAL**

**1.1 GENERAL DOCUMENTS**

- A. The Terms and Conditions of the Contract, including Supplementary and Special Conditions of the Contract, and the Drawings apply to this Section.

**1.2 SUMMARY**

- A. Section Includes:
1. Protection of existing vegetation to remain.
  2. Removing existing vegetation.
  3. Clearing and grubbing.
  4. Stripping and stockpiling topsoil.
  5. Removing above and below grade site improvements.
  6. Site Preparation.
  7. Erosion protection, noise and dust control.

**1.3 RELATED WORK**

- A. Related work of other sections includes but is not limited to:
1. TPDES Storm Water Pollution Prevention Plan
  2. Section 02 41 00 – Site Demolition
  3. Section 31 00 00 – Site Earthwork

**1.4 DEFINITIONS**

- A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.



- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other non-soil material.
- D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.
- E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and as indicated on the Tree Protection Plan.
- F. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

## 1.5 **CONDITIONS**

- A. Contractor is referred to the Special Conditions and to other applicable sections of these Specifications in regard to protection of existing improvements and property shown to remain, as well as the proper barricading of all work areas.
- B. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
  - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
  - 3. The Contractor shall be required to remove mud or debris from existing adjacent streets scheduled to remain in service throughout his contract period.
  - 4. The Contractor shall be responsible and protect the Owner from damage during haul operations. Any damage shall be repaired at the Contractor's expense.
- C. Erosion Protection: Provide erosion control as shown on the plans and maintain for the duration of the project. Provide routine maintenance as required to maintain integrity of erosion and sedimentation protection measures and remove any accumulations of mud or debris which would jeopardize the integrity of control measures. Refer to plans for details.

- D. Dust Control: The Contractor shall exercise care during site clearing operations to confine dust to the immediate work area and shall employ dust control measures to the satisfaction of the Owner to ensure adequate dust control throughout site clearing operations.
- E. The use of explosives will not be permitted.

#### 1.6 **SALVAGE OF MATERIALS**

- A. Contractor to deliver to the Owner all items that are specified to be salvaged and retained by the Owner (as applicable and shown on the Drawings). Owner's Designated Representative shall direct Contractor in the field of where to deliver the salvaged material. The Contractor has salvage rights for all other existing materials, parts, or accessories scheduled for demolition.
- B. All items specified to be removed or required to be removed because of conflicts with proposed improvements shall be removed from the Owner's property in a timely manner.

#### 1.7 **LEGALLY PERMITTED LANDFILL – CERTIFICATION**

- A. The Contractor shall dispose of all materials in a legally permitted landfill, permitted to accept construction waste, as determined by the Texas Department of Health, Municipal Solid Waste Management Regulation.
- B. The Contractor shall be required to provide written evidence of the permitted landfill prior to commencement of site clearing operations.

#### 1.8 **DEMOLITION**

- A. Removal of Miscellaneous Items: Contractor shall remove all other miscellaneous items not identified elsewhere, for the purposes of carrying out the Work, and dispose of in accordance with Item 1.6 of this Section.

#### 1.9 **REFERENCES**

- A. OSHA Excavation and Trench Safety Standards.
  - 1. 29 CFR Part 1926 - OSHA Health and Safety Standards for Excavations.
- B. ASTM: American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103, U.S.A. All references are to current active standard.
  - 1. ASTM D4318 – Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

## 1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to store at the site, and handle in a manner which will maintain the materials in their original manufactured or fabricated condition until ready for use.

## PART 2 - PRODUCTS

### 2.1 TREE WOUND PAINT

- A. Bituminous based paint of standard manufacture specially formulated for tree wounds.

### 2.2 HERBICIDE

- A. Comply with Federal Insecticide, Fungicide, and Rodenticide Act (Title 7 U.S.C. Section 136) for requirements on contractor's licensing, certification and record keeping. Contact the command Pest Control Coordinator prior to starting work.

## PART 3 - EXECUTION

### 3.1 PROTECTION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Roads and Walks
  - 1. Keep roads and walks free of dirt and debris at all times.
- C. Trees and Shrubs
  - 1. Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require.
- D. Utility Lines
  - 1. All existing utility locations shown on plans are approximate, based on information provided by utility service providers and field surveys. Utilities were not uncovered to determine precise locations, except as noted on the plans. The contractor shall verify the location of underground utilities and drainage structures at least forty-eight (48) hours prior to construction, whether shown on the plans or not, and shall protect same during construction.

2. Protect existing utility lines that are not identified to be removed. Notify the Owner's Designated Representative immediately of damage to or an encounter with an unknown existing utility line. The Contractor shall be responsible for the repairs of damage to existing utility lines that are indicated or made known to the Contractor prior to start of clearing and grubbing operations. When utility lines which are to be removed are encountered within the area of operations, the Contractor shall notify the Owner's Designated Representative in ample time to minimize interruption of the service.

### **3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- A. Install erosion and sedimentation controls prior to commencing operations that disturb soil.

### **3.3 TREE AND PLANT PROTECTION**

- A. Protect trees and plants as described in the Drawings.
- B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect

### **3.4 SITE CLEARING AND GRUBBING**

- A. All areas of proposed construction shall be stripped of existing vegetation, concrete, asphalt and six inches (6") of topsoil, except as noted on the plans. Topsoil is to be stockpiled for reuse on the project, as directed below. The exposed subgrade shall be proof rolled with at least a 15-ton pneumatic roller to detect weak soil support areas. These areas will be removed and replaced according to the following:
  1. Areas not designated for new improvements shall be reshaped and filled to finished grade, less topsoil requirement.
  2. Areas designated for new improvements shall be reshaped and filled to subgrade with material meeting requirements for select fill material.
    - a. Place lifts of select fill in thin, loose layers not exceeding eight inches in thickness to the desired rough grade and compact to a minimum of 95% of the maximum density defined by ASTM D698.
    - b. Maintain moisture within a range of optimum -1% to optimum +3%.
    - c. Conduct in-place density tests at a rate of one test per 3,000 square feet for every lift with a minimum of 2 tests per lift.

- d. For select fill placed above the existing groundline, extend the lateral limits of the fill at least 5 feet beyond the perimeter of the building area, transitioning back to the existing groundline on a 3:1 (horizontal/vertical) slope.
- B. Take all measures necessary to protect trees to remain from construction damage and keep them healthy during the construction process. This includes trees inside construction fences and adjacent to any construction activities.
  - C. Clear and grub all existing trees and understory where indicated on the drawings.
    1. Remove all dead trees and tree limbs or trees that have substantial structural or cosmetic damage.
    2. Remove all climbing vines to a height of 30' above the ground. Grub out vine roots.
    3. Remove all broken limbs and vines on trees that could fall and pose a hazard to pedestrians.
    4. Spray all Poison Ivy with two (2) applications of a contact herbicide labeled for such use. After a complete kill has been achieved, grub out all plants and roots. Do not burn any part of Poison Ivy plants.
    5. Remove Briars and other vines and brambles where these plants have grown up into trees.
    6. Remove old fences and fence posts. In cases where wire penetrates existing trees to remain the wire shall be trimmed back flush with the tree bark.
    7. Remove logs and stumps higher than four inches (4") above grade and other debris from this area. Backfill holes in accordance with Section 31 00 00 – Site Earthwork.
    8. Trim tree limbs to allow five feet (5') clearance above ground.
    9. Remove any trash or man-made debris from this area.
    10. All material generated by the pruning and clearing process shall be disposed of legally off-site.
  - D. Perform these operations under the direction of the licensed arborist.

- E. Do not begin operations until limits of clearing and grubbing have been identified and staked out by the contractor and approved by the Owner's Designated Representative.
- F. Do no damage to existing plant material, utilities, and/or pavements designated to remain as indicated on the drawings.
- G. Fill any depression caused by clearing and grubbing operations; removing any improvements, over or underground, as necessary to facilitate new construction.
- H. Disposal will be done legally; no burning is permitted on University property.
- I. A certified arborist shall perform all pruning. Contractor shall submit proof of qualifications and three current references to A/E and Owner for approval prior to commencing any pruning.

**3.5 GENERAL STRIPPING OF EXISTING WEEDS AND GRASSES:**

- A. The area within the work limits shown shall be stripped of lawns and vegetation under the direction of the Owner's Designated Representative.
- B. Method of removal shall remove a minimum amount of topsoil and shall be even so as to not generally change the overall grading.
- C. Remove and dispose of all products of stripping from the site. Do not allow material to accumulate at locations in or about the work areas.

**3.6 STRIPPING AND REMOVAL OF EXISTING SOD:**

- A. All areas designated shall be stripped of existing sod to a depth of two and one-half (2 1/2") inches, or as deep as necessary to remove the majority of roots.
- B. Sod shall be stripped by acceptable means and materials. Products of stripping operations shall be removed from the project area and legally disposed of.

**3.7 STRIPPING AND STOCKPILING OF TOPSOIL:**

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to a depth of six (6") inches or as necessary to remove all topsoil. Strip topsoil not in a muddy condition and avoid admixtures of subsoil.

- C. Strip no soil where grades require only a slight change. Stockpile the topsoil in areas designated on the Drawings or as agreed upon with the Owner. Stockpiled topsoil shall be free from trash and other related material and shall be protected during the duration of the Contract.
- D. Stripped and stockpiled topsoil not used for landscape fill or for planting operations shall be removed from the site and legally disposed of.

### 3.8 **DISPOSAL OF MATERIALS**

#### A. Non-saleable Materials

- 1. Logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations, shall be disposed of outside the limits of Owner controlled land at the Contractor's responsibility, except when otherwise directed in writing. Such directive will state the conditions covering the disposal of such products and will also state the areas in which they may be placed.

END OF SECTION

**SECTION 31 23 13**  
**SUBGRADE PREPARATION**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

- A. The Terms and Conditions of the Contract, including Supplementary and Special Conditions of the Contract, and the Drawings apply to this Section.

1.2 SUMMARY

- A. Section includes furnishing all labor, materials, and equipment necessary for completing all subgrade preparation operations for pavement, drainage facilities and other improvements shown on the drawings associated with this project.

1.3 RELATED SECTIONS

- A. Section 31 00 00 – Site Earthwork

1.4 DEFINITIONS

- A. Prepared Ground Surface – Ground surface after completion of site clearing, scalping of sod, stripping of topsoil, excavation to grade, and scarification and compaction of subgrade.
- B. Subgrade – Layer of existing soil after completion of clearing, grubbing, scalping to topsoil prior to placement of fill, structural fill, roadway structure or base for floor slab.
- C. Proof Rolling – Testing of subgrade to identify areas that will not support the future loading without excessive settlement, and locate areas of instability

1.5 REFERENCE STANDARDS

- A. The contractor shall comply with applicable provisions and recommendations of the following:
  - 1. ASTM: American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103, U.S.A. All references are to current active standard.
    - a. ASTM D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
    - b. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
  - 2. Geotechnical Report.

1.6 SUBMITTALS

- A. Provide certifications and laboratory analysis results for all fill materials proposed for use on the project, indicating conformity to the specifications and source of materials.
- B. Perform, document and report the following quality control tests at the designated frequency in accordance with Section 01 45 00.
  - 1. Submit two (2) copies of test reports of the moisture-density and compaction results for review.
  - 2. Comply with Submittal requirements outlined in Sections 01 33 00 and 01 45 00.



## 1.7 SITE CONDITIONS

- A. Environmental Requirements: Prepare subgrade when unfrozen and free of ice and snow.

## 1.8 SEQUENCING AND SCHEDULING

- A. Complete applicable work as specified in Section 31 00 00 – Site Earthwork prior to subgrade preparation.

## **PART 2 - PRODUCTS**

### 2.1 EQUIPMENT

#### A. Proof Rolling Equipment

1. The proof rolling equipment shall consist of not less than four pneumatic tired wheels, running on axles carrying not more than two wheels, and mounted in a rigid frame and provided with loading platform or body suitable for ballast loading. All wheels shall be arranged so that they will carry approximately equal loads when operating on uneven surfaces.
2. The proof roller under working conditions shall have a rolling width of from 8 feet to 10 feet, and shall be so designed that, by ballast loading, the gross load may be varied uniformly from 25 tons to 50 tons. The tires shall be capable of operating under the various loads with variable air pressure up to 150 pounds per square inch. Tires shall be practically full of liquid. (Tires shall be considered as being practically full when liquid will flow from the valve stem of a fully inflated tire with the stem in the uppermost position). The operating load and tire pressure shall be within the range of the manufacturer's chart. The Contractor shall furnish the A/E charts or tabulations showing the contact areas and contact pressures for the full range of tire inflation pressures and for the full range of loadings for the particular tires furnished.
3. The proof roller shall be towed by a suitable crawler type tractor or rubber tired tractor of adequate tractive capacity, or may be of the self-propelled type. A proof roller unit shall consist of either a self-propelled roller or combination of roller and towing tractor
4. There shall be a sufficient quantity of ballast available to load the equipment to a maximum gross weight of 50 tons.
5. Rubber tired tractive equipment shall be used on base courses and asphalt pavements. Other type tractive equipment may be used on embankment subgrade. The heavy pneumatic tire roller unit shall be capable of turning 180 degrees in the crown width or operating in forward and reverse modes.
6. In lieu of the rolling equipment specified, the Contractor may, upon written permission from the A/E, operate other compacting equipment that will produce equivalent results in the same period of time as the specified equipment. If the substituted compaction equipment fails to produce the desired results within the same period of time as would be expected of the specified equipment, as determined by the A/E, its use shall be discontinued.

## **PART 3 - EXECUTION**

### 3.1 GENERAL

- A. Keep subgrade free of water, debris, and foreign matter during compaction or proof-rolling.
  - B. Bring subgrade to proper grade and cross-section and uniformly compact surface.
  - C. Do not use sections of prepared ground surface as hauls roads. Protect prepared subgrade from traffic.
  - D. Maintain prepared ground surface in finished condition until next course is placed.
  - E. The Contractor shall be responsible for providing accurate lines and grades of subgrade per drawings.
- 3.2 APPROVAL OF SUBGRADE
- A. Proof-Rolling: Proof-roll subgrade below the building pad and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
  - B. Completely proof-roll subgrade in one direction, each succeeding trip of the proof roller shall be offset by not greater than one tire width. Repeat proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
  - C. Remove soft spots down to firm soil, minimum 12 inches deep, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by A/E representative, fill with select structural fill in maximum 8 inches deep lifts, and compact as specified.
- 3.3 MOISTURE CONDITIONING
- A. Dry Subgrade: Add water, then mix to make moisture content uniform throughout.
  - B. Wet Subgrade: Aerate material by blading, disking, harrowing, or other methods, to hasten drying process.
- 3.4 QUALITY CONTROL TESTING
- A. Provide certifications and laboratory analysis results for all fill materials proposed for use on the project, indicating conformity to the specifications and source of materials.
  - B. Engage a testing laboratory for control testing during subgrade preparation operations to perform, document and report the required quality control tests at the designated frequency in accordance with Geotechnical Engineering Report and Supplementary Reports.

**END OF SECTION**

**SECTION 31 32 13**  
**SOIL MIXING STABILIZATION**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

- A. The Terms and Conditions of the Contract, including Supplementary and Special Conditions of the Contract, and the Drawings apply to this Section.

1.2 SUMMARY

- A. Section includes furnishing and installing cement stabilized sand subgrade, and related work as shown and detailed on the Drawings.

1.3 RELATED WORK

- A. Related work of other Sections includes:
  - 1. Section 31 00 00 – Site Earthwork.
  - 2. Section 31 23 13 – Subgrade Preparation.

1.4 REFERENCES

- A. ASTM: American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103, U.S.A. All references shall be to current active standard.
  - 1. ASTM C94 – Standard Specification for Ready-Mixed Concrete.
  - 2. ASTM C150 – Standard Specification for Portland Cement.
- B. TxDOT: Texas Department of Transportation, 125 East 11<sup>th</sup> Street, Austin, Texas 78701
  - 1. Tex-101-E – Test Procedure for Preparing Soil and Flexible Base Materials for Testing.
  - 2. Tex-103-E – Test Procedure for Determining Moisture Content in Soil Materials.
  - 3. Tex-115-E – Test Procedure for Field Method for Determining In-Place Density of Soils and Base Materials.
  - 4. Tex-120-E – Test Procedure for Soil-Cement Testing.

1.5 WEATHER CONDITIONS

- A. Start cement application only when the air temperature is at least 35 degrees F and rising or is at least 40 degrees F. The temperature will be taken in the shade and away from artificial heat.
- B. Minimize dust and scattering of cement by wind. Do not apply cement when, in the opinion of the Owners Designated representative, wind conditions cause blowing cement to become dangerous to traffic or objectionable to adjacent property owners.

1.6 SUBMITTALS

- A. Mix design.

**PART 2 - PRODUCTS**

2.1 CEMENT

- A. Type I Portland Cement conforming to ASTM C150.

2.2 WATER

- A. Potable water, free of oils, acids, alkalis, organic matter, or other deleterious substances, meeting requirements of ASTM C94.

**PART 3 - EXECUTION**

3.1 CONDITIONS

- A. Stabilization shall be mixed and compacted in one lift and shall be completed the same day.

3.2 MIX DESIGN

- A. The optimum percentage of cement to be added shall be determined based on compressive strength tests on samples with varying percent cement and prepared in accordance with Tex-120-E. The percentage cement added shall provide a minimum strength of 200 pounds per square inch.

3.3 PREPARATION

- A. Shape the existing material in accordance with the plans.
B. Pulverize or scarify the existing material after shaping so that 100% passes a 2-1/2" sieve.

3.4 PLACEMENT

- A. Dry Placement
1. Cement shall be uniformly spread and mixed into the subgrade material prior to the application of water.
B. Slurry Placement
1. Slurry placement is not acceptable for this project.

3.5 MIXING

- A. Thoroughly mix the material and cement using approved equipment.
B. Mix until a homogeneous mixture is obtained.
C. Add water as necessary to maintain optimum mixing moisture.
D. Spread and shape the completed mixture in a uniform layer.
E. After mixing, sample material and test in accordance with Tex-101-E, Part III, to determine compliance with the gradation requirements below:

Table with 3 columns: Sieve Size, Base, Subgrade. Rows include sieve sizes 1-3/4 in., 3/4 in., No. 4 and corresponding minimum % passing values (100, 85, - for base; 100, 85, 60 for subgrade).

3.6 COMPACTION

- A. Compact the mixture in one lift.
B. Sprinkle or aerate the treated subgrade to adjust the moisture content during compaction so that it is within 2.0 percentage points of optimum as determined by Tex-120-E. Determine the moisture content of the mixture at the beginning and during construction in accordance with Tex-103-E. Adjust operations as required.
C. Begin rolling longitudinally at the sides and proceed towards the center, overlapping on successive trips by at least one-half the width of the roller unit. Operate rollers at a speed between 2 and 6 miles per hour.
D. Compact to at least 95% of the maximum density determined in accordance with Tex-120-E. Determine roadway density in accordance with Test Method Tex-115-E and verify strength in accordance with Tex-120-E.

- E. Remove material that does not meet density requirements. Remove areas that lose required stability, compaction, or finish. Replace with cement-treated mixture and compact and test as described above.
- F. The Engineer may accept the section if no more than 1 of the 5 most recent density tests is below the specified density and the failing test is no more than 3 pcf below the specified density.

### 3.7 FINISHING

- A. Immediately after completing compaction, clip, skin, or tight-blade the surface of the cement treated material with a maintainer or subgrade trimmer to a depth of approximately 1/4 inch. Remove loosened material and dispose of it at an approved location.
- B. Roll the clipped surface immediately with a pneumatic-tire roller until a smooth surface is attained. Add small increments of water as needed during rolling. Shape and maintain the course and surface in conformity with the typical sections, lines and grades shown on the plans.
- C. Finish grade of constructed subgrade shall be within 0.1 feet in the cross-section and 0.1 feet in 16 feet measured longitudinally.

### 3.8 CURING

- A. Cure for at least three days.
- B. During curing, maintain moisture content at no lower than 2 percentage points below optimum.
- C. Maintain moisture content by sprinkling or by applying an asphalt material at the rate of 0.05 to 0.20 gallons per square yard.
- D. Do not allow equipment on the finished course during curing except as required for sprinkling.
- E. Continue curing until placing another course or opening the finished section to traffic.

### 3.9 TESTING

- A. Perform one moisture-density test per 5,000 square feet of surface area on the treated subgrade.
- B. Perform one after mixing gradation analysis per 5,000 square feet of surface area on the treated subgrade.

**END OF SECTION**

**SECTION 31 32 15**  
**LIME SOIL STABILIZATION**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

- A. The Terms and Conditions of the Contract, including Supplementary and Special Conditions of the Contract, and the Drawings apply to this Section.

1.2 SUMMARY

- A. Section includes furnishing and treating the new subgrade of pavement sections by pulverizing, adding lime, mixing, and compacting the mixed material as specified and as shown and detailed on the Drawings.

1.3 RELATED WORK

- A. Related work of other Sections includes:
1. Section 31 11 00 – Clearing and Grubbing
  2. Section 31 00 00 – Site Earthwork
  3. Section 31 23 13 – Subgrade Preparation

1.4 REFERENCES

- A. ASTM: American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103, U.S.A., all ASTM references shall be to current active standard:
1. ASTM C11 – Standard Test Methods for Physical Testing of Quicklime, Hydrated Lime and Limestone.
  2. ASTM C977 – Standard Specification for Quicklime and Hydrated Lime for Soil Stabilization.
  3. ASTM D 421 – Practice for Dry Preparation of Soil Samples for Particle Size Analysis and Determination of Soil Constants
  4. ASTM D422 – Standard Test Method for Particle-Size Analysis of Soils
  5. ASTM D 698 - Test Method Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5-lb. (2.49-kg) Rammer and 12-in. (305-mm) Drop.
  6. ASTM D1556 – Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
  7. ASTM D 4318 - Test for Liquid Limit, Plastic Limit and Plasticity Index of soils.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.

**PART 2 - PRODUCTS**

2.1 MATERIALS

- A. All lime slurries used in "Slurry Placing" shall be furnished at or above the Minimum Dry Solids Content.
1. Lime slurry shall be Type A Hydrated Lime, meeting the following criteria:
    - a. Chemical:
      - 1) Total "active" lime content, % by wt.- - -90.0 min. (i.e., % by wt Ca(OH)<sub>2</sub> + % by wt CaO, if present)
      - 2) Unhydrated lime content, % by wt CaO: 5.0 max
      - 3) "Free Water" content, % by wt H<sub>2</sub>O: 5.0 max

- b. Physical
  - 1) Wet sieve requirement, as % by wt residue:
  - 2) Retained on No. 6 sieve: 0.2 max
  - 3) Retained on No. 30 sieve: 4.0 max
- 2. Quicklime shall be pelletized and suitable for either dry placement or for use in the preparation of a slurry for "Slurry Placing", meeting the following criteria:
  - a. Chemical:
    - 1) Unhydrated lime content, % by wt CaO: -87.0 min.
  - b. Physical
    - 1) Wet sieve requirement, as % by wt residue:
    - 2) Retained on No. 6 sieve: 8.0 max<sup>1</sup>
    - 3) Retained on 1 in sieve: 0.0
    - 4) Retained on ¾ in. sieve: 10.0 max.
    - 5) Retained on No. 100 sieve: 80.0 min.

**PART 3 - EXECUTION**

**3.1 APPLICATION**

- A. The completed course shall be uniformly treated, free from loose or segregated areas, of uniform density and moisture content, well bound for its full depth and shall have a smooth surface.
- B. Prior to treating existing material, it shall be shaped to conform to the typical sections as shown on the plans.
- C. Before pulverizing or scarifying an existing material, the Construction Manager shall proof roll the required area in accordance with the following criteria:
  - 1. Equipment.
    - a. The proof rolling equipment shall consist of not less than four pneumatic tired wheels, running on axles carrying not more than two wheels, and mounted in a rigid frame and provided with loading platform or body suitable for ballast loading. All wheels shall be arranged so that they will carry approximately equal loads when operating on uneven surfaces.
    - b. The proof roller under working conditions shall have a rolling width of from 8 feet to 10 feet, and shall be so designed that, by ballast loading, the gross load may be varied uniformly from 25 tons to 50 tons. The tires shall be capable of operating under the various loads with variable air pressure up to 150 pounds per square inch. Tires shall be practically full of liquid. (Tires shall be considered as being practically full when liquid will flow from the valve stem of a fully inflated tire with the stem in the uppermost position). The operating load and tire pressure shall be within the range of the manufacturer's chart as directed by the Engineer. The Construction Manager shall furnish the Engineer charts or tabulations showing the contact areas and contact pressures for the full range of tire inflation pressures and for the full range of loadings for the particular tires furnished.

- c. The proof roller shall be towed by a suitable crawler type tractor or rubber tired tractor of adequate tractive capacity, or may be of the self-propelled type. A proof roller unit shall consist of either a self-propelled roller or combination of roller and towing tractor.
  - d. There shall be a sufficient quantity of ballast available to load the equipment to a maximum gross weight of 50 tons.
  - e. Rubber tired tractive equipment shall be used on base courses and asphalt pavements. Other type tractive equipment may be used on embankment subgrade. The heavy pneumatic tire roller unit shall be capable of turning 180 degrees in the crown width or operating in forward and reverse modes.
  - f. In lieu of the rolling equipment specified, the Construction Manager may, upon written permission from the Engineer, operate other compacting equipment that will produce equivalent results in the same period of time as the specified equipment. If the substituted compaction equipment fails to produce the desired results within the same period of time as would be expected of the specified equipment, as determined by the Engineer, its use shall be discontinued.
2. Construction Methods.
- a. This work shall be done only when directed by the Engineer. The subgrade and/or base layer shall be proof rolled to locate unstable areas when directed by the Engineer.
  - b. The load and tire inflation pressures shall be adjusted as directed by the Engineer. It is proposed to use a contact pressure corresponding as nearly as practical to the maximum supporting value of the earthwork or base. A minimum of two coverages 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 speeds directed by the Engineer, which shall be between 2 and 6 miles per hour.
  - c. Where the operation of the proof roller unit shows an area to be unstable or non-uniform, it shall be corrected in accordance with the applicable Item of Work.
3. Soft spots shall be corrected.
- D. In lieu of using the cutting and pulverizing machine, the Construction Manager shall excavate and window row the material to expose the secondary grade to the typical sections. Lines and grades shown on the plans.
  - E. A sufficient quantity of hydrated lime shall be mixed with the subgrade soils to decrease the soil-lime mixture plasticity index to 18 (based on a dry method of sample preparation, ASTM D4318) or less and increase the pH of the soil lime mixture to at least 12.4. For estimating purposes assume two percent (2%) lime by weight, actual lime quantity should be determined by laboratory testing prior to commencing construction. Laboratory testing should include soluble sulphates in subgrade soils to determine if sulphate-



induced heave needs to be addressed. The lime-stabilized clay will have a minimum of 60%, on a weight basis, of the stabilized soil passing the No. 4 sieve at a moisture content at or above optimum. If the plasticity index cannot be reduced to less than 18, the optimum lime content will be determined using a pH meter as outlined in ASTM C977.

- F. All construction methods shall meet or exceed the following criteria:
1. General.
    - a. The completed course shall be uniformly treated, free from loose or segregated areas, of uniform density and moisture content, well bound for its full depth and shall have a smooth surface.
  2. Preparation of Subgrade or Existing Base.
    - a. Prior to treating existing material, it shall be shaped to conform to the typical sections, as shown on the plans or as established by the Engineer. This work shall be done in accordance with the provisions of applicable bid items. When shown on the plans, any existing asphaltic concrete pavement shall be removed and will be paid for in accordance with applicable bid items.
    - b. Before pulverizing or scarifying an existing material, when shown on the plans and when directed by the Engineer, the Construction Manager shall proof roll the roadbed in accordance with 3.1C above.
    - c. Soft spots shall be corrected as directed by the Engineer.
    - d. When the Construction Manager elects to use a cutting and pulverizing machine that will process the material to the plan depth, the Construction Manager will not be required to excavate to the secondary grade or windrow the material. This method will be permitted only if a machine is provided which will insure that the material is cut uniformly to the proper depth and which has cutters that will plane the secondary grade to a uniform surface over the entire width of the cut. The machine shall provide a visible indication of the depth of cut at all times.
    - e. In lieu of using the cutting and pulverizing machine, the Construction Manager shall excavate and windrow the material to expose the secondary grade to the typical sections, lines and grades as shown on the plans or as established by the Engineer.
  3. Pulverization.
    - a. The existing pavement or base material shall be pulverized or scarified so that 100 percent shall pass the two (2) inch sieve.
  4. Application.
    - a. The percentage by weight or pounds per square yard of lime to be added will be as shown on the plans and may be varied by the Engineer if conditions warrant.
    - b. Lime shall be spread only on that area where the mixing operations can be completed during the same working day.
    - c. Unless otherwise approved by the Engineer, the lime operation shall not be started when the air temperature is below 40 F and

falling, but may be started when the air temperature is above 35 F and rising. The temperature will be taken in the shade and away from artificial heat. Lime shall not be placed when weather conditions in the opinion of the Engineer are unsuitable.

- d. The application and mixing of lime with the material shall be accomplished by the methods herein described as "Dry Placing" or "Slurry Placing". Type A Hydrated Lime shall be applied by "Slurry-Placing" unless otherwise shown on the plans or approved by the Engineer.
- e. Dry Placing.
  - 1) The lime shall be distributed by a spreader approved by the Engineer or by bag distribution for Type A Hydrated Lime at the rate shown on the plans or as directed by the Engineer.
  - 2) The lime shall be distributed at a uniform rate and in such a manner as to reduce the scattering of lime by wind. Lime shall not be applied when wind conditions, in the opinion of the Engineer, are such that blowing lime becomes objectionable to adjacent property owners or dangerous to traffic.
  - 3) A motor grader shall not be used to spread Type A Hydrated Lime.
  - 4) The material shall be sprinkled as approved by the Engineer.
- f. Slurry Placing.
  - 1) When Type A Hydrated Lime is specified and slurry placement is to be used, the Type A Hydrated Lime shall be mixed with water to form a slurry with a solids content approved by the Engineer.
- g. Slurry Consistency Requirements
  - 1) Slurry shall be of such consistency that it can be applied uniformly without difficulty.
  - 2) When the distributor truck is not equipped with an agitator, the Construction Manager shall have a standby pump available on the project for agitating the lime and water as required by the Engineer in case of undue delays in dispersing the slurry.
- h. Mixing.
  - 1) The mixing procedure shall be the same for "Dry Placing" or "Slurry Placing" as herein described.
  - 2) During the interval between application and mixing, hydrated lime that has been exposed to the open air for a period of six (6) hours or more or to excessive loss due to washing or blowing will not be accepted for payment.
  - 3) The material and lime shall be thoroughly mixed by equipment approved by the Engineer. The material and lime shall be brought to the proper moisture content and may be left to cure one (1) to four (4) days as approved by the

- Engineer or the mixing continued until a homogeneous friable mixture of material and lime is obtained.
- 4) When shown on the plans or approved by the Engineer, the pulverization requirement may be waived when the material contains a substantial quantity of aggregate.
  - 5) Following mixing, a sample of the material at roadway moisture will be obtained for pulverization testing. All non-slaking aggregates retained on the 3/4-inch sieve will be removed from the sample. The remainder of the material shall meet the following pulverization requirement when tested by Test Method ASTM D422:
    - a) Minimum passing 1-3/4" sieve .....100
    - b) Minimum passing 3/4" sieve .....85
- i. Compaction Methods.
- 1) Prior to compaction, the material shall be aerated or sprinkled as necessary to provide the optimum moisture. Compaction of the mixture shall begin immediately after the pulverization requirement is met.
  - 2) Compaction shall continue until the entire depth of the mixture is uniformly compacted by "Ordinary Compaction" or "Density Control" as shown on the plans. 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 sections, lines and grades as shown on the plans or as established by the Engineer.
  - 3) When shown on the plans or approved by the Engineer, multiple lifts will be permitted.
  - 4) Ordinary Compaction. When "Ordinary Compaction" is shown on the plans the following provisions shall apply:
    - a) The material shall be sprinkled and rolled as directed by the Engineer. All irregularities, depressions or weak spots which develop shall be corrected immediately by scarifying the areas affected, adding or removing material as required, reshaping and recompacting by sprinkling and rolling.
    - b) Should the material lose the required stability, compaction or finish before the next course is placed or the project is accepted, it shall be reworked in accordance with section 6 below. However, compaction shall be in accordance with "Ordinary Compaction".
  - 5) Density Control. When "Density Control" is shown on the plans the following provisions shall apply:
    - a) Unless otherwise shown on the plans, each course shall be sprinkled as required and compacted to the extent necessary to provide not less than 98 percent of the optimum density as determined by Test Method ASTM

- D698. Roadway density testing will be as outlined in Test Method ASTM D1556.
- b) When the material fails to meet the density requirements, or should the material lose the required stability, density or finish before the next course is placed, or the project is accepted, it shall be reworked in accordance with section 6 below.
- 6) Reworking a Section. When a section is reworked within 72 hours after completion of compaction, the Construction Manager shall rework the section to provide the required compaction. When a section is reworked more than 72 hours after completion of compaction, the Construction Manager shall add 25 percent of the specified rate of lime. Reworking shall include loosening, road mixing as approved by the Engineer, compacting, and finishing. When a section is reworked, a new optimum density will be determined from the reworked material in accordance with Test Method ASTM D698.
  - 7) Finishing and Curing.
    - a) After the final layer or course of the lime treated material has been compacted, it shall be brought to the required lines and grades in accordance with the typical sections.
    - b) The completed section shall then be finished by rolling with a pneumatic tire or other suitable roller as approved by the Engineer. The completed section shall be moist cured or prevented from drying by addition of an asphalt material at the rate of 0.05 to 0.20 gallons per square yard as determined by the Engineer. This material shall be the type shown on the plans. Curing shall continue for seven (7) days before further courses are added or traffic is permitted, unless otherwise approved by the Engineer.
    - c) However, the lime treated material may be covered by other courses, the day following finishing, when approved by the Engineer. When the plans provide for the treated material to be covered by other courses of material, the next course shall be applied within 14 calendar days after final compaction is completed, unless otherwise approved by the Engineer.
  - 8) Tolerances. Tolerances shall conform to the following:
    - a) Density Tolerances. The Engineer may accept the work providing not more than one (1) out of the most recent five (5) density tests performed is below the specified density, provided the failing test is no more than three (3.0) pounds per cubic foot below the specified density.

- b) Grade Tolerances. Any deviation in excess of 0.1 foot in cross section and 0.1 foot in 16 feet measured longitudinally shall be corrected by loosening, adding or removing the material, reshaping and recompacting by sprinkling and rolling.
  - G. The subgrade moisture content and density will be maintained until construction is complete.
  - H. Water will not be allowed to collect in or near foundation areas, pavement areas or floor slab areas during or after construction. Care will be taken to ensure that water is not allowed to collect in natural or fill soils beneath or around the structures and pavement areas.
  - I. Excavations and undercut areas will be protected from changes in moisture content.
  - J. The Construction Manager shall have on site portable pumps and appropriate appurtenances for ensuring water ponding does not occur.
- 3.2 FIELD QUALITY CONTROL
- A. Testing Service: Engage a qualified independent testing agency to perform materials evaluation tests and to design mixtures.
  - B. Testing of subgrade operations shall conform to the Geotechnical Report as outlined in Excavation and Fill.

**END OF SECTION**

**SECTION 32 11 23  
AGGREGATE BASE COURSES**

**PART 1 - GENERAL**

1.1 SUMMARY

- A. Section includes furnishing and installing flexible base for curbs and gutters, roadways, and parking areas as shown and detailed on the Drawings

1.2 RELATED WORK

- A. Related Work of Other Sections:
  - 1. Section 31 00 00 – Site Earthwork
  - 2. Section 31 23 13 – Subgrade Preparation
  - 3. Section 32 12 16 – Asphalt Paving

1.3 REFERENCES

- A. American Society of Testing and Materials (ASTM), 1916 Race Street, Philadelphia, Pennsylvania 19103. All references shall be to current active standard.
  - 1. ASTM C117 – Standard Test Method for Materials Finer than 75-um (No. 200) Sieve in Mineral Aggregates by Washing.
  - 2. ASTM D75 – Standard Practice for Sampling Aggregates.
  - 3. ASTM D422 – Standard Test Method for Particle Size Analysis of Soils.
  - 4. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
  - 5. ASTM D2216 – Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.
  - 6. ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
  - 7. ASTM D4318 – Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
  - 8. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
- B. Texas Department of Transportation (TxDOT), 125 East 11<sup>th</sup> Street, Austin, Texas 78701.
  - 1. Tex-116-E – Ball Mill Method for Determining the Disintegration of Flexible Base Material
  - 2. Tex-117-E – Triaxial Compression for Disturbed Soils and Base Materials
  - 3. Tex-140-E – Measuring Thickness of Pavement Layer

1.4 SUBMITTALS

- A. Test Reports: Submit two (2) copies of test reports of the physical properties of base material for review and approval by the Owner's Representative.

- B. Laboratory analysis of each base course material proposed demonstrating compliance with the requirements listed below in 2.1A. Utilize the following ASTM and TxDOT standard laboratory test procedures:
  1. Moisture Content (ASTM D2216)
  2. Liquid Limit (ASTM D4318)
  3. Plasticity Index (ASTM D4318)
  4. Sieve Analysis (ASTM D422)
  5. Moisture-Density Determination (ASTM D1557)
  6. Roadway Density (ASTM D6938)
  7. Wet Ball Mill (Tex-116-E)
  8. Compressive Strength (Tex-117-E)

1.5 QUALITY ASSURANCE

- A. Obtain materials from same source throughout.
- B. Take samples for laboratory testing in conformance with ASTM D75.
- C. One optimum moisture-maximum density curve from proposed material.

**PART 2 - PRODUCTS**

2.1 BASE COURSE

- A. Type A Base Course – Type A material shall be crushed stone produced and graded from oversize quarried aggregate that originates from a single, naturally occurring source. Crushed gravel or uncrushed gravel shall not be acceptable A material. No blending of sources and/or additive materials will be allowed in material.
- B. Type E Base Course – Caliche.
- C. Base Course material shall meet the following criteria:

Property	Test Method	Grade 1-2
Master Gradation Sieve Size (% Retained)		
2-1/2"		-
1-3/4"		0-10
7/8"	ASTM D422	10-35
3/8"		30-65
No. 4		45-75
No. 40		65-90
Liquid Limit (% Max.)	STM D4318	40
Plasticity Index (Max.)	STM D4318	10
Wet Ball Mill (% Max.)	Tex-116-E	40
Wet Ball Mill (% Max. Increase Passing No. 40 Sieve)	Tex-116-E	20
Minimum Compressive Strength (psi)		
Lateral Pressure 0 psi	Tex-117-E	35
Lateral Pressure 15 psi	Tex-117-E	175

- 1. The Engineer may accept material if no more than one (1) of the five (5) most recent gradation tests has an individual sieve outside the specified limits of the gradation.

2. The Engineer may accept material if no more than one (1) of the five (5) most recent plasticity index tests is outside the specified limit. No single test may exceed the allowable limit by more than 2 points.

### **PART 3 - EXECUTION**

#### **3.1 GENERAL**

- A. The Contractor shall provide and set all construction stakes as required by a Registered Professional Land Surveyor for the work required. All stakes shall be checked for conformity with the drawings and existing conditions. After approval of lines and grades the Contractor shall protect and maintain the approved stakes until they have served their purpose. Blue tops shall be set by the Contractor for subgrade on centerline, quarter points, and curb lines at intervals not exceeding 50 feet or 25 feet within curves.
- B. The subgrade shall have been compacted to a minimum of 95 percent density, to the typical sections, lines and grades shown on the drawings. The Contractor shall verify that the subgrade has been prepared and compacted in accordance with Section 31 23 13 by proof rolling. Any deviation shall be corrected and proof rolled prior to placement of aggregate, and must be approved by the Owner's Representative. As soon as possible after the acceptance of the condition of the subgrade, the base course shall be installed.

#### **3.2 PLACEMENT**

- A. Placing: Flexible base shall be placed in eight inch (8") courses maximum and in accordance with the following:
  1. First Course:
    - a. It shall be the responsibility of the Contractor to deliver the required amount of base material to each 100-foot station. Base material shall be spread uniformly and shaped the same day as delivered. In the event inclement weather or other unforeseen circumstances render this impractical, the material shall be shaped as soon as practical.
    - b. Prior to compacting the flexible base, the flexible base material shall be bladed and shaped to conform to the typical sections as shown on the plans. All areas of segregated coarse or fine material shall be corrected or removed and replaced with well-graded material, as directed by the Engineer and at the Contractor's expense.
    - c. The Contractor shall sprinkle for dust control as directed by the Engineer.
  2. Succeeding or Finish Courses:
    - a. Construction methods shall be the same as required for the first course. Throughout this entire operation, the shape of each course shall be maintained by blading. Upon completion, the surface shall be smooth and in conformity with the typical section



as shown on the plans and the established lines and grades. Prior to placing the surfacing on the completed base, the base shall be cured to the extent directed by the Engineer.

3. Compaction Method:
  - a. The flexible base shall be compacted to a minimum of 98% of the maximum dry density as determined by the modified Proctor test (ASTM D1557) and the moisture content shall be within plus or minus 1.5% of the optimum moisture content.
  - b. When the material fails to meet the density requirements, or it loses the required stability, density or finish before the next course is placed or the project is completed, it shall be reworked and retested in accordance with Section 3.2.A.4, below
4. Reworking a Section:
  - a. Should the base course, due to any reason or cause, lose the required stability, density or finish before the surfacing is complete; it shall be reworked, recompacted and refinished at the sole expense of the Contractor.
5. Tolerances shall conform to the following:
  - a. Density Tolerances. The Engineer may accept the work providing not more than one (1) out of the most recent five (5) consecutive density tests performed is below the specified density, and providing that the failing test is no more than three (3.0) pounds per cubic foot below the specified density.
  - b. Grade Tolerances. In areas on which surfacing is to be placed, any deviation in excess of 1/4 inch in cross section or 1/4 inch in a length of 16 feet measured longitudinally shall be corrected by loosening, adding or removing material, reshaping and recompacting by sprinkling and rolling.
  - c. Thickness Measurement. When the measurement is by the square yard, the flexible base will be measured for depth in units of 4000 square yards, or fraction thereof. The measurements will be at location(s) determined by the Engineer and performed in accordance with Test Method Tex-140-E. In any unit where flexible base is deficient by more than 1/2 inch in thickness, the deficiency shall be corrected by scarifying, adding material as required, reshaping, recompacting and refishing at the Contractor's expense.

B. Spreading

1. Flexible base material deposited upon the prepared subgrade shall be spread, shaped and rolled the same day if possible. If not possible to do this within the first twenty-four hours (24), delay shall be held to a minimum. The base shall be wetted, bladed and rolled to achieve at least 98% compaction as determined by ASTM D1557. If the material fails to meet the density specified, it shall be re-worked as necessary to meet the density required.

C. Deviation

1. Any deviation in the finish surface in excess of 1/4" in cross-section or removing material, reshaping and recompacting by sprinkling or rolling. Any re-working of the base course required to conform to these specifications shall be at the cost of the Contractor.

3.3 QUALITY CONTROL TESTING

- A. Inspect and test each lift of base course. Do not place base for subsequent lifts until test results for the previously placed lift verify compliance with compaction requirements.
- B. Perform field density tests in accordance with ASTM D6938.
- C. Perform at least one field in-place density test for every 500 square feet, in no case shall be less than three (3) tests for any base course placement.
- D. Moisture-Density Relationship: One test of a representative sample of each day's delivery.

END OF SECTION

## **SECTION 32 12 16 ASPHALT PAVING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. The Terms and Conditions of the Contract, including Supplementary and Special Conditions of the Contract, and the Drawings apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes furnishing and installing asphalt concrete paving including prime coat, tack coats, and related work as shown and detailed on the Drawings.

#### **1.3 RELATED WORK**

- A. Related work of other Sections includes:
  - 1. Section 31 00 00 – Site Earthwork
  - 2. Section 32 11 23 – Aggregate Base Courses

#### **1.4 DEFINITIONS**

- A. Prime Coat – Prime coat is an asphalt binder applied to the finished base material to provide some waterproofing and to enable it to bond to a subsequent pavement layer (surface treatment or hot mix asphalt).
- B. Tack Coat – Tack coat is applied as a binder between layers of hot mix asphalt.

#### **1.5 ACRONYMS**

- A. AE-P – Asphalt Emulsion Prime
- B. CSS – Cationic Slow Setting
- C. EAP&T – Emulsified Asphalt Prime and Tack
- D. H (suffix) – Harder Residue (lower penetration)
- E. MC – Medium Curing
- F. PCE – Prime, Cure and Erosion Control
- G. SS – Slow Setting

#### **1.6 REFERENCES**

- A. ASTM: American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103, U.S.A. All references shall be to current active standard.
  - 1. ASTM D946 – Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction
  - 2. ASTM D977 – Standard Specification for Emulsified Asphalt
  - 3. ASTM D2027 – Standard Specification for Cutback Asphalt (Medium-Curing Type)
  - 4. ASTM D2397 – Standard Specification for Cationic Emulsified Asphalt
- B. TxDOT: Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges, TxDOT 2004 edition
  - 1. TxDOT Item 300 – Asphalts, Oils, and Emulsions
  - 2. TxDOT Item 340 – Dense-Graded Hot-Mix Asphalt

#### **1.7 SUBMITTALS**

- A. Contractor shall certify the mixing plant will conform to the requirements of TxDOT Item 340.

- B. Mix design reports for Type D mixture in accordance with TxDOT Method Tex-204-F.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Asphaltic Concrete Material shall be hauled in tight trucks previously cleaned of all dirt and foreign material with the load completely covered by canvas.

**PART 2 - PRODUCTS**

2.1 PRIME COAT

- A. Provide material meeting the requirements of one of the following:
  1. MC-30 in accordance with ASTM D2027.
  2. AE-P meeting the requirements of TxDOT Item 300.
  3. EAP&T meeting the requirements of TxDOT Item 300.
  4. PCE meeting the requirements of TxDOT Item 300.

2.2 TACK COAT

- A. Provide material meeting the requirements of one of the following:
  1. ASTM D977 emulsified asphalt, or ASTM D2397 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.
  2. CSS-1H meeting the requirements of TxDOT Item 300.
  3. EAP&T meeting the requirements of TxDOT Item 300.
  4. SS-1H meeting the requirements of TxDOT Item 300.

2.3 HOT MIX ASPHALTIC CONCRETE SURFACE COURSE

- A. The asphaltic concrete surface course shall be plant mixed, hot laid TxDOT Item 340 Type D (Fine Graded Surface Course) meeting the master specifications requirements in listed below. The mix is to be designed for a stability of 40 (minimum) when tested in accordance with TxDOT Test Method Tex-208-F. The asphalt cement content by percent of total mixture weight shall fall within a tolerance of -0.2 to +0.4 percent asphalt cement from the specific mix. The grade of asphalt cement shall be PG 64-22, ASTM D946. In addition, the mix shall be designed so that 75 to 85 percent of the voids in the mineral aggregate (VMA) are filled with asphalt cement. The coarse aggregate shall be crushed limestone, not gravel. Aggregates known to be prone to stripping should not be used in the hot mix. The mix shall have at least 70 percent strength retention when tested in accordance with Tex-531-C.

Master Gradation Bands (% Passing by Weight or Volume)	
Sieve Size	% Passing
3/4"	-
1/2"	98.0 – 100.0
3/8"	85.0 – 100.0
#4	50.0 – 70.0
#8	35.0 – 46.0
#30	15.0 – 29.0
#50	7.0 – 20.0
#200	2.0 – 7.0

2.4 HOT MIX ASPHALTIC CONCRETE BASE COURSE

- A. The asphaltic concrete base course shall be plant mixed, hot laid TxDOT Item 340 Type A (Coarse Base) or Type B (Fine Base) meeting the master specifications requirements in listed below. The mix is to be designed for a stability of 40 (minimum) when tested in accordance with TxDOT Test Method Tex-208-F. The asphalt cement content by percent of total mixture weight shall fall within a tolerance of -0.2 to +0.4 percent asphalt cement from the specific mix. The grade of asphalt cement shall be PG 64-22, ASTM D946. In addition, the mix shall be designed so to have a minimum 12.0 (Type A) or 13.0 (Type B) percent voids in mineral aggregate (VMA). Aggregates known to be prone to stripping should not be used in the hot mix. The mix shall have at least 70 percent strength retention when tested in accordance with Tex-531-C.

Type A Master Gradation Bands (% Passing by Weight or Volume)	
Sieve Size	% Passing
1 1/2"	98.0 – 100.00
1"	78.0 – 94.0
3/4"	64.0 – 85.0
1/2"	50.0 – 70.0
3/8"	-
#4	30.0 – 50.0
#8	22.0 – 36.0
#30	8.0 – 23.0
#50	3.0 – 19.0
#200	2.0 – 7.0
Type B Master Gradation Bands (% Passing by Weight or Volume)	
Sieve Size	% Passing
1 1/2"	-
1"	98.0 – 100.0
3/4"	84.0 – 98.0
1/2"	-
3/8"	60.0 – 80.0
#4	40.0 – 60.0
#8	29.0 – 43.0
#30	13.0 – 28.0
#50	6.0 – 20.0
#200	2.0 – 7.0

2.5 EQUIPMENT

- A. All equipment shall comply with the requirements below:

1. Asphalt Paver: Furnish a paver that will produce a finished surface that meets longitudinal and transverse profile, typical section, and placement requirements. Ensure paver does not support the weight of any portion of hauling equipment other than the connection. Provide loading equipment that does not transmit vibration or other motions to the paver that adversely affect the finished pavement quality. Equip the paver with an automatic, dual, longitudinal-grade control system and an automatic, transverse-grade control system
2. Tractor Unit: Supply tractor unit that can push or propel vehicles, dumping directly into the finishing machine to obtain the desired lines and grades to eliminate any hand finishing. Equip the unit with a hitch sufficient to maintain contact between the hauling equipment's rear wheels and the finishing machine's pusher rollers while mixture is unloaded.
3. Screed: Provide a heated compacting screed that will produce a finished surface that meets longitudinal and transverse profile, typical section, and placement requirements. Screed extensions must provide the same compacting action and heating as the main unit unless otherwise approved
4. Grade Reference: Provide a grade reference with enough support that the maximum deflection does not exceed 1/16 in. between supports. Ensure that the longitudinal controls can operate from any longitudinal grade reference including a string line, ski, mobile string line, or matching shoes. Furnish paver skis or mobile string line at least 40 ft. long unless otherwise approved
5. Material Transfer Devices: Ensure the devices provide a continuous, uniform mixture flow to the asphalt paver,
6. Remixing: When required, provide equipment that includes a pug mill, variable pitch augers, or variable diameter augers operating under a storage unit with a minimum capacity of 8 tons.
7. Motor Grader: When allowed, provide a self-propelled grader with a blade length of at least 12 ft. and a wheelbase of at least 16 ft.
8. Handheld Infrared Thermometer: Provide a handheld infrared thermometer meeting the requirements of Tex-244-F.
9. Straightedges and Templates: Furnish 10 ft. straightedges and other templates as required or approved.
10. Coring Equipment: When coring is required, provide equipment suitable to obtain a pavement specimen meeting the dimensions for testing.
11. Rollers:

- a. Pneumatic Tire Rollers – Pneumatic tire rollers consist of rubber wheels on axels mounted in a frame with either a loading platform or body suitable for ballast loading. Arrange the rear tires to cover the gapes between adjacent tires of the forward group. Furnish rollers capable of forward and backward motion, Compact asphalt pavements and surface treatments with a roller equipped with smooth-tread tires. Compact without damaging the surface. When necessary, moisten the wheels with water or an approved asphalt release agent. Select and maintain the operating load and tire pressure within the range of the manufacturer’s charts or tabulations to attain maximum compaction. Furnish the manufacturer’s charts or tabulations showing the contact areas and contact pressures for the full range of loadings for the particular tires furnished. Maintain individual tire inflation pressures within 5 psi of each other. Provide uniform compression under all tires

### **PART 3 - EXECUTION**

#### **3.1 INSPECTION**

- A. Proof-roll prepared subbase and base course surfaces to check for unstable areas and areas requiring additional compaction or which have become wet beyond acceptable limits. Do not begin paving work until deficient areas have been corrected and are ready to receive paving.

#### **3.2 PRIME COAT**

- A. Conditions
  1. Prime coat shall not be applied when the air temperature is below 60 degrees F and falling, but it may be applied when the temperature is above 50 degrees F and is rising; the air temperature being taken in the shade and away from artificial heat.
- B. Preparation
  1. Clean the surface by sweeping with a vacuum sweeper or other approved methods as directed by the Engineer
- C. Application
  1. Apply with an approved sprayer. Prime coat shall be applied at a rate not to exceed 0.20 gallons per square yard over compacted base material, smoothly and evenly, and shall be cured for 24 hours minimum. During the application of prime coat care shall be taken to prevent splattering of adjacent pavement, curbs, gutters or structures.

#### **3.3 TACK COAT**

- A. Maximum Lift Thickness – if the proposed hot mix asphalt thickness exceeds the maximums listed below, it will be installed in multiple lifts with tack coat applied between the lifts:
  1. Type A: 6.0”
  2. Type B: 5.0”
  3. Type D: 3.0”
- B. Preparation

1. Clean the surface by sweeping with a vacuum sweeper or other approved methods as directed by the Engineer.
- C. Application
1. Apply with an approved sprayer. Tack coat shall be applied at a rate not to exceed 0.10 gallons per square yard over the surface, smoothly and evenly. All contact surfaces of curbs and surfaces and all joints shall be painted with a thin uniform coat of the tack coat material. During the application of prime coat care shall be taken to prevent splattering of adjacent pavement, curbs, gutters or structures.
- 3.4 SURFACE COURSE
- A. Conditions
1. The asphaltic mixture, when placed with a spreading and finishing machine, or the tack coat shall be placed when the air temperature is at least 50 degrees F.
  2. The asphaltic mixture, when placed with a motor grader, shall not be placed when the air temperature is below 55 degrees F and is falling, but may be placed when the air temperature is above 45 degrees F and is rising.
  3. The air temperature shall be taken in the shade and away from artificial heat.
  4. If, after being discharged from the mixer and prior to placing, the temperature of the asphaltic mixture falls below 200 degrees F, it will be rejected.
- B. The surface course shall be the thickness as shown on the drawings and spread in lifts with a maximum thickness of 3.0". Spread the lift in such a manner that when compacted, the finished course will be smooth, of uniform density, and to section, line and grade as shown on the drawings. All surface course placement shall meet the requirements of TxDOT Item 300.
- 3.5 ROLLING
- A. A Troxler nuclear density gauge shall be used to determine rolling pattern.
- B. Begin rolling while pavement is still hot and as soon as it will bear the roller without undue displacement or hair cracking. To prevent adhesion of surface mixture to the roller, keep wheels properly moistened with water. Excessive use of water will not be permitted. Complete compaction before mix temperature cools to 185 degrees F.
- C. Compress the surface thoroughly and uniformly, first with power-driven, 3-wheel, or tandem rollers weighing a minimum of 12 tons. Obtain subsequent compression by starting at the side and rolling longitudinally toward the center of the pavement, overlapping on successive trips by at least on-half width of rear wheels. Make alternate trips slightly different in length. Continue rolling until not further compression can be obtained and all rolling marks are eliminated.
- D. Use a tandem roller for the final rolling. Double coverage with an approved pneumatic roller on asphaltic concrete surface is acceptable after flat wheel and tandem rolling has been completed.



- E. All rolling compaction shall be completed before the mixture temperature drops below 175 degrees F.
- 3.6 HAND TAMPING
  - A. Along walls, curbs, headers and similar structures, and in all locations not accessible to rollers, compact the mixture thoroughly with a vibrating plate compactor
- 3.7 DENSITY
  - A. Compact the surface course to the density between 91 and 95 percent of the maximum theoretical density as measured by TEX-207-F. If, during the construction, the results of density tests show that either the compacted base course, binder course or surface course has a density less than specified, an additional rolling with a 3-wheel or pneumatic roller will be required. Such a rolling shall be done before the mix cools if it is to be successful.
- 3.8 SURFACE TESTS
  - A. The Contractor shall conduct surface testing. The completed surface, when tested with a 10-foot straightedge laid parallel to the center line of the pavement, shall show no deviation in excess of 3/16 inch per foot from the nearest point of contact. The maximum ordinate measured from the face of the straightedge shall not exceed 1/4 inch at any point. Furnish approved templates for checking subgrade in finished sections. The strength and rigidity of templates shall be such that if a support is transferred to center, no deflection in excess of 1/8 inch will be observed.
- 3.9 CONSTRUCTION JOINTS
  - A. Place courses as nearly continuously as possible. Pass the roller over unprotected ends of the freshly laid mixture only when the mixture has become chilled. When work is resumed, cut back the laid material to produce a slightly beveled edge for the full thickness of the course. Remove old material which has been cut away and lay the new mix against the fresh cut.
- 3.10 DEFECTIVE PAVEMENT
  - A. Recompact pavement sections not meeting specified densities or replace them with new asphaltic concrete material. Replace with new material section of surface course pavement not meeting surface test requirements or having an unacceptable surface texture. Patch asphalt pavement sections in accordance with procedures established by the Asphalt Institute. Replace asphalt pavement sections which did not meet the specifications.
- 3.11 DEFICIENT SURFACE THICKNESS
  - A. Any area of asphalt surface found deficient in thickness by more than 0.25 inches, and if low and causing ponding, shall be removed and replaced, at the Contractor's expense, with asphalt surface of the thickness shown on the drawings. Care should be taken not to damage or remove the pavement below the asphalt surface. Should damage to the pavement below the asphalt surface occur, it shall also be removed and replaced at the Contractor's expense
  - B. No additional payment over the contract price will be made for any asphalt surface of a thickness exceeding that required by the drawings.
- 3.12 QUALITY CONTROL TESTING

- A. Perform document and report the following quality control tests:
  - 1. Bulk specific gravity tests of the in-place, compacted bituminous mixtures in accordance with TxDOT Test Method Tex-207-F, Part I.
  - 2. For Type D mixture take three (3) cores for each 500 tons placed.

END OF SECTION

## SECTION 32 13 13 - CONCRETE PAVING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section includes:
  - 1. Driveways.
  - 2. Roadways.
  - 3. Parking lots.
  - 4. Curbs and gutters.
  - 5. Walks.
- B. Related Sections:
  - 1. Section 01 43 00 – Quality Assurance
  - 2. Section 01 45 00 – Quality Control
  - 3. Section 03 30 00 – Cast-In-Place Concrete
  - 4. Section 31 00 00 – Site Earthwork
  - 5. Section 31 11 00 – Clearing and Grubbing
  - 6. Section 31 23 13 – Subgrade Preparation

#### 1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

#### 1.4 REFERENCES

- A. Geotechnical Report
- B. AASHTO: American Association of State Highway and Transportation Officials, 444 N Capitol St. NW, Suite 249, Washington, DC 20001. All references are to current active publication.
  - 1. AASHTO M182 – Standard Specification for Burlap Cloth Made from Jute or Kenaf and Cotton Mats.
- C. ACI: American Concrete Institute, 38800 Country Club Drive, Farmington Hills, Michigan 48331, USA. All references shall be to current active publication.
  - 1. ACI 117 – Specification for Tolerances for Concrete Construction and Materials.
  - 2. ACI 301 – Specifications for Structural Concrete.
  - 3. ACI 306 – Guide to Cold Weather Concreting.
  - 4. ACI 315 – Manual of Standard Practices for Detailing Reinforced Concrete Structures.
  - 5. ACI 325 – Guide for Design of Jointed Concrete Pavements for Streets and Local Roads
  - 6. ACI 330 – Guide for Design and Construction of Concrete Parking Lots.
- D. ASTM: American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103, USA. All references shall be to current active standard.
  - 1. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
  - 2. ASTM A775 – Standard Specification for Epoxy-Coated Steel Reinforcing Bars.

3. ASTM C31 – Standard Practice for Making and Curing Concrete Test Specimens in the Field.
4. ASTM C33 – Standard Specification for Concrete Aggregates.
5. ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
6. ASTM C94 – Standard Specification for Ready-Mixed Concrete.
7. ASTM C143 – Standard Test Method for Slump of Hydraulic Cement Concrete.
8. ASTM C150 – Standard Specification for Portland Cement.
9. ASTM C171 – Standard Specification for Sheet Materials for Curing Concrete.
10. ASTM C172 – Standard Practice for Sampling Freshly Mixed Concrete.
11. ASTM C231 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
12. ASTM C260 – Standard Specification for Air-Entraining Admixtures for Concrete.
13. ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
14. ASTM C494 – Standard Specification for Chemical Admixtures for Concrete.
15. ASTM C618 – Standard Specification for Coal Fly Ash and Raw or Natural Pozzolan for Use in Concrete.
16. ASTM C873 – Standard Test Method for Compressive Strength of Concrete Cylinders Cast in Place in Cylindrical Molds.
17. ASTM C881 – Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
18. ASTM C979 – Standard Specification for Pigments for Integrally Colored Concrete.
19. ASTM C989 – Standard Specification for Slag Cement for Use in Concrete and Mortars.
20. ASTM C1017 – Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
21. ASTM C1059 – Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete.
22. ASTM C1064 – Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
23. ASTM C1116 – Standard Specification for Fiber-Reinforced Concrete.
24. ASTM D1751 – Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

#### 1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Indicate joint layout, pavement markings, lane separations, and defined parking spaces.
- C. Other Action Submittals:
  1. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

- D. Reinforcement: Submit shop drawing for fabrication, bending and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures". Show bar schedules, stirrup spacing, diagrams of bent bars, and arrangements of reinforcement. Include special reinforcement required at openings through concrete construction and locations of construction joints not indicated on the Drawings.
- E. Material Certificates: For the following, from manufacturer:
  - 1. Cementitious materials.
  - 2. Steel reinforcement and reinforcement accessories.
  - 3. Fiber reinforcement.
  - 4. Admixtures.
  - 5. Curing compounds.
  - 6. Applied finish materials.
  - 7. Bonding agent or epoxy adhesive.
  - 8. Joint fillers.
- F. Material Test Reports: For each of the following:
  - 1. Aggregates.
- G. Field quality-control reports.
- H. Submit in accordance with TPWD DIVISION 1 - SECTION 01000 - SPECIAL CONDITIONS SECTION 1.09 SUBMITTALS and UGC Article 8.

#### 1.6 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.
- B. ACI Publications: Comply with ACI 301 unless otherwise indicated.
- C. Pre-installation Conference: Conduct conference at Project site.
  - 1. Review methods and procedures related to concrete paving, including but not limited to, the following:
    - a. Concrete mixture design.
    - b. Quality control of concrete materials and concrete paving construction practices.
  - 2. Require representatives of each entity directly concerned with concrete paving to attend, including the following:
    - a. Contractor's superintendent.
    - b. Independent testing agency responsible for concrete design mixtures.
    - c. Concrete paving subcontractor.
- D. QUALITY ASSURANCE in accordance with TPWD DIVISION 1 - SECTION 01000 - SPECIAL CONDITIONS SECTION 1.10 QUALITY ASSURANCE AND UGC Article 8.

#### 1.7 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities

#### 1.8 DELIVERY, STORAGE AND HANDLING

- A. All requirements for storage of materials, conveying, depositing, temperature for placing and protecting as specified under Section 03 30 00 shall apply to the concrete work performed under this section.

### PART 2 - PRODUCTS

#### 2.1 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.
  2. Curb and gutter outside forms shall have a height equal to the full depth of the curb or gutter. The inside form of curb shall have batter as indicated and shall be securely fastened to and supported by the outside form. Rigid forms shall be provided for curb returns, except that benders or thin plank forms may be used for curb or curb returns with a radius of 10 feet or more, where grade changes occur in the return, or where the central angle is such that a rigid form with a central angle of 90 degrees cannot be used. Back forms for curb returns may be made of 1-1/2 inch benders, for the full height of the curb, cleated together. In lieu of inside forms for curbs, a curb "mule" may be used for forming and finishing this surface, provided the results are approved
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

## 2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: Deformed steel bars, ASTM A615, Grade 60.
- B. Joint Dowel Bars: ASTM A615, Grade 60, unless otherwise noted. Cut bars true to length with ends square and free of burrs.
- C. Epoxy-Coated Joint Dowel Bars: ASTM A775; with ASTM A615, Grade 60, plain-steel bars
- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
  1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
  2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

## 2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of same type, brand, and source throughout Project:
  1. Portland Cement: ASTM C150, [gray] [white] Portland cement Type I/II. Supplement with the following:
  2. Fly Ash: ASTM C618, Class F
  3. Ground Granulated Blast-Furnace Slag: ASTM C989, Grade 100 or 120.
- B. Normal Weight Aggregates: ASTM C33, Class 4S, uniformly graded. Provide aggregates from a single source with documented service record data of at least 10 years satisfactory service in similar paving application and service conditions using similar aggregates and cementitious materials. -
  1. Maximum Coarse-Aggregate Size:
  2. Paving: 1-1/2 inches nominal.
  3. Curb and Sidewalk: 1 inch nominal.
  4. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement
- C. Exposed Aggregate: Selected, hard, and durable; washed; free of materials with deleterious reactivity to cement or that cause staining; from a single source, with gap-graded coarse aggregate as follows:
  1. Aggregate Sizes: 1/2 to 3/4 inch nominal.

2. Aggregate Source, Shape, and Color: Reference Architectural.
- D. Water: Potable and complying with ASTM C94.
- E. Air-Entraining Admixture: ASTM C260.
- F. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain no more than 0.1 percent water-soluble chloride ions by mass of cementitious material:
  1. Water-Reducing Admixture: ASTM C494, Type A.
  2. Retarding Admixture: ASTM C494, Type B.
  3. Water-Reducing and Retarding Admixture: ASTM C494, Type D.
  4. High-Range, Water-Reducing Admixture: ASTM C494, Type F.
  5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494, Type G.
  6. Plasticizing and Retarding Admixture: ASTM C1017, Type II
- G. Color Pigment: ASTM C979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.
  1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    2. ChemMasters.
    3. Davis Colors.
    4. Dayton Superior Corporation.
    5. Elementis Pigments.
    6. Hoover Color Corporation.
    7. Lambert Corporation.
    8. LANXESS Corporation.
    9. QC Construction Products.
    10. Scofield, L.M. Company.
    11. Solomon Colors, Inc.
    12. Stampcrete International, Ltd.
    13. SureCrete Design Products.
  14. Color: As selected by Architect from manufacturer's full range.

#### 2.4 FIBER REINFORCEMENT

- A. Synthetic Fiber: Monofilament or fibrillated polypropylene fibers engineered and designed for use in concrete paving, complying with ASTM C1116, Type III, 1/2 to 1-1/2 inches long.
  1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  2. Monofilament Fibers:
    - 1) Axim Concrete Technologies; Fibrasol IIP.
    - 2) Euclid Chemical Company (The); Fiberstrand 100.
    - 3) FORTA Corporation; Forta Mono.
    - 4) Grace Construction Products, W. R. Grace & Co.; Grace MicroFiber.
    - 5) Metalcrete Industries; Polystrand 1000.
    - 6) SI Concrete Systems; Fibermix Stealth
  3. Fibrillated Fibers:
    - 1) Axim Concrete Technologies; Fibrasol F.
    - 2) Euclid Chemical Company (The); Fiberstrand F.
    - 3) FORTA Corporation; Forta.

- 4) Grace Construction Products, W. R. Grace & Co.; Grace Fibers.
- 5) SI Concrete Systems; Fibermer

## 2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- B. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.
  1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Conspec Co.: Aquafilm.
    - b. Concrete Chemicals, Inc.: CCI Evaporation Retardant.
    - c. Contractors Paving Supply: CPSI-ER.
    - d. Euclid Chemical Company: Eucobar
    - e. L&M Construction Chemicals, Inc.: E-Con.
    - f. Master Builders: MasterKure ER 50.
    - g. Nox-Crete: Nox-Crete Monofilm.
    - h. Poly-Tuff System: TuffAid Evaporative Retarder & Finishing Aid.
    - i. Sika Corp.: SikaFilm.
    - j. Spec Chem: SpecFilm (RTU & Concentrate).
    - k. Texas Polymer Systems: TPS ER.
    - l. US SPEC: Monofilm ER.
    - m. Vexon Chemicals: Certi-Vex Envio Assist.
    - n. W.R. Meadows: Evapre-RTU and Sealtight Evapre.
- E. Liquid Membrane-Forming Concrete Curing Compound: ASTM C309. Type 1D or Type 2 Class A.
  1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Bona US: Type II, code: 309.
    - b. Concrete Paving Solutions: Type I-D, code 1140.
    - c. Dayton Superior: Type I, code: Resin Cure w/dye J11WD; Type II, code: White Resin Cure TX; and Type II, code: Texas WWC J9A.
    - d. Hunt Process Corp.: Type II, code: WTX; and Type II, code: WWTX1 White Wax Cure.
    - e. Prime Eco Group: Type I-D, code: TID-300; Type II, code TSC-100; and Type II, code: Eco1000.
    - f. Right Pointe: Type II, code: White Water Resin; and Type II White Water Wax Cure.
    - g. Spec Chem: Type I-D, code: Pave Cure Rez Clear-TX; Type II, code: Pave Cure Rez White-TX; and Type II, code: PCWW-1 Wax.
    - h. Texas Polymer Systems: Type I, code: Clear Cure; and Type II, code: White Cure.
    - i. W.R. Meadows: Type I-D, code: 1140 SEALTITE 1310; Type II, code: 1240; and Type II, code: 1600 series (1610 white).

## 2.6 RELATED MATERIALS

- A. Joint Fillers: ASTM D1751 asphalt saturated cellulosic fiber in preformed sheets.



- B. Slip Resistive Aggregate Finish: Factory-graded, packaged, rustproof, non-glazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.
- C. Bonding Agent: ASTM C1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- D. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin capable of humid curing and bonding to damp surfaces; of class suitable for application temperature, of grade complying with requirements, and of the following types:
  - 1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- E. Rock Salt: Sodium chloride crystals, kiln dried, coarse gradation with 100 percent passing 3/8-inch sieve and 85 percent retained on a No. 8 sieve.
- F. Joint Sealants: Acceptable sealants include, but are not limited to:
  - 1. MasterSeal SL1 by BASF
  - 2. Sikaflex-1A, by Sika Corporation
  - 3. Eucolastic 1SL, by Euclid Chemical Company

## 2.7 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
  - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
  - 2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that meet or exceed requirements.
- B. Proportion mixtures to provide normal-weight concrete with the following properties:
  - 1. Compressive Strength (28 Days):
    - a. Concrete Pavement: 4,000 psi.
    - b. Concrete Sidewalk: 3,000 psi.
    - c. Concrete Curb and Gutter: 3,500 psi.
  - 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
  - 3. Slump Limit: 5 inches plus or minus 1 inch.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
  - 1. Air Content: 4-1/2 percent plus or minus 1.5 percent for 1-1/2-inch nominal maximum aggregate size.
  - 2. Air Content: 4-1/2 percent plus or minus 1.5 percent for 1-inch nominal maximum aggregate size.
  - 3. Air Content: 5 percent plus or minus 1.5 percent for 3/4-inch nominal maximum aggregate size.
- D. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing admixture in concrete as required for placement and workability.
  - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- E. Cementitious Materials: Limit percentage by weight of cementitious materials other than Portland cement according to ACI 301 requirements.

- F. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

## 2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Furnish batch certificates for each batch discharged and used in the Work.
  - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding
  - 1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
  - 2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
  - 3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch according to requirements in Section 31 23 13 – Subgrade Preparation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Prepare subgrade as per Section 31 23 13 – Subgrade Preparation.
- B. Remove loose material from compacted subbase surface immediately before placing concrete/
- C. Notify A/E a minimum of 24 hours prior to commencement of concreting operations.
- D. Moisten base as required to minimize absorption of water from fresh concrete. Do not permit puddles of water to accumulate.

### 3.3 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

### 3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

- E. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap of adjacent mats.

### 3.5 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
  - 1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.
  - 2. Align joints in pavement, curb and sidewalks.
- B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
  - 1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
  - 2. Provide tie bars at sides of paving strips where indicated.
  - 3. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
  - 4. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.
  - 1. Locate expansion joints at maximum intervals of 50 feet unless otherwise indicated for curbs and sidewalks.
  - 2. Extend joint fillers full width and depth of joint.
  - 3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
  - 4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
  - 5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
  - 6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
  - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
  - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut joints into concrete when cutting action will not tear, abrade, or otherwise damage surface. Joints are to be soft saw cut with an early entry saw, same day as pour. If not shown provide at approximately 4' intervals for walks and 10' intervals

for paving unless otherwise indicated. Construct joints 1/4 of paving thickness unless otherwise indicated. Verify with A/E.

- E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

### 3.6 CONCRETE PLACEMENT

- A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.
- B. Remove snow, ice, or frost from subbase, surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- E. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- F. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
- G. Screed paving surface with a straightedge and strike off.
- H. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- I. Curbs and Gutters: Use design mixture for automatic machine placement. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing.
- J. Slip-Form Paving: Use design mixture for automatic machine placement. Produce paving to required thickness, lines, grades, finish, and jointing.
  - 1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of slip-form paving machine during operations.
- K. Cold-Weather Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
  - 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
  - 2. Do not use frozen materials or materials containing ice or snow.
  - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
- L. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
  - 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas

### 3.7 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
  1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.
  2. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.
  3. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

### 3.8 SPECIAL FINISHES

- A. Monolithic Exposed-Aggregate Finish: Expose coarse aggregate in paving surface as follows:
  1. Immediately after float finishing, spray-apply chemical surface retarder to paving according to manufacturer's written instructions.
  2. Cover paving surface with plastic sheeting, sealing laps with tape, and remove when ready to continue finishing operations.
  3. Without dislodging aggregate, remove mortar concealing the aggregate by lightly brushing surface with a stiff, nylon-bristle broom. Do not expose more than one-third of the average diameter of the aggregate and not more than one-half of the diameter of the smallest aggregate.
  4. Fine-spray surface with water and brush. Repeat cycle of water flushing and brushing until cement film is removed from aggregate surfaces to depth required.
- B. Seeded Exposed-Aggregate Finish: Immediately after initial floating, spread a single layer of aggregate uniformly on paving surface. Tamp aggregate into plastic concrete and float finish to entirely embed aggregate with mortar cover of 1/16 inch.
  1. Spray-apply chemical surface retarder to paving according to manufacturer's written instructions.
  2. Cover paving surface with plastic sheeting, sealing laps with tape, and remove sheeting when ready to continue finishing operations.
  3. Without dislodging aggregate, remove mortar concealing the aggregate by lightly brushing surface with a stiff, nylon-bristle broom. Do not expose more than one-third of the average diameter of the aggregate and not more than one-half of the diameter of the smallest aggregate.
  4. Fine-spray surface with water and brush. Repeat cycle of water flushing and brushing until cement film is removed from aggregate surfaces to depth required

- C. Slip-Resistive Aggregate Finish: Before final floating, spread slip-resistive aggregate finish on paving surface according to manufacturer's written instructions and as follows:
  - 1. Uniformly spread 40 lb/100 sq. ft of dampened, slip-resistive aggregate over paving surface in two applications. Tamp aggregate flush with surface using a steel trowel, but do not force below surface.
  - 2. Uniformly distribute approximately two-thirds of slip-resistive aggregate over paving surface with mechanical spreader, allow to absorb moisture, and embed by power floating. Follow power floating with a second slip-resistive aggregate application, uniformly distributing remainder of material at right angles to first application to ensure uniform coverage, and embed by power floating.
  - 3. Cure concrete with curing compound recommended by slip-resistive aggregate manufacturer. Apply curing compound immediately after final finishing.
  - 4. After curing, lightly work surface with a steel wire brush or abrasive stone and water to expose nonslip aggregate.
- D. Rock-Salt Finish: After initial floating, uniformly spread rock salt over paving surface at the rate of 5 lb/100 sq. ft.
  - 1. Embed rock salt into plastic concrete with roller.
  - 2. Cover paving surface with 1-mil-thick polyethylene sheet and remove sheet when concrete has hardened and seven-day curing period has elapsed.
  - 3. After seven-day curing period, saturate concrete with water and broom-sweep surface to dissolve remaining rock salt, thereby leaving pits and holes

### 3.9 DETECTABLE WARNINGS

- A. Blockouts: Form blockouts in concrete for installation of detectable paving units specified in Division 32 Section "Unit Paving".
  - 1. Tolerance for Opening Size: Plus 1/4 inch, no minus.

### 3.10 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound or a combination of these as follows:
  - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches and sealed by waterproof tape or adhesive.

Immediately repair any holes or tears occurring during installation or curing period using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas that have been subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period

### 3.11 PAVING TOLERANCES

- A. Comply with tolerances in ACI 117 and as follows:
  1. Elevation: 3/4 inch.
  2. Thickness: Plus 3/8 inch (10 mm), minus 1/4 inch.
  3. Surface: Gap below 10-foot- long, unlevelled straightedge not to exceed 1/2 inch.
  4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
  5. Lateral Alignment and Spacing of Dowels: 1 inch.
  6. Vertical Alignment of Dowels: 1/4 inch.
  7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
  8. Joint Spacing: 3 inches.
  9. Contraction Joint Depth: Plus 1/4 inch, no minus.
  10. Joint Width: Plus 1/8 inch, no minus.

### 3.12 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C172 shall be performed according to the following requirements:
  1. Testing Frequency: Obtain at least one composite sample for each 5000 sq. ft. or fraction thereof of each concrete mixture placed each day.
  2. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
  3. Slump: ASTM C143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
  4. Air Content: ASTM C231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
  5. Concrete Temperature: ASTM C1064; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
  6. Compression Test Specimens: ASTM C31; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
  7. Compressive-Strength Tests: ASTM C 39; test one specimen at seven days and two specimens at 28 days.
  8. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.

- C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
- G. Concrete paving will be considered defective if it does not pass tests and inspections.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- I. Prepare test and inspection reports.

### 3.13 REPAIRS AND PROTECTION

- A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.
- B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with Portland cement concrete bonded to paving with epoxy adhesive.
- C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 13 13



**SECTION 32 17 13  
PARKING BUMPERS**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

A. The Terms and Conditions of the Contract, including Supplementary and Special Conditions of the Contract, and the Drawings apply to this Section.

1.2 SUMMARY

A. Furnish all labor, materials and equipment for providing all of the following complete and in place:

1. Parking bumpers.
2. Adhesive.
3. Steel bars for installation.

1.3 RELATED WORK

A. Related work of other Sections includes:

1. Section 03 30 00- Cast-In-Place Concrete

1.4 REFERENCES

A. American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, Pennsylvania 19103, U.S.A. All references are to current active standard

1. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

B. Texas Department of Transportation. Department of Transportation (TxDOT), 125 East 11<sup>th</sup> Street, Austin, Texas 78701

1. TxDOT DMS-6100 – Epoxies and Adhesives.

1.5 SUBMITTALS

A. General: Refer to Section 01 33 00 - Submittal Procedures, and Section 01 33 23 – Shop Drawings, Product Data and Samples, for submittal requirements and procedures.

B. Shop Drawings: Submit Shop Drawings of bumpers, including plan layout and installation details, for approval.

C. Product Data: Submit manufacturers' product data of precast bumpers and epoxy adhesives for approval.

1.6 QUALITY ASSURANCE

A. Precast parking bumpers shall be manufactured for the intended purpose by a company or firm specializing in the manufacture of precast concrete parking appurtenances.

**PART 2 - PRODUCTS**

2.1 MATERIALS

A. Parking Bumpers:

1. Provide precast concrete parking bumpers conforming to the dimensions shown on the plans.
2. Bumpers shall be manufactured of air entrained concrete; 2,500 psi minimum compressive strength; approximately 4" high x 8" wide x 72" long, with a vertical hole in each end for anchorage as indicated on the plans.
3. Provide (2) #3 reinforcing bars running the length of the wheel stop. Anchor in place with two No. 4 bars, 18" long.

B. Adhesive: Adhesive for anchoring parking bumpers to pavement shall be an epoxy adhesive manufactured for the purpose, meeting the requirements of TxDOT DMS-6100, Type V.

C. Steel Bars for Installation: Epoxy coated rebar, No. 4 size, ASTM A615, Grade 60, epoxy coated, with less than 2 percent damaged coating in each 12-inch of bar length.

**PART 3 - EXECUTION**

*HISD Parking Lot Improvements*

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**PARKING BUMPERS**

3.1 INSTALLATION

A. Asphalt Pavement

1. Precast concrete parking bumpers shall be anchored in position on at-grade asphalt pavements, as indicated, with two No. 4 epoxy coated dowels and an appropriate epoxy adhesive as specified above.

B. Concrete Pavement

1. Core drill holes 1/8 inch larger than steel bar. Anchor in position as indicated, with two No. 4 epoxy coated dowels and an appropriate epoxy adhesive as specified above. Grout annular opening around hole.

OR

2. Precast concrete bumpers shall be secured in position on at-grade concrete pavements using a bed of epoxy grout meeting the requirements of TxDOT DMS-6100, Type V.

**END OF SECTION**

**SECTION 32 17 23  
PAVEMENT MARKINGS**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

- A. The Terms and Conditions of the Contract, including Supplementary and Special Conditions of the Contract, and the Drawings apply to this Section.

1.2 SUMMARY

- A. Section includes parking striping, handicapped stall graphics, drive lane markings, and related work as shown and detailed on the Drawings.

1.3 SUBMITTALS

- A. Submit product data; include surface preparation, product handling and application requirements.

**PART 2 - PRODUCTS**

2.1 MATERIALS

- A. Marking Paint: Paint shall be chlorinated rubber federally approved traffic paint applied with two coats at the manufacturer's recommended rate (total minimum rate of 100 to 110 sq. ft/gal). Stripes shall match color and parking/drive layouts that currently exist.
- B. Provide "White" paint to mark paving stalls, directional arrows, etc. for asphalt paving areas. Provide "Yellow" paint to mark paving stalls, directional arrows, etc. for concrete paving areas. Provide "Blue" color for handicapped marking, and "Red" for fire lanes, unless otherwise indicated. Provide white stenciled "No Parking - Fire Lane" marking as applicable.

**PART 3 - EXECUTION**

3.1 EXAMINATION

- A. Examine areas and conditions under which work is to be performed and notify Owner's Representative of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Confirm that asphalt and concrete paving has cured a minimum of 30 days and that pavement surfaces are dry before starting pavement marking.
- B. Surface Preparation:

1. Sweep and clean surface with power broom supplemented by hand brooming to remove loose material, dust and debris.
  2. Remove grease and oil deposits with solvents and detergents.
- C. Carefully and accurately lay out the location and termination of traffic and lane markings at the locations indicated. Protect adjacent curbs, walks, fences, and other items from receiving paint.
- D. Pavement-marking paint shall not be applied until layout, colors, and placement have been verified with the Owner.

### 3.3 APPLICATION

- A. Striping: Apply paint with mechanical equipment to produce stripes with uniform straight edges, minimum 4" wide. Apply in 2 coats at manufacturers recommended rates to provide a 15-mil minimum wet film thickness.

### 3.4 CURING AND PROTECTION

- A. Curing and Protection: Barricade pavement areas to prevent traffic until coatings are completely cured and ready to receive traffic in accordance with coating manufactures printed instructions and recommendations.

END OF SECTION